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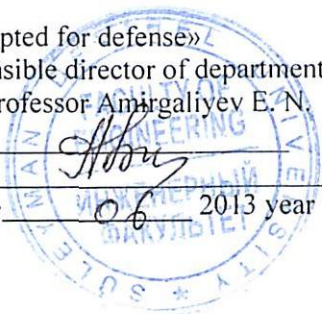
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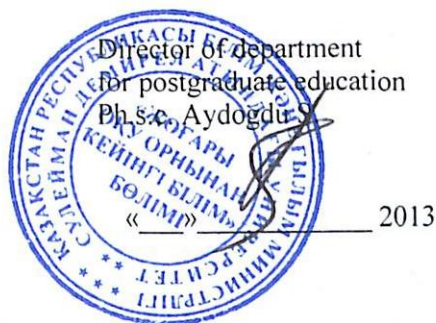
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Master dissertation

**Development of a mobile application to establish e-communication with parents**

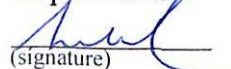
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## ТҮЙІНДЕМЕ

Бірге жиналу —бұл бастау, бірге қалу—бұл алға жылжу, ал бірлесіп жұмыс істеу—бұл жетістік. Жетістігі мол мұғалімдер ата-аналармен қарым—қатынас құруға мән береді. Мұғалімдер мен ата-аналар арасындағы бірлесіп жұмыс істеу оқушылардың жетістігі үшін өте маңызды ролге ие. Қарым—қатынастың ашық жолын құру — ата-аналарға бірлесіп бірыңғай жұмыс істеу майданын ұсынады әрі сіздің балаңыздың сызықтан шығып кету мүмкіндігі өте аз болады.

Көптеген ата-аналар балаларының зор келешегі үшін олардың жоғары оқу орындарында білім алатындарына кәміл сеніп керемет жоспарлар құрады. Олар балаларының үлкен адам болулары үшін колледж, университет немесе арнайы білім алсын деп көп жылдар бойы жоспар жасайды. Баласын жақсы көретін әр ата-ана баласының мектеп және арнайы білім ордаларында білім алғандарын көру үшін бір минутын да зая кетірмейді.

Бұл жобаның мақсаты мектеп пен ата-ана арасында жылдам және өте арзан смс хабарласу системасын қолдана отырып өте оңай байланыс түрін орнату, өйткені жобаның басты мақсаты— ата-анамен байланыс құру. Сонымен қатар бұл жоба ата-ана мен мектептің тығыз байланыста болуы арқылы оқушының сабақ үлгерімі мен тәрбиесін жақсартады.

Бұл жоба ата-аналармен байланысу үшін андроид аппликацияға негізделген смс бағдарламасын қолдану арқылы ата-анамен байланысу үшін жасалды. Бұл бағдарлама— оқушының сабаққа келіп келмегендігі, қай сабаққа қатысып қай сабаққа қатыспағандығы, сабақ үлгерімі, пән бағалары, емтихан нәтижелері, жаңалықтар және хабарландыруларды жолдау немесе қабылдау қабілетін қамтиды. Телефонмен сөйлескендей жылдам бірақ одан да арзан әі дәл сол кезде ата-ананың жұмысы болып қолының бос болмауының еш маңызы жоқ.

Әрине бұл ата-анамен байланыс құру үшін алғашқы этап. Егер бұл этап көздеген мақсатқа жеткізбесе мұғалім келесі этапқа көшеді. Гровс баяндағандай, « егер телефонмен сөйлесу оқушының жетістігі үшін аса маңызды нәтиже бермесе, сіз келесі этапқа өтуді қалайсыз: ата-аналармен бетпе-бет жиналыс жоспарлау». Компьютерлік мағлұмат жасауы және жылдам хабарлама мүмкіндігі бар мобильдік байланыс бірлесіп жұмыс істеу мүмкіндігін туғызады.

Негізі ең идеал байланыс жолы ата-ананың мектепке тікелей өздерінің келіп қарым—қатынас құруы мектепте көп салада жетістікке септігін тигізіп оқушылардың да оқуға деген шабыттарын арттырады бірақ әдеттегідей ата-аналар мектептен ұзақ болады. Дегенмен мобильдік құралдардың адамдар арасындағы алыс ара қашықтықты жоюы танымал болатын.

## ABSTRACT

Coming together is a beginning, staying together is progress and working together is success.

Successful teachers communicate with the parents. Collaboration between parents and teacher is absolutely crucial to a student success. Create an open path of communication so parents present a united front, there is a lower chance that your student will fall through the cracks.

Most parents make great plans for their children making sure they attend a good grammar and high school. They prepare for years for the child's adulthood by planning for college or special training. No one would for a minute, who loved their child, would neglect seeing the child attend school and getting a good secular education.

The purpose in this project is establish easy communication between school and parents using fast and low cost SMS messaging system, because it has a major advantage in communicating with parents. That helps to increase student success with communication between school and parents.

This project is an android based application for communicate with parents using SMS (Short Message Service). Capable to send and receive SMS between school and parents including text content students' grade marks, attendance, announcements and congratulations. As fast as phone call but cheaper also it doesn't matter if the parent is busy or not.

This application can send grade marks to the parents, also if parents want to know grades marks, application response "info" text from the parents as student's grade marks.

Of course this is first step of the communication with parents. If that way fails teacher needs to move communication to next step. As Groves described "If phone calls fail to produce any significant improvement in a student's behavior, you'll want to move on to the next step: scheduling a face-to-face parent conference.

Mobile communication, with its quick-messaging capabilities and computer-like information processing, can empower them to work together. Ideally, the physical presence of parents at the school would boost education in many ways, but parents are normally away from schools. Mobile devices, however, have been popular for reducing the distance between people.

## РЕЗЮМЕ

Собраться вместе есть начало, оставаться вместе есть прогресс ,а работать вместе это успех.

Успешные учителя общаются с родителями. Сотрудничество между родителями и учителем имеет решающее значение для успеха учащихся.

Родители делают большие планы для своих детей, убедившись, что они посещают хорошую школу и получают хорошее образование. Они готовятся в течение многих лет к взрослой жизни ребенка. Никто не будет пренебрегать посещением ребенка школы.

Целью этого проекта является обеспечить легкий способ связи между школой и родителями с помощью системы SMS сообщений, потому что она имеет большое преимущество в общении с родителями. Это помогает увеличить успехи ученика благодаря связи между школой и родителями.

Этот проект является Android приложением для общения с родителями с использованием SMS (Short Message Service). Это приложение способно отправлять и получать SMS между школой и родителями, включая оценки, посещаемость, объявления и поздравления. Так быстро, как телефонный звонок, но более дешево и это не имеет значения, если родитель занят или нет.

Конечно, это первый этап связи с родителями. Если таким образом если не удастся добиться успеха учитель должен двигаться к следующему шагу. Как говорит Гровс «Если телефонные звонки не дают значительного улучшения в поведении ученика, вы должны, перейти к следующему шагу: планированию родительского собрания.

Мобильная связь, с его быстрой возможности обмена сообщениями и компьютерной обработки информации, может дать им возможность родителям работать вместе с учителем. В идеале, физическое присутствие родителей в школе будет стимулировать образование во многих отношениях, но родители, как правило, вдали от школ. Однако мобильные устройства, позволяют уменьшить расстояния между людьми.

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## LIST OF ABBREVIATIONS

SMS	Short Message Services
GUI	Graphical User Interface
DBMS	Database Management System
MYSQL	My Structured Query Language
HTML	Hypertext Markup Language
XML	Extensible Markup Language
VMS	Voice Message Systems
IOS	Apple Mobile Operating System
GSM	Global System for Mobile
E- mail	Electronic Mail
WEB	A Hypertext System That Operates Over the Internet
NCLB	No Child Left Behind Act
CD-ROM	Compact Disc Read-only memory
DVD	Digital Video Disc
IEU	Australian Capital Territory Independent Education Union
NWS	New South Wales
SPAM	Unwanted e-mail From a Company or Web Site
SDK	Software Development Kit
OS	Operating System
JVM	Java Virtual Machine
GNU(GPL)	General Public License
JDT	Java development tools
PHP	Hypertext Preprocessing
API	Application Programming Interfaces
RSS	Rich Site Summary
UI	User Interface
UML	Unified Modeling Language

## INTRODUCTION

Home and school - everyone shares the goal of helping children learn and feel successful. Research has proven that when parents and teachers work together, everyone benefits: students tend to earn higher grades, perform better on tests, attend school more regularly, have better behavior, and show more positive attitudes toward themselves and toward school. School programs that include strong parent involvement are more effective [1]. In order to achieve students' academic and behavior success it is paramount that teachers and parents work together to help develop and build skills throughout the school year. A combination of motivation, organization, time management and concentration will help students stay on track and be able to achieve successful scores. [2]

Although the benefits of parent involvement are clear, many schools struggle to find effective ways to overcome the barriers of keeping parents informed. When there is a lack of communication between parents and teachers, some parents may approach the school with a defensive and angry attitude. [3]

The ways for communications are;

- Phone call: Best way to contact the teacher. Making the initial phone call will open the lines of communication with teachers.

Parent-Teacher Conference: Can create a successful partnership so both parent and teachers are on the same page. Discussion can occur and avoid blame by taking a solution-focused approach.

Follow-up after Parent-Teacher conferences to plan specific strategies if needed or discuss further with other teachers.

Newer, more advanced forms of communication are available. An often time, these forms of communication allow both parents and teachers to communicate without the limitation of school hours or location.

E-communication: Consisting of web, e-mail and SMS, and don't need face to face communication simultaneously. Also one of the fast method of being aware of students all detailed academic and behavioral grades.

### **This Application**

In this thesis, an android based application is produced to communicate with parents using SMS (Short Message Service). Capable to send and receive SMS between school and parents including text content students' grade marks, attendance, announcements and congratulations. As fast as phone call but cheaper also it doesn't matter if the parent is busy or not.

Of course this is first step of the communication with parents. If that way fails teacher needs to move communication to next step. As Groves described "If phone calls fail to produce any significant improvement in a student's behavior, you'll want

to move on to the next step: scheduling a face-to-face parent conference. You can even ask the principal to hold the conference in her office and mediate. Where phone calls sometimes fail, parent conferences can often succeed."<sup>[4]</sup>

Today, this application is using in 17 schools in Kazakhstan.

## CHAPTER 1

### 1.1 Problem Statement

There are few types of communication methods between teacher and parents;

#### 1.1.1 Face to Face Conference

Face-to-face contact is the best way to communicate with parents and a lot of teachers choose this option as their main way to communicate. It's important to be flexible when scheduling conferences because some parents can only attend before or after school. During the conference it's important to discuss academic progress and goals, what the student needs work on, and any concerns the parent has with their child or the education that they are being provided with. But it is not easy to schedule, so a teacher or school needs to use alternative methods additionally. Economic and time constraints may also be primary obstacles to effective communication according to Finders & Lewis <sup>[5]</sup>.

#### 1.1.2 Phone Call

One popular communication strategy is a phone call. As the teacher of a multi-age class, Gustafson, called the parents of each child in her class monthly to discuss concerns or to answer questions. She noted that these contacts provided her with valuable information about the lives of her students, including extracurricular activities, bullying experiences, and a death in the family. Gustafson concluded that the solid academic performance of her students came, at least in part, from positive communication with parents by phone.<sup>[6]</sup>

The problem for phone call is the time and cost from teacher side, it is not easy to call all of students periodically. If the parent is busy or driving etc. that is second problem for phone call because 67% of Kazakhstan people are working.<sup>[7]</sup>

#### 1.1.3 E-Communication

"Written communication is probably the most efficient and effective way we can provide valuable ongoing correspondence between school and home" <sup>[8]</sup>. Written communication is a permanent product that requires careful consideration regarding format and content. The goal is to organize concise, accurate information so that parents will read and understand it.

##### 1.1.3.1 E-mail and Web Communication

In recent years, educators have experimented with various technologies to communicate with parents in innovative and time-efficient ways. Integrating technology can help schools communicate quickly to a broad parent community.<sup>[9]</sup>

**To keep Attendance of Students:** Today, regular school attendance is an important factor in school success [15]. Poor attendance has been linked to poor academic achievement [16]. Research has shown a direct correlation between good attendance and student achievement [17]. Educators can improve attendance, by monitoring students' attendance, encouraging personal development and building relationships with parents setting high expectations [18]. In this application, checking attendance is very fast and easy, if a student is absent, application sends a text to the parents.

**Announcements and Congratulations with SMS:** In parent - teacher communication welcome message should come from the teacher and continue strongly. In order to establish strong communication, they need more than student grades or attendance information. If a parent receives "happy birthday" message from the school, he/she feels closer to the school. With this application, you can send any special text to the parents or to whole class. In addition, a meeting or conference can be announced to whole school in a few minutes via SMS.

**SMS Reports:** All sent and received SMS' stored in an excel file as a report. Report including message text, sent date and time, delivery status.

### 1.3 Area of Research

To conduct this research, the following steps were required:

Examine research papers and literature on communication between school and parents, Web, e-mail and SMS communication (online resources, textbooks, thesis, and other reference services.)

Conduct specific searches for any existing SMS applications and Web services.

Comparison between IOS and Android devices

Implement test evaluation for Android SMS application

To test the application is effective or not for students.

### 1.4 Scope and Assumptions

This application designed for fast and effective communication between school and parents. The application needs to following requirements;

Targeted to all schools which needed to communicate with parents

Also can be used to establish better communication between students and their schools

GSM operator with working SMS service.

### 1.5 Research Questions

The questions that this thesis will address are the following:

Which one is better for communication with parents' web, e-mail or SMS?

Internet technology is the most recent tool used by schools to communicate to a parent community. Increasingly, school Web sites are used to convey a broad range of school information. Students often become involved with both the technology and the content of the Web site and may work together with teachers to create and maintain the site. Teachers trained to use the school Web site can provide updates easily accessed by parents regarding homework assignments, test schedules, resource links, and so on. In fact, use of the internet can serve as an “interactive tool for individualizing homework and supporting the involvement of families in the homework process”.

That system can include widely information about students but the disadvantage of the system is that; in Kazakhstan, 18.2% percent of (15 years and up) population can use e-mail and open web pages so about 80% of parents cannot reach the information. [10]

### 1.1.3.2 SMS (Short Message Service)

Mobile communication, with its quick-messaging capabilities and computer-like information processing, can empower them to work together. Ideally, the physical presence of parents at the school would boost education in many ways, but parents are normally away from schools. Mobile devices, however, have been popular for reducing the distance between people.

In Kazakhstan there are 24 million mobile phone numbers that means a most of people using more than one mobile phone. [11]

If it possible to use an easy to use application communication gets faster between school and parents. [12]

## 1.2 Goals and Objectives

The Goals of thesis include:

**To establish easy communication between school and parents:** SMS is fast and low cost because of that it has a major advantage in communicating with parents.

**To increase student success with communication with school-parents:** A number of research studies have shown that students from kindergarten through grade twelve make greater achievement gains when their parents are aware, knowledgeable, and encouraging about their school experience. [13] [14].

This application can send grade marks to the parents, also if parents want to know grades marks, application response "info" text from the parents as student's grade marks.

How should the application's screen display be organized to provide easy to use?

What software development tools (e.g. Java, Eclipse etc.)

Which interface language options should be used?

What similar web based and SMS application may already exist and if yes, do they sufficiently satisfy the requirements?

## **1.6 Organization of Thesis**

The organization of thesis includes the following chapters.

- Chapter I: This chapter introduces the topic of the SMS application and identifies the need for use it.
- Chapter II: Literature Review - This chapter introduces the terminologies, related research work.
- Chapter III: Overall description of the System – This chapter offers the basic graphical overview of the functionality provided by a system in terms of actors, their goals. Also including the programming languages used in the application. ✓
- Application Screenshots – This chapter illustrates the application with its screenshots captured.
- Conclusion.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

Communication with the parents of students is one of the most neglected aspects of successful teaching, especially at the secondary level. The reason for this neglect is obvious and borne of necessity: Teachers often do not have the time to make the necessary phone calls to parents. However, if you want to ensure parental support and increase good behavior, find the time to make that phone call. [<sup>19</sup>]

If phone calls fail to produce any significant improvement in a student's behavior, you'll want to move on to the next step: scheduling a face-to-face parent conference. You can even ask the principal to hold the conference in her office and mediate. Where phone calls sometimes fail, parent conferences can often succeed. [<sup>20</sup>]

In this thesis, it is designed an Android application that is used to establish communication between school and parents. This application is in use by 17 schools in Kazakhstan and helpful in managing, checking and communicating with parents and feedbacks from school management and parents are positive. The application has helped to minimize time and effort to send attendance and grade marks to parents. The application is cheapest, easy to use and faster than such SMS applications in the market.

#### 2.2 Related Research

##### 2.2.1 Parent and Teacher Communication

Teachers need to engage parents in conversations about what is happening in the classroom. Teachers also need to make parents feel that they are a part of the classroom. In order to do this, educators will use one of the many online tools for communication. The purpose of this literature review is to further establish the increased need for parent and teacher communication and also to formulate ways to increase communications already in place.

### 2.2.3 Importance of Communication

Parents and teachers need to effectively and openly communicate about issues and topics in the classroom. This communication will help increase student engagement. According to Merkley, Schmidt, Dirksen, & Fulher [<sup>28</sup>] beginning 2002, the No Child Left Behind Act (NCLB) required all teachers and schools to communicate with families to help students succeed. Roner stated parents and students are using more social media to get information [<sup>29</sup>]. The social media tools being used enable users to easily publish ideas to a wide audience of people. Machen (2005) found students of parents that have an active role in the kindergarten classroom show an increase in kindergarten and eight grade reading achievement. “Although the relationship between family factors and children’s success is complex, the positive influence of parent involvement promoted a family-school partnership that increased positive constructive child outcomes” [<sup>30</sup>].

Roner suggested that educators in turn utilize social media tools to improve communication and create an interactive experience for the school community. Educators at all levels of learning can use a social media tool to increase parent engagement with the school and the student. Typically when students get to middle and high school parental involvement in the classroom shifts to a more extracurricular role or parent teacher organizations, rather than directly related to the classroom. According to Machen this type of parental involvement is just as significant as the types of involvement that take place at the elementary level. Risko et al. believed that creating parent networks helps to engage parents in the school community, when otherwise the parent might feel uncomfortable. Parents will be able to access the social network and find answers to questions from other parents, rather than ask the teacher.

Machen found that parent involvement in the kindergarten classroom may increase reading scores, but does not increase scores on math assessments. The author also noted that student’s perceptions of themselves as readers and the desire to read was increased due to parent involvement in the classroom. “Children benefit significantly when adults take strong interest in their education”. Merkley, Schmidt, Dirksen, & Fulher found that frequent and valuable communication created a partnership between home and school that benefitted students. When communication between home and school is in place, understanding increases, suggestions are given between educators and parents and all parties involved maintain positive attitudes. When parents are involved in the classroom they are sending a valuable message to the child that education is important. Involving parents within the classroom and collaborating with the teacher show their child they truly care about the child’s success and help increase students’ confidence. Parents who are involved in the classroom are also more likely to give encouragement and positive feedback to their student.

## **2.2.4 Ways to Increase Communication**

Teachers need to find ways to implement parent communication in the classroom. Carter gave two suggestions from other teachers for using social media sites to increase parent communication: use a social media site to provide updates on club information and remind parents and student of upcoming due dates and assignments [<sup>31</sup>]. Merkley suggested using an online portal or school website to communicate with parents on a more frequent basis regarding grades, attendance and homework. Nielsen told of the eight ways a teacher use Facebook [<sup>32</sup>]. For future use, it's planned to use the notes featured to showcase student writing and allowed for comments. Risko also suggested ways to increase parent and teacher communication. The author suggested when meeting with parents, opening with a friendly greeting and smile and being the conversation with celebrating the student's successes. It also provides a teacher a way to introduce ways to increase student engagement in the home environment.

## **2.2.5 Electronic Home-School Communication**

While the most common methods of home-school communication are written notes, telephone calls, and face-to-face meetings, the availability of technology has provided additional options. For example, schools are using various text messaging systems (for countering truancy) and various voicemail developments.

Literature describes voice mail technologies as: Voicemail such as voice bulletin boards and voice messaging systems (VMS). In using voicemail, O'Neil & Huff, stated;

Teachers can leave frequent messages for parents on classroom activities and parents can leave messages for parents. This provides for an easy way for parents to keep up-to-date with classroom activities so that they can enrich classroom instruction with learning activities at home. Parents can also leave messages for teachers. Such as "my student will not be in school today because he is sick." [<sup>33</sup>]

Jerold Bauch, professor emeritus of education at Vanderbilt University has been credited for pioneering the application of advanced voicemail technologies in parent-school communications [<sup>34</sup>]. The Transparent School Model, attributed to Bauch (Lunts; Marshall & Rossett), "uses a site -based voice-messaging computer to organize and deliver time-delayed messages between parents and teachers" [<sup>35</sup>]. With this system, parents can dial in, at any time, and hear a short message that summarizes what the children learned that day, informs about the homework assignments, and coaches parents on how to help children in their study. This system allows teachers to record a message for parents and have it stored in a computer system. The computer system automatically delivers the message to students' homes. Depending on the messaging service, messages can be sent to individuals, groups, or the entire school. Lunts described the VMS to have the same features as the voice bulletin board, and added that teachers can set the timing of the

According to Pence “a successful educational environment integrates the efforts of families, schools and a variety of institutions within the community” [21]. The author also believed that people today live with many gadgets, cell phones, computers, iPads, and MP3 players. With these astounding numbers, teachers are also using social media in the classroom. The social media tools society uses can also be used to increase parent and teacher communication to increase student engagement in the classroom. This review of literature will examine parent and teacher communication, the importance of communication and ways to increase communication.

### **2.2.2 Parent and Teacher Collaboration**

With stakes at the highest they have ever been for testing and funding, educators need to reach every student in every way possible. According to Stevens & Nimisha [22] parent involvement is now an all-encompassing term that includes a wide variety of actions; including participation in educational activities, talking about the importance of education, communication and participation with the school, providing support, encouragement and having high expectations. Machen [23] believed that because of the rapid climb in high stakes testing, accountability and standards, it is increasingly important to begin involving parents as partners in the learning process. Machen [24] also stated that finding real and simple ways to get parents involved in the classroom fosters a positive environment and make higher academic standards a reality. The teacher needs to be willing to communicate with parents and the parents need to be willing to reciprocate. Involving parents early on in their child’s education can foster a love of learning in the student and a sense of trust in teachers for the parent.

Davis and Yang [25] believed creating frequent and simple ways for parents and teachers to communicate lead to positive communication and increases parent involvement in the school. Regular communication will also create positive school-home relationships; including collaboration with the families will also create an atmosphere of support and encouragement for the teachers. Roner [26] believed that using an online discussion board teachers and administrators can create an effective and safe way for parents to share thoughts and ideas. He also stated, “As long as discussion items are properly designed and managed, they can present a wonderful way for parents to participate in the school’s decision making process”. Risko and Walker - Dalhouse [27] believed that asking parents to monitor homework does not constitute a collaborative relationship between a teacher and parent. They believe that fostering simple partnerships are not helpful for creating relationships and suggest avoiding them. Risko also promoted collaboration to help parents and family members engage the use of literacy activities in the home and to be excited about reading with their child. A good way to ensure student success is to establish communication with parents early on and continue throughout the year.

message delivery, and that parents can leave recorded messages in response to the call they received. In addition, the advantages of VMS are ease of use and that parents can call anytime day or night. Students who miss class can also determine their assignments [<sup>36</sup>].

Nelms studied the effects of teacher-created Web pages on home-school communication. This study was conducted as an action research project in rural, primary school in southeastern Georgia. The school consisted of grades kindergarten through second with approximately 59% of the student population qualified for free or reduced lunch. Participating parents reported that a class Web page provided them with useful information and specifically mentioned the “one-to-one correspondence area” (a personal messages section of the Web page) as one of the most beneficial aspects of the site. In addition, parents reported more frequent use of e-mail. [<sup>37</sup>]

The Bridges Demonstration Project (2003), a public-private partnership, was comprised of 63 schools and eight public television stations in their respective states (CO, IL, MD, NE, NY, PA, SC, & TX).

The Bridges Demonstration Project resources and training strategies were designed as new models for integrating technology to enhance students’ motivation to read and write; for improving communication between teachers and parents as they bolster students’ drive to read and write; and for helping close the “digital learning divide” that exists for Title I students and their parents.

The technologies included videos, CD-ROMs, and DVDs, as well as books and student activity sheets for the students to take home to enable and encourage parental involvement in their child’s reading and writing activities. The final report noted that the majority of parents and teachers believed that the use of technology as part of the project had improved school-home communication. Also, educators adopted new home-school strategies, and intended to continue and increase the use of e-mail for home-school communication.

Rice reported personal attempts to develop strong parent-teacher relationships through trial-and-error communication methods such as newsletters, phone logs, e-mail, and posting to a Web page. He realized newsletters only provided one-way communication and often saw copies of the newsletters on the floor or in the trash. After calling home and keeping a log of each call, he reported this method demanded an increased time commitment because of difficulty finding a time when both he and the parent could converse. He noted e-mail had the following advantages:

- Increased flexibility as to when parents could be contacted,
- Regulation of the amount of time spent on conversations,
- Ease in contacting a large number of parents at one time,

- Ease for parents to contact the teacher when they are at home, and
- Increased parent participation in school events.

Last, Rice used the Web page to: Provide information about the school and classroom activities, announce up-to-date opportunities for parent involvement, post pictures and student work, and notify parents of letters of forms that need to be returned.

The study ran four years with his fifth grade students in a community where an estimated 95% of the families had access to a computer.<sup>[38]</sup>

Huseth reported that from personal experience written and phone communications were both time consuming and inefficient. To solve these problems, she created a Web page and posted an assignment calendar and science-related Web links. From a parent survey, the top three parent needs were:

1. A calendar showing the dates of assignments due,
2. A current list of student grades and missing assignments, and
3. Research links to the Web.

In addition, Huseth set up an e-mail newsletter for parents. Parent responses indicated appreciation at being informed when a student's homework was due. For parents without access to computers or who were not comfortable with this form of communication, she continued to use traditional communication methods, such as phone calls home.

This report involved eight grade science students. The teacher reported a class load of 186 students, and 95% of the parents had access to a computer on a weekly basis <sup>[39]</sup>.

Delicio cited that principals found e-mail an effective tool to maintain contact with parents. One principal reported using e-mail to prevent rumors from spreading around the community and to give parents immediate and accurate information regarding a campus threat. The same principal commented, "E-mail is usually a more reliable and accurate information source than the student messenger, who can bury must-see information in a backpack for months" (para. 11). In addition, e-mail was used to contact deaf parents, report disciplinary actions, and update parents on news and events. Parents responded with pleasure to this more secure way of communicating with the school <sup>[40]</sup>.

### **2.2.6 Problems with E-mail**

Marlatt noted most North American secondary schools direct little attention to home-school communication strategies and stated: "School to home communication is a highly valuable yet underused strategy to assist the educator's goal of ensuring student success". Even if a well-planned electronic communication system is in

place, it will not enhance school-home communication unless it is used. For example, Lunts cited observation on voice message systems (VMS): If schools do not update the messages and use the VMS inconsistently, they cause more damage than good to home-school communication. For e-mail, Heuchan, McGuire, Kahl, & Murphy, stated, "if the school fails to answer e-mail, the Internet adoption is superficial and incomplete at best" [<sup>41</sup>].

Limited use of e-mail may be caused by some of the same problems that confronted traditional communication. For example, teachers may find that involving parents in the education process takes more time and effort than they can realistically devote. In addition, Decker and Majerczyk (as cited in Marlatt) found that both parents and teachers might have negative perceptions, one of the other, which impede communications. Blendinger and Snipes (as cited in Marlatt) found that parents, in particular, might be influenced by their own negative school experiences. To address these issues, Bermúdez and Márquez stated that it takes a concerted effort from the school to initiate contact with parents, especially with minority parents. Delicio and Rice reported that e-mail was a tool that could increase the number of increase the number of school-initiated contact. [<sup>42</sup>]

William Bainbridge observed that writing clear messages to parents was a problem for some teachers. Too often jargon and "insider language" left parents confused as to the true message being conveyed. "Plain talk and clear thinking go a long way in assuring effective communication between educators and parents" [<sup>43</sup>].

White, an IEU organizer, identified three issues that concerned teachers: workload (time constraints), privacy, and security (both personal and professional). The IEU or New South Wales /Australian Capital Territory Independent Education Union is an independent union that represents teachers and support staff in non-government schools, early childhood centers and other non-government educational institutions in New South Wales and the Australian Capital Territory. The IEU conducted preliminary research and found students and parents are increasingly using email to communicate with teachers to get homework explained, ask for information and references obtain assignment sheets, or submit homework. From interviewing teachers White identified the above three concerns. On the issue of time commitment, some reporters reported e-mail saved time in school-home communication. However, White reported that many teachers found that the time they once had for lesson planning and other work was consumed answering e-mail messages. Parents who used e-mail communicated with teachers more frequently than they did with written or telephone messages. However, some teachers found it increasingly difficult to manage their working days when parents expected immediate responses to messages [<sup>44</sup>].

Teachers were concerned about privacy and security issues. In school districts where e-mail was monitored, technical support staff had to respect the confidentiality of the messages they examined. Many teachers were concerned

about having their names and e-mail addresses published on the Internet. In a study to determine the reaction of American Internet users to unsolicited mail (e.g., SPAM), Fallows found that 73% of e-mail users avoided giving out their e-mail addresses and 69% avoided posting them on the Web. This attempt at privacy was not an option in school districts that published teacher's names and e-mail addresses. In some cases, the personal security of educators had been threatened because of the ease with which personal information could be accessed.

According to White, it was easy for recipients to misinterpret the information in e-mail messages. By nature, an e-mail message is short and may not follow the generally accepted rules of English usage. Without the visual and aural clues that are part of a face-to-face meeting, the tone of the message may have been misinterpreted. Parents may have even questioned a teacher's professional competency if informal or "standard e-mail" English was used in an electronic message. [45]

To address teachers' concerns on workload (time constraints), privacy, and security, White recommended that teachers develop and negotiate protocols (policies) with the school and homes to retain the benefits of e-mail, while avoiding the risks to teachers. While most schools addressed needed policies for acceptable Internet and school intranet for students and staff, there is a gap in the area of e-mail communications between staff and students/parents. White advocated that teachers take action to achieve sensible and reasonable protocols.

### **2.3 Related Applications**

Texta HQ Android SMS gateway; Android based application, needs to internet for sending SMS. Designed for bulk SMS, not optimized for schools.

Parentpay - web based application. Parents send payments to school through this system and has optional SMS sending service.

Communicate with parents, there are few windows applications capable to send e-mail and SMS to parents and using internet for sending SMS.

MarvelSoft <http://www.marvelsoft.co.in/> Web based SMS app

<http://www.riasc.net/> windows based SMS application, using Nokia mobile phone for sending SMS. There is no compilation in SMS text, need to write all of SMS' one by one.

SMS-SCHOOL Kazakhstan; using web based SMS application, needs fast computer and fast internet connection, very expensive due to our application.

Description of the table:

- 2012 Market share (worldwide); that information guide us for which platform are massive all over the world, if we are making an application, massive operating system is better option. As you see in the table Android has most area in the market. In second place we see Apple's IOS. Decision will be made between those two operating systems.
- Easy Import and export: This application including data and most of that data contain lists, especially student lists. In order to enter that information to a mobile device is not easy so we should make it easier with import and export function and using that function is very easy in Android OS. We can easily copy any file to android device from computer without 3rd party applications. But in IOS, import-export function is not easy, also copying any file from computer to device is very tiring, it needs to iTunes installed computer. In that step our choice is Android.
- SMS Module integration: Our application has designed for communication, and SMS function is most important part of the application. In Android OS, there are many SMS application they can use instead of stock SMS module but IOS always use its own module, if we can't change default SMS application, functionality of the applications decreases, so Android is better again.
- Easy to develop:
  - It is possible to use any pc to develop an Android application but for IOS we need a MacOS installed computer.
  - Android developer kit, including Java development kit can be installed completely free, but IOS development kit is not free.
  - In order to test developed application, needs iPhone or iPad, but in Android, simulator makes test the application.

After all of that research we decided to develop that application for Android.

### 3.1 Roles and Actors

The application works on an Android based device (preferred Tablet), and controlled by the school managers.

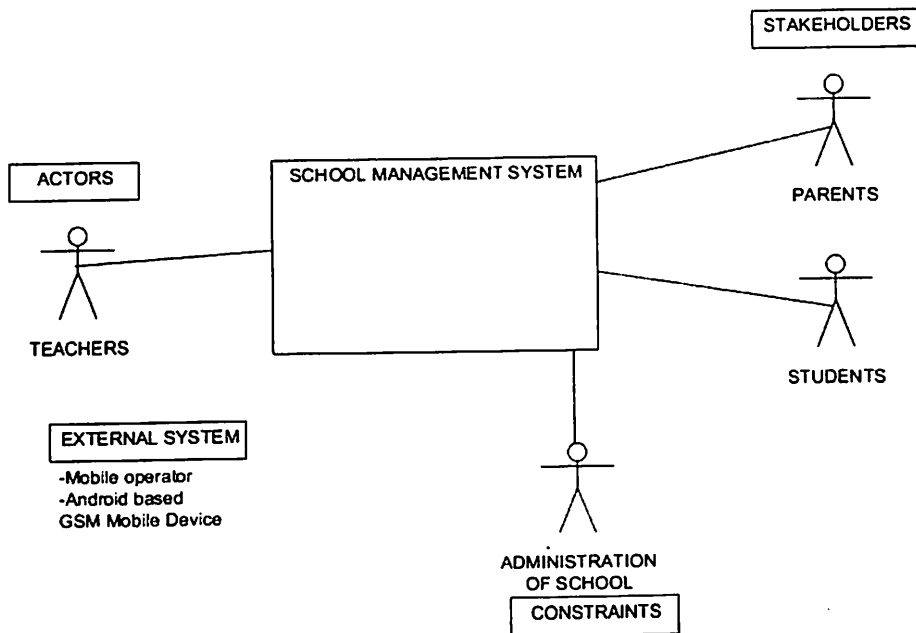
The application supports only one user simultaneously, but in different periods supports multiple users.

Teachers enter grade marks of the students and every teacher has own grade enter pages.

Attendance section and sending SMS designed for administrator.

Parents and students can only see the information on their mobile phones sent by administrator but also can ask information via SMS.

A "use case diagram" usually represents the interaction between the system and entities external to the system. These external entities are referred to as actors. Actors represent roles that may include human users, external hardware, or other systems. Figure 2 provides an overview of the use cases and actors for SMS application.



**Figure 2: Use Case diagram of Application.**

**Teacher Can:**

- Enter, edit and remove grade marks for own course.
- Send own course marks to parents via SMS

**Administrator Can:**

- Add and edit whole information,
- Check attendance of students,
- Send attendance report SMS to parents
- Send all course marks to parents

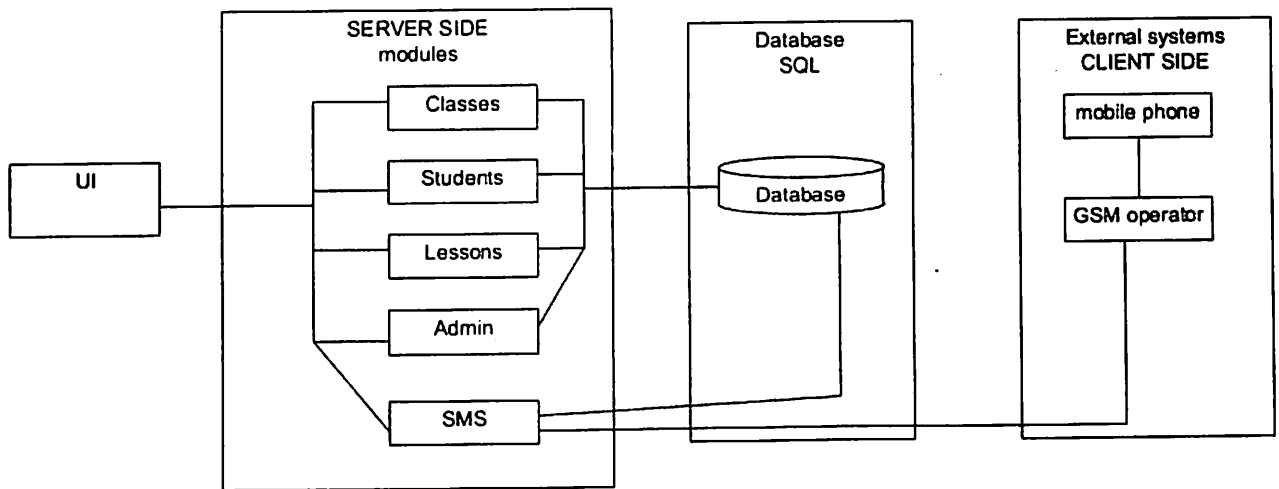
**Parents and Students Can:**

- Receive information text from school
- Ask information via SMS.

**Mobile cellular operator and tablet device** are external members of the application.

**3.2 Design and implementation issues**

The system consists of one main database that contains students' information. That database stored SD-card of the device. Main user interface include "Classes", "Students", "Lessons", "Attendance" and "SMS" buttons.



**Figure 3: UML Diagram of the application.**

Button “**Classes**” contains list of classes in school, using for add or remove classes. When click to a class, shows list of students for current class. At the next step, if click a student name application shows detail of the student including personal information and grade marks. That information can edit here, additionally possible to send SMS to one or all students of the class including grade marks, term marks, attendance, announcements, greetings etc.

Classes module directly connected to database.

Button “**Students**” searches student information in database. This page contains 4 search criteria: “*Name*”, “*Surname*”, “*SMS phone number*” and “*Student number*”. One of them is sufficient for searching.

Button “**Attendance**” contains list of classes and students, directly connected to database. There are four attendance options for a student, “absent”, “half day”, “permitted” and empty. Attendance part responsibility belongs to Administrator, checks status of students and sends SMS to parents.

Button “**Lessons**” contains list of courses. Connected to database. Teachers reach course marks, add, change and send SMS to parents for own branch.

“**Admin**” part is “menu” button for Android devices. Menu button contains “columns”, “import-export”, “License” and “settings”. Admin can add or remove columns for grade marks, import students’ lists from excel file, change settings including language, message text etc.

Student information is stored at main database that located SD-card of the device. Settings information is stored second database located program folder. Admin part can reach both of database.

“**SMS**” module gathers information through “Attendance” part and sends SMS to parents.

## CHAPTER 3

### OVERALL DESCRIPTION OF THE SYSTEM

#### 3.1 Which Platform is the Best for our work

Nowadays, there are lots of platforms for develop an application but we need to find which one is best for us.

Some of them are:

1. Windows
2. MacOS
3. Linux
4. Windows Mobile
5. IOS
6. Android
7. ....

In this list, first three OS' are desktop platforms so they don't fit our freedom of the mobility, so we need to continue to list.

Platform	2012 Market share (worldwide)	Easy Import and export	SMS module integration	Easy to develop
Windows Mobile	10.8%	+	+	+
IOS	18.9%	-	-	-
BlackBerry OS	12.6%	+	-	-
Symbian	5.2%	-	+	+
Android	49.2%	+	+	+
Other	3.4%			

Table 1. Comparing Operating System for Our application [46]

#### Gartner Predictions for 2012 Mobile OS Market

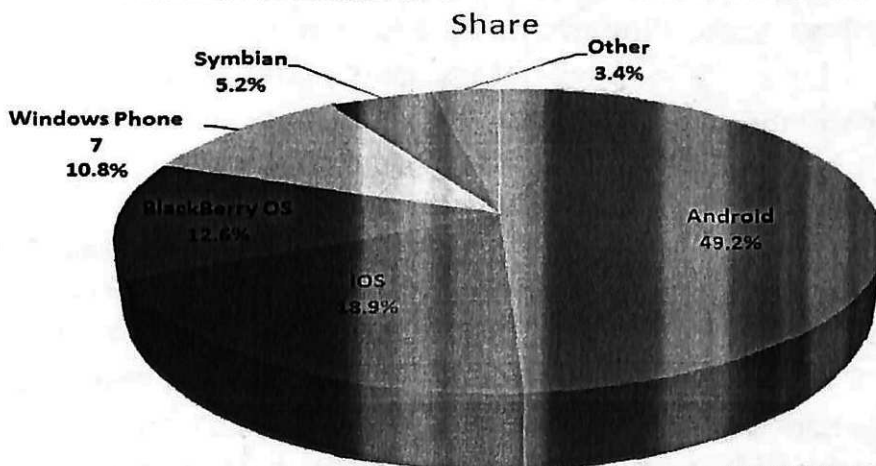


Figure 1: 2012 Market Share of smartphones.

Development tools are downloadable components, so after one has downloaded the latest version and platform, older platforms and tools can also be downloaded for compatibility testing.

Android applications are packaged in .apk format and stored under /data/app folder on the Android OS (the folder is accessible only to the root user for security reasons). APK package contains .dex files (compiled byte code files called Dalvik executables), resource files, etc. [48]

### 3.3.2.2 Java Standard Edition (Software Platform)

Not to be confused with JavaScript.

Android software development is the process by which new applications are created for the Android operating system. Applications are usually developed in the Java programming language using the Android Software Development Kit, but other development tools are available [49].

Java is a set of several computer software products and specifications from Sun Microsystems (which has since merged with Oracle Corporation), that together provide a system for developing application software and deploying it in a cross-platform computing environment. Java is used in a wide variety of computing platforms from embedded devices and mobile phones on the low end, to enterprise servers and supercomputers on the high end. While less common, Java applets are sometimes used to provide improved and secure functions while browsing the World Wide Web on desktop computers.

Writing in the Java programming language is the primary way to produce code that will be deployed as Java bytecode. There are, however, bytecode compilers available for other languages such as Ada, JavaScript, Python, and Ruby. Several new languages have been designed to run natively on the Java Virtual Machine (JVM), such as Scala, Clojure and Groovy. Java syntax borrows heavily from C and C++, but object-oriented features are modeled after Smalltalk and Objective-C. Java eliminates certain low-level constructs such as pointers and has a very simple memory model where every object is allocated on the heap and all variables of object types are references. Memory management is handled through integrated automatic garbage collection performed by the JVM. On November 13, 2006, Sun Microsystems made the bulk of its implementation of Java available under the GNU General Public License (GPL). [50]

### 3.3.2.3 Eclipse

In computer programming, **Eclipse** is a multi-language software development environment comprising a base workspace and an extensible plug-in system for customizing the environment. It is written mostly in Java. It can be used to develop applications in Java and, by means of various plug-ins, other programming languages including Ada, C, C++, COBOL, Fortran, Haskell, Perl, PHP, Python, R, Ruby (including Ruby on Rails framework), Scala, Clojure, Groovy, Scheme, and Erlang. It can also be used to develop packages for the software Mathematica. Development environments include the Eclipse Java development tools (JDT) for Java and Scala, Eclipse CDT for C/C++ and Eclipse PDT for PHP, among others.

The initial codebase originated from IBM VisualAge. The Eclipse software development kit (SDK), which includes the Java development tools, is meant for Java developers. Users can extend its abilities by installing plug-ins written for the Eclipse Platform, such as development toolkits for other programming languages, and can write and contribute their own plug-in modules.

The Eclipse Project was originally created by IBM in November 2001 and supported by a consortium of software vendors. The Eclipse Foundation was created in January 2004 as an independent not-for-profit corporation to act as the steward of the Eclipse community. The independent not-for-profit corporation was created to allow a vendor neutral and open, transparent community to be established around Eclipse. Today, the Eclipse community consists of individuals and organizations from a cross section of the software industry. [<sup>51</sup>]

### **3.3.2.4 Extensible Markup Language (XML)**

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. It is defined in the XML 1.0 Specification produced by the W3C, and several other related specifications, all gratis open standards.

The design goals of XML emphasize simplicity, generality, and usability over the Internet. It is a textual data format with strong support via Unicode for the languages of the world. Although the design of XML focuses on documents, it is widely used for the representation of arbitrary data structures, for example in web services.

Many application programming interfaces (APIs) have been developed to aid software developers with processing XML data, and several schema systems exist to aid in the definition of XML-based languages.

As of 2009, hundreds of document formats using XML syntax have been developed, including RSS, Atom, SOAP, and XHTML. XML-based formats have become the default for many office-productivity tools, including Microsoft Office (Office Open XML), OpenOffice.org and LibreOffice (OpenDocument), and Apple's iWork. XML has also been employed as the base language for communication protocols, such as XMPP.

Also used Notepad++ application for editing XML files.

Notepad++(Windows OS; <http://notepad-plus.sourceforge.net/uk/site.htm>)

### 3.4 SMS APPLICATION (KTL-SMS)

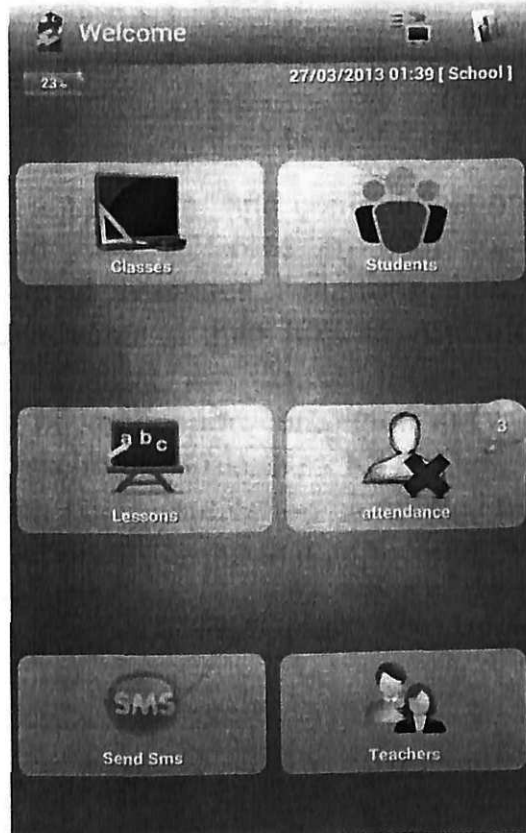
Name of the SMS application is KTL-SMS, especially designed for Kazakh - Turkish High Schools. I am working in KTL for 10 years and worked 4 years as Vice Principal. I have experienced a few problems in the school which can be



*Figure 4: Application Icon*

solved with simple applications and communication between school and parents is most important and easy to solve problem so I have decided to design an application. I was need to choice a platform, had two options IOS and Android. Android has more advantage than IOS so Android is chosen as platform of the application.

First version of application completed in two months and we started to test application in two schools, Oskemen KTL and Nurorda International School - Oskemen. Six month later, application completed as a stable version. Today, 18 of Kazakh-Turkish Schools are using that application with positive feedback.



*Figure 5: Application main Screen*

### 3.4.1 User Interface and Sample Codes

#### 3.4.1.2 Main Screen

Main user interface includes “Classes”, “Students”, “Lessons”, “Attendance”, “Teachers” and “SMS” buttons.

Additionally,

- An icon at the top left of the screen, show battery level of the device.
- Icon of application and School name,
- Current date and time,
- Current database,
  - Application allows to use four different databases, names of them are; School, dormitory, UBT and teachers. A school management, checks students in different times such school time or at the dormitory of school, preparation time. It doesn't need to use second device for different periods, changing database solve the problem with one device.
- Backup function button,
  - That button, helps to back up current database.
- Export to excel button.
  - Application has ability to send and receive SMS to/from parents, sometimes we need that reports, and “Export to Excel” button saves all of SMS information to an .xls file. The table in that file including, SMS sent to which student's parents, sent SMS date and time, text and received time by the other side. If the application received SMS from parents, received from whom, received date, time and message text.

#### 3.4.1.2.1 Android Manifest File Sample Codes for Application:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
xmlns:android="http://schemas.android.com/apk/res/android"
package="com.ktl.ogrencitakip"
android:versionCode="1"
android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="7"
android:targetSdkVersion="11" />
    <uses-permission android:name="android.permission.SEND_SMS"
/>
```

The “**Client Side**” of application contains “GSM operator” and “mobile phone” and cannot reach directly to database. Send and receive information through SMS module.

The application runs on an Android device has firmware version of 2.2 and above, should have sim-card.

The database management system of choice was MySQL and the codes were written in Java using Eclipse.

### **3.3 Languages, Software that are Used**

#### **3.3.1 Database Platform**

SQLite free application used for creating database. SQLite is a software library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine. SQLite is the most widely deployed SQL database engine in the world. The source code for SQLite is in the public domain. SQLite is an embedded SQL database engine. Unlike most other SQL databases, SQLite does not have a separate server process. SQLite reads and writes directly to ordinary disk files. A complete SQL database with multiple tables, indices, triggers, and views, is contained in a single disk file. The database file format is cross-platform - you can freely copy a database between 32-bit and 64-bit systems or between big-endian and little-endian architectures. These features make SQLite a popular choice as an Application File Format. Think of SQLite not as a replacement for Oracle but as a replacement for fopen(). Ongoing development and maintenance of SQLite is sponsored in part by SQLite Consortium members, including Nokia, Bloomberg, Oracle, Mozilla, Bentley and Adobe. [47]

#### **3.3.2 Programming Languages**

##### **3.3.2.1 Android SDK**

The Android software development kit (SDK) includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, Windows XP or later. The officially supported integrated development environment (IDE) is **Eclipse** using the Android Development Tools (ADT) Plugin, though IntelliJ IDEA IDE (all editions) fully supports Android development out of the box, and NetBeans IDE also supports Android development via a plugin. Additionally, developers may use any text editor to edit **Java** and **XML** files, then use command line tools to create, build and debug Android applications as well as control attached Android devices.

Enhancements to Android's SDK go hand in hand with the overall Android platform development. The SDK also supports older versions of the Android platform in case developers wish to target their applications at older devices.

```

    <uses-permission
android:name="android.permission.RECEIVE_SMS" />
    <uses-permission
android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
    <uses-permission
android:name="android.permission.READ_PHONE_STATE"/>
    <application
        android:icon="@drawable/icon"
        android:label="@string/app_name" >
        <activity
            android:label="@string/app_name"

android:theme="@android:style/Theme.NoTitleBar.Fullscreen"
            android:name=".ActSplash" >
            <intent-filter >
                <action android:name="android.intent.action.MAIN"
/>

                <category
android:name="android.intent.category.LAUNCHER" />
                </intent-filter>
            </activity>
            <activity android:label="@string/mainmenu"
                android:name=".ActMainMenu"/>

            <activity android:label="@string/ayarlar"

android:theme="@android:style/Theme.NoTitleBar.Fullscreen"
                android:name=".PrfSettings"/>
            <activity android:label="@string/dersactivity"

android:theme="@android:style/Theme.NoTitleBar.Fullscreen"
                android:name=".ActDers"/>

            <activity android:label=""

android:theme="@android:style/Theme.Translucent.NoTitleBar.Fullsc
reen"
                android:name=".ActLisans"

        android:configChanges="keyboardHidden|orientation"/>
        <receiver android:name=".receivers.SmsReceiver">
            <intent-filter>
                <action
android:name="android.provider.Telephony.SMS_RECEIVED" />
                </intent-filter>
            </receiver>
        </application>
</manifest>

```

### 3.4.1.2.2 Explanation of Codes

`package="com.ktl.ogrencitakip"` Name of application package.

#### a) Version Compatibility:

```
<uses-sdk android:minSdkVersion="7" android:targetSdkVersion="11" />
android:minSdkVersion
```

An integer designating the minimum API Level required for the application to run. The Android system will prevent the user from installing the application if the system's API Level is lower than the value specified in this attribute. You should always declare this attribute.

```
android:targetSdkVersion
```

An integer designating the API Level that the application targets. If not set, the default value equals that given to `minSdkVersion`.

This attribute informs the system that you have tested against the target version and the system should not enable any compatibility behaviors to maintain your app's forward-compatibility with the target version. The application is still able to run on older versions (down to `minSdkVersion`).

#### b) Permissions

```
<uses-permission android:name="android.permission.SEND_SMS" />
```

*The code above allows to use send SMS features of android device.*

A permission is a restriction limiting access to a part of the code or to data on the device. The limitation is imposed to protect critical data and code that could be misused to distort or damage the user experience.

Each permission is identified by a unique label. Often the label indicates the action that's restricted. For example, here are some permissions defined by Android:

```
android.permission.CALL_EMERGENCY_NUMBERS
android.permission.READ_OWNER_DATA
android.permission.SET_WALLPAPER
android.permission.DEVICE_POWER
```

A feature can be protected by at most one permission.

If an application needs access to a feature protected by permission, it must declare that it requires that permission with a `<uses-permission>` element in the manifest. Then, when the application is installed on the device, the installer determines whether or not to grant the requested permission by checking the authorities that signed the application's certificates and, in some cases, asking the user. If the permission is granted, the application is able to use the protected

features. If not, its attempts to access those features will simply fail without any notification to the user.

An application can also protect its own components (activities, services, broadcast receivers, and content providers) with permissions. It can employ any of the permissions defined by Android (listed in `android.Manifest.permission`) or declared by other applications. Or it can define its own. A new permission is declared with the `<permission>` element.

### c) Activities:

```
<activity android:label="@string/ayarlar"  
android:theme="@android:style/Theme.NoTitleBar.Fullscreen"  
    android:name=".PrfSettings"/>
```

An *Activity* is an application component that provides a screen with which users can interact in order to do something, such as dial the phone, take a photo, send an email, or view a map. Each activity is given a window in which to draw its user interface. The window typically fills the screen, but may be smaller than the screen and float on top of other windows.

An application usually consists of multiple activities that are loosely bound to each other. Typically, one activity in an application is specified as the "main" activity, which is presented to the user when launching the application for the first time. Each activity can then start another activity in order to perform different actions. Each time a new activity starts, the previous activity is stopped, but the system preserves the activity in a stack (the "back stack"). When a new activity starts, it is pushed onto the back stack and takes user focus. The back stack abides to the basic "last in, first out" stack mechanism, so, when the user is done with the current activity and presses the Back button, it is popped from the stack (and destroyed) and the previous activity resumes.

When an activity is stopped because a new activity starts, it is notified of this change in state through the activity's lifecycle callback methods. There are several callback methods that an activity might receive, due to a change in its state whether the system is creating it, stopping it, resuming it, or destroying it and each callback provides you the opportunity to perform specific work that's appropriate to that state change. For instance, when stopped, your activity should release any large objects, such as network or database connections. When the activity resumes, you can reacquire the necessary resources and resume actions that were interrupted. These state transitions are all part of the activity lifecycle.

## d) String

A string resource provides text strings for your application with optional text styling and formatting. There are three types of resources that can provide your application with strings:

### String

XML resource that provides a single string.

### String Array

XML resource that provides an array of strings.

All strings are capable of applying some styling markup and formatting arguments.

A single string that can be referenced from the application or from other resource files (such as an XML layout).

#### i. String File of the Application:

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
  <string-array name="settings_galeri_thumb_size_listkey">
    <item>small</item>
    <item>normal</item>
    <item>big</item>
  </string-array>

  <string-array name="settings_language_listval">
    <item>English</item>
    <item>Қазақша</item>
    <item>русский</item>
    <item>Turkish</item>
  </string-array>

  <string-array name="settings_language_listkey">
    <item>en</item>
    <item>by</item>
    <item>ru</item>
    <item>tr</item>
  </string-array>

  <string-array name="settings_database_listkey">
    <item>school.db</item>
    <item>dormitory.db</item>
    <item>teacher.db</item>
    <item>uhd.db</item>
  </string-array>
```

```
<string
name="settings_galeri_thumb_size_default">small</string>
</resources>
```

In this string file, the codes below show language options of the application which listing in settings menu;

```
<string-array name="settings_language_listval">
    <item>English</item>
    <item>Қазақша</item>
    <item>русский</item>
    <item>Turkish</item>
</string-array>
```

And next string shows names of referenced language files, which are in xml format;

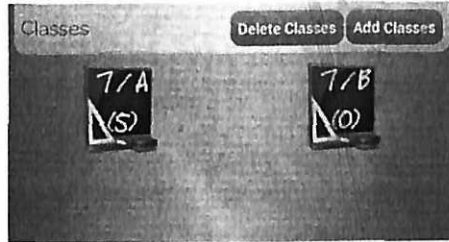
```
<string-array name="settings_language_listkey">
    <item>en</item>
    <item>by</item>
    <item>ru</item>
    <item>tr</item>
</string-array>
```

Last string part references for databases. The application has 4 different databases and we can select different database files. The code below shows database options in the settings menu;

```
<string-array name="settings_database_listkey">
    <item>school.db</item>
    <item>dormitory.db</item>
    <item>teacher.db</item>
    <item>uhd.db</item>
</string-array>
```

### 3.4.1.3 Classes

Button “*Classes*” contains list of classes in school. As default there is no any class in the application but it is possible to add many class here.



*Figure 6: Classes Screen*

Figure 5, shows screenshot of classes menu and the sample codes below shows visual design of that menu.

```
<LinearLayout
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="right"
    android:gravity="right"
    android:layout_marginLeft="5dip"
    android:layout_marginRight="5dip"
    android:background="@drawable/header_white_bg"
>
<com.ogrencitakip.custom.MyTextView
    android:layout_width="0.0dip"
    android:layout_weight="1"
    android:layout_height="wrap_content"
    android:text="@string/siniflaractivity"
    style="@style/normal_header_title"
    layout_gravity="left"
    gravity="left"
    android:singleLine="true"
    android:fadingEdge="horizontal"
    android:fadingEdgeLength="5dp"
/>
```

There are two buttons in this screen, “Delete Class” and “Add Class” and they are using for add or remove classes. To add a class, need to press “Add Class” button.

For remove added class, should use “Delete Class” button but the application doesn’t allow removing a class which has students, that means in order to remove a class, the class must be empty.

## Sample layout design codes of buttons in classes menu;

```
<Button
    android:id="@+id/btn_sil_sinif"
    android:background="@drawable/buton_dark"
    style="@style/buton_dark"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/btn_sil_sinif"
/>
<Button
    android:id="@+id/btn_yeni_sinif"
    android:background="@drawable/buton_dark"
    style="@style/buton_dark"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/btn_yeni_sinif"
/>
```

## Sample JAVA codes for Classes > Buttons

```
Button btn_sil_sinif = (Button)
findViewById(R.id.btn_sil_sinif);
    btn_sil_sinif.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Toast.makeText(ActSiniflar.this,
getString(R.string.sinif_sil_buton), Toast.LENGTH_LONG).show();
    }
});

Button btn_sinif_ekle = (Button)
findViewById(R.id.btn_yeni_sinif);
    btn_sinif_ekle.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent duzenle = new
Intent(ActSiniflar.this, ActSiniflarEkle.class);
        duzenle.putExtra("act",
ActSiniflarEkle.ACT_EKLE);
        startActivityForResult(duzenle, 2);
    }
});
```

### 3.4.1.3.1 Menu > Classes > 7A

When click to a class, shows list of students for current class in a table. The table including grade marks of all students of the chosen class. It is possible to add

Stude... **Gallery** **Attendance** **Send SMS** **Add Students**

Full Name	Bio1	Bio2	Chem1	Chem2	Comp1	Comp2	Math1	Math2	Phys1	Phys2
Suleyman Aydin	5	4	4	4	5	5	3	2	4	5
Rauan Syzdykov	4	5	5	4	5	4	3	4	5	4
Bahtiyar Omarov	4	5	4	5	4	5	4	5	5	4
Muhsin Sahin	4	2	5	4	4	5	4	5	4	4

*Figure 7: Grade marks screen*

or remove subject columns. That column names are limited with 7 characters and Unicode letters including numbers. The reason for that limitation is that standard SMS is limited with 160 Unicode characters.

Columns are in alphabetical order with different colors.

#### a) Sample Design Codes of a class

```
<com.ktl.ogrencitakip.custom.MyTextView
    android:id="@+id/title"
    android:layout_width="0.0dip"
    android:layout_weight="1"
    android:layout_height="wrap_content"
    android:text="@string/ogrenciactivity"
    style="@style/normal_header_title"
    layout_gravity="left"
    gravity="left"
    android:singleLine="true"
    android:fadingEdge="horizontal"
    android:fadingEdgeLength="5dp"
/>
<Button
    android:id="@+id/btn_galeri"
    android:background="@drawable/buton_dark"
    style="@style/buton_dark"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/btn_galeri"
    android:visibility="gone"
/>
<Button
```

## b) Sample JAVA codes of a class menu

```
package com.ktl.ogrencitakip;
```

```
import java.util.ArrayList;
import java.util.Calendar;
import java.util.HashMap;
import java.util.Locale;
//////////
import android.app.Activity;
import android.app.AlertDialog;
import android.app.DatePickerDialog;
import android.app.Dialog;
import android.content.DialogInterface;
import android.content.DialogInterface.OnClickListener;
import android.content.Intent;
import android.content.SharedPreferences;
import android.content.SharedPreferences.Editor;
public class ActOgrenciler extends Activity{

private ScHelper      sc_helper      = null;
private ScHelper      sc_helper_w    = null;
private Cursor        ogrenciCursor  = null;
private Cursor        sinif_cur      = null;

private boolean       devamsizlik_rapor_acikmi = false;
private boolean       ogrenci_no_ve_sinif_listede_goster = false;
String where = "";
String title = "";
int tdb = 0;

final public static int ACT_SINIF          = 1;
final public static int ACT_DERS          = 2;
final public static int ACT_DEVAMSIZLIK   = 3;
final public static int ACT_ARA          = 4;
static final int DATE_DIALOG_ID = 1;
private int mYear;
private int mMonth;
private int mDay;

CharSequence[] dialog_sinif_items = null;

private String[] renkler = {
"#731818",
"#657318",
.....
private int renkler_sayi = 6;

@Override
protected void onCreate(Bundle savedInstanceState) {
```

```

super.onCreate(savedInstanceState); sp =
PreferenceManager.getDefaultSharedPreferences(ActOgrenciler.this)
;
// Language
Configuration conf = new Configuration();
conf.locale = new Locale(sp.getString("language", "en"));
getResources().updateConfiguration(conf, null);
//--Language

if(sc_helper_w == null){
sc_helper_w = new ScHelper(ActOgrenciler.this);
if(sc_helper_w.checkDataBase())
try { sc_helper_w.openDataBaseWriteable(); }catch(SQLException
sqle){ throw sqle; }
}

Update_UI();
getWindow().addFlags(WindowManager.LayoutParams.FLAG_KEEP_SCREEN_
ON);

}
private void Update_UI()
{
setContentView(R.layout.activityogrenciler);
final Bundle extras = getIntent().getExtras();
if(extras != null){
int act = extras.getInt("act");
param = extras.getString("param");
String wht = extras.getString("white_list");
switch (act) {
case ACT_SINIF:
where = "WHERE sinif._id = "+param;
title = " - " +extras.getString("title") + " sınıfı";
break;
case ACT_DERS:
where = "WHERE sinif._id = "+param;
title = " - " +extras.getString("title");
white_list = wht;
break;
case ACT_ARA:
where = "WHERE "+param;
white_list = wht;
ogrenci_no_ve_sinif_listede_goster = true;
break;

default:
break;
}
if(extras != null && act != ACT_ARA){
sms_btn = (Button) findViewById(R.id.btn_sms_sinif_notlar);
dvm_btn = (Button) findViewById(R.id.btn_devamsizlik);
sms_btn.setVisibility(View.VISIBLE);
dvm_btn.setVisibility(View.VISIBLE);
}
}

```

```

galeri_btn = (Button) findViewById(R.id.btn_galeri);
galeri_btn.setVisibility(View.VISIBLE);
galeri_btn.setOnClickListener(new View.OnClickListener() {

```

Application has programmed based on “class” menu, so it is core of the application.

In this screen, there are 4 buttons which are “Gallery”, “Attendance”, “Send SMS” and “Add Student”.

**i) Gallery**

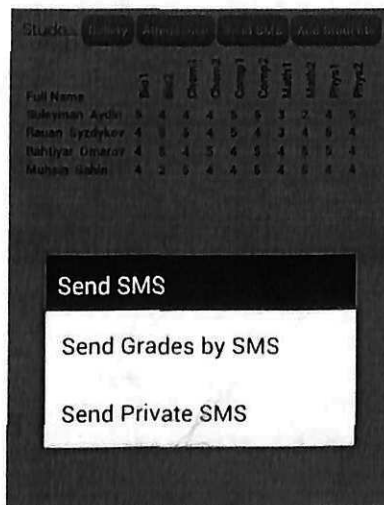
When click to gallery button, pop-up menu shows photo album of the students with their name for current class. That helps to a teacher to remember names of the students.

**ii) Attendance**

Attendance button, links to application to Attendance menu of current class, Attendance part will explain later.

**iii) Send SMS**

Best function of the program. Creates and sends SMS to whole class, pop up menu shows two options after click it, “Send Grades by SMS” and “Send Private



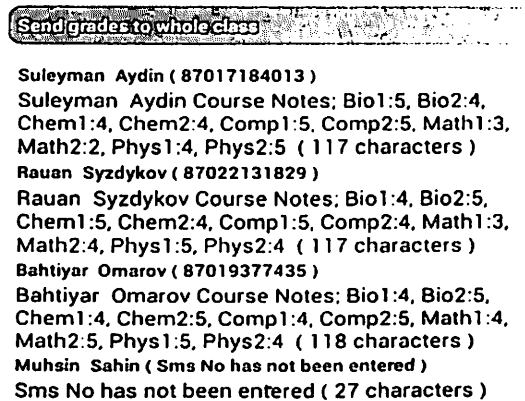
**Figure 8: SMS sending options**

SMS”. First option using for let parents know their child’s grades. Second option is text only messages and using for send announcements and greetings from the school and in second option every parent receives same text.

## Sample Codes of Send SMS Button

```
if(sms_btn != null)
{
    sms_btn.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View arg0) {
        AlertDialog.Builder AlertB = new
AlertDialog.Builder(ActOgrenciler.this);
        //AlertB.setView(ScV);
        final CharSequence[] _options = new
CharSequence[6] ;
            _options[0] =
getString(R.string.hepsini_sec);
            _options[1] =
getString(R.string.dev_tip_1);
            _options[2] =
getString(R.string.dev_tip_2);
            _options[3] =
getString(R.string.dev_tip_3);
            _options[4] =
getString(R.string.tum_sinifa_gondermeye_zorla);
            _options[5] =
getString(R.string.toplam_devamsizligi_gonder);
        final boolean[] _selections = new
boolean[ _options.length ];
```

Next step of the sending grade by SMS ask to selection of subject to send marks. Here possible to select all or one by one. Choosing of the subjects and



**Figure 9: SMS confirmation screen**

pressing Okay button creates SMS for each student for last confirmation.

Confirmation screen shows each SMS texts with phone number to send. If there is no problem, pressing to Okay button sends SMS one by one. That message text, sent time, delivery time and recipient of the SMS are stored in reports. Application has a function to export the reports to excel.

Another option in this menu is Email. If class teacher asks grade marks, the text in this screen can be shared by email.

### Sample JAVA codes of SMS Menu:

```
AlertB.setTitle(getString(R.string.hangi_notlar_sms_
atilsin));

AlertB.setPositiveButton(getString(R.string.tamam),
new OnClickListener() {
    @Override
    public void onClick(DialogInterface
arg0, int arg1) {
        String whitelist = "";
        for( int i = 1; i <
_options.length; i++ ){
            if(_selections[i])
            {
                whitelist+=_options[ i
]+", ";
            }
        }
        if(whitelist.length() > 1)
        {
            whitelist =
whitelist.substring(0,whitelist.length()-1);
        }
        Intent sms_sinif = (Intent) new
Intent(ActOgrenciler.this,ActSms.class);

        sms_sinif.putExtra("act",ActSms.ACT_TUM_SINIFA_NOT_S
MS);
        sms_sinif.putExtra("sinif_id",param);
        if(ogrenci_id_varsa_yaz != null)

        sms_sinif.putExtra("ogrenci_id",ogrenci_id_varsa_yaz
);

        sms_sinif.putExtra("whitelist",whitelist);
        startActivityForResult(sms_sinif,2);
    }
});
```

### “Send Private SMS” Option

Second SMS option is “Send Private SMS” which is using to send same text to whole class such as announcements and greetings. For example “Next Monday, at 17.00, We have a Seminar for Parents, we wish to you see here, Nurorda Intl

School” as an announcement, or “Happy New Year From Nurorda Intl School” as a greeting text.

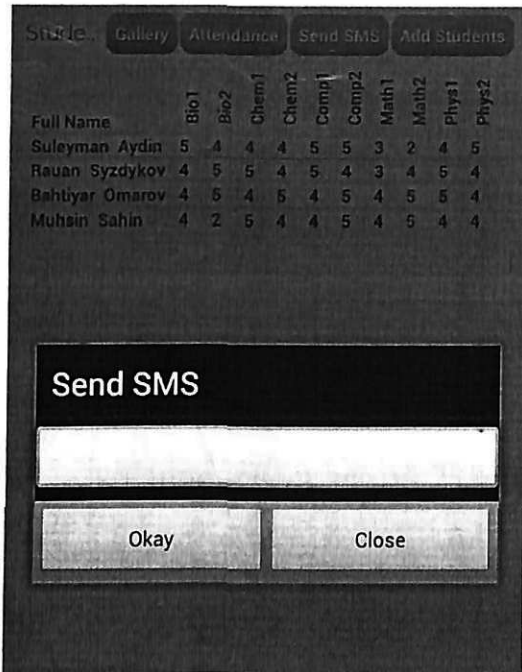


Figure 10: Send private SMS screen

**iv) Add Student**

In order to add student to database, there are two ways, first one is pressing “Add Student” button to add students one by one. Second way is to import whole class from an excel file. This subject will explain first method, “Add Student” button. To click “Add Student” button, shows the menu below:

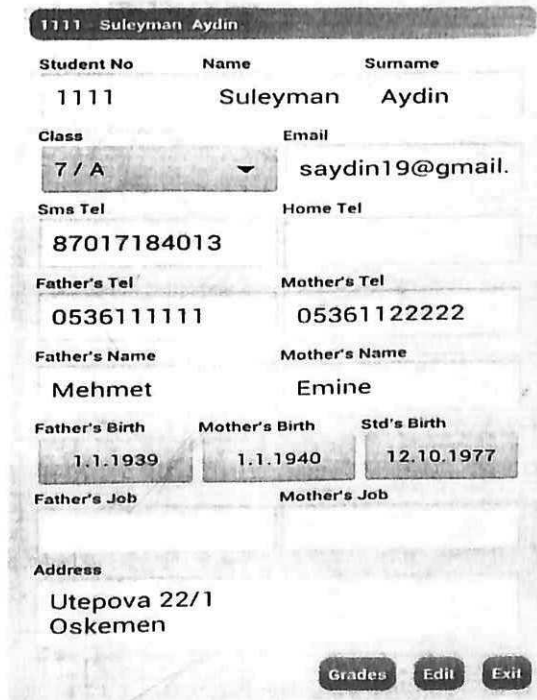


Figure 11: Student information screen

This menu is interface of entering student’s information to database and asking that information: Student Number, Name, Surname, Class, Email, SMS Tel,

Home Tel, Father's Tel, Mother's Tel, Father's Name, Mother's Name, Father's Birthday, Mother's Birthday, Student's Birthday, Father's Job, Mother's Job, Home Address and Commentaries about student.

"Student Number" is ID number of student and recording to database with that number. "Class" of student is chosen from a combo box, list of Classes taken from "Classes" menu.

For add a student, Student Number, Name, Surname, Class and SMS number must be filled, because these are required information. Remaining information are details about students and parents, they don't necessary to record database. But it better to enter them because that information help to communicate with students. Entering information and pressing Okay button, records the student to database.

### a) Sample Design Codes of a "Add Student"

```
<Button
```

```
    android:id="@+id/btn_yeni_ogrenci"  
    android:background="@drawable/buton_dark"  
    style="@style/buton_dark"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="@string/btn_yeni_ogrenci"  
/>
```

```
</LinearLayout>
```

```
<ScrollView
```

```
    android:scrollbars="vertical"  
    android:layout_width="fill_parent"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="5dip"  
    android:layout_marginBottom="5dip">
```

```
<TableLayout
```

```
xmlns:android="http://schemas.android.com/apk/res/android"
```

```
    android:id="@+id/tableLayout1"
```

```

        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:paddingLeft="15dip"
        android:paddingRight="15dip"
        android:stretchColumns="*"
    >
</TableLayout>

```

### b) Sample JAVA Codes of a "Add Student" menu

```

btn_yeni_ogrenci.setVisibility(View.GONE);
    sms_btn.setVisibility(View.VISIBLE);
    dvm_btn.setVisibility(View.VISIBLE);

    dvm_btn.setText(getString(R.string.txt_devamsizlik_tarih));
        title = getString(R.string.txt_devamsizlik)+" -
"+mDay+"."+(mMonth+1)+"."+mYear;

        MyTextView mtv = (MyTextView)
findViewById(R.id.title);

        mtv.setText(title);

{

    setContentView(R.layout.activityogrenciler);
    Update_UI_Genel();
    btn_yeni_ogrenci.setVisibility(View.GONE);
    MyDate md_o = new MyDate();
    md_o.set_date(mDay,mMonth,mYear);
    md_o.remove_day(gun);
    dvm_btn.setVisibility(View.VISIBLE);

    dvm_btn.setText(getString(R.string.txt_devamsizlik_duzenle))
;
        title = getString(R.string.txt_devamsizlik) + " - "+
mDay + "." + (mMonth+1) + "." + mYear + " - " +
md_o.get_date_formatted("dd.M.yyyy");
        MyTextView mtv = (MyTextView) findViewById(R.id.title);
        mtv.setText(title);

    sinif_degistir_init(2);
    Drawable tablezebral =
getResources().getDrawable(R.drawable.tablezebral);

```

```

        Drawable tablezebra2 =
getResources().getDrawable(R.drawable.tablezebra2);

        TableLayout table = (TableLayout)
findViewById(R.id.tableLayout1);
        table.removeAllViews();

        TableRow row_for_title = new TableRow(this);

        TextView t_o_no = new TextView(this);
        t_o_no.setText(getString(R.string.ogrenci_no_stunu));
        t_o_no.setTextAppearance(ActOgrenciler.this,
R.style.anamenu_buton_txt);
        t_o_no.setTextColor(Color.parseColor("#465a4a"));

        TextView t_ad_soyad = new TextView(this);
        t_ad_soyad.setText(getString(R.string.ad_soyad_stunu));
        t_ad_soyad.setTextAppearance(ActOgrenciler.this,
R.style.anamenu_buton_txt);
        t_ad_soyad.setTextColor(Color.parseColor("#465a4a"));

        TextView t_sinif = new TextView(this);
        t_sinif.setText(getString(R.string.sinif_stunu));
        t_sinif.setTextAppearance(ActOgrenciler.this,
R.style.anamenu_buton_txt);
        t_sinif.setTextColor(Color.parseColor("#465a4a"));

        if(ogrenci_no_ve_sinif_listede_goster)
row_for_title.addView(t_o_no);

        row_for_title.addView(t_ad_soyad);

        if(ogrenci_no_ve_sinif_listede_goster)
row_for_title.addView(t_sinif);

        final MyDate md = new MyDate();
        md.set_date(mDay,mMonth,mYear);

        for(int say = 0 ; say <= gun; say++)
        {
                if(say != 0)
                md.remove_day(1);
                String yeni_tarih = "
"+md.get_date_formatted("dd.M")+";
                DikeyTextView t_devamsizlik_tarih = new
DikeyTextView(ActOgrenciler.this);
                t_devamsizlik_tarih.setText(yeni_tarih);

t_devamsizlik_tarih.setTextAppearance(ActOgrenciler.this,
R.style.anamenu_buton_txt);

t_devamsizlik_tarih.setTextColor(Color.parseColor("#465a4a"));

```

```

row_for_title.addView(t_devamsizlik_tarih);
}

```

### 3.4.1.3.1.1 Menu > Classes > 7A > Student

When click a student's name in the list under the class menu, a menu appears as a pop-up.

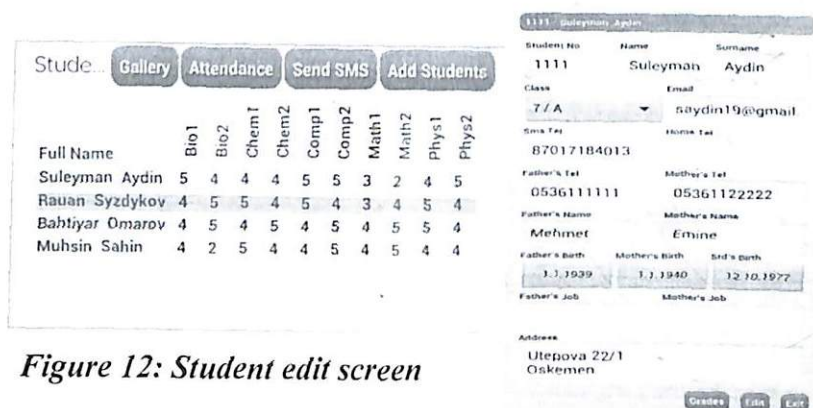


Figure 12: Student edit screen

This menu is “Student’s Action” menu and includes options of Student info, Edit grades, Send Grades by SMS, Send Attendance by SMS and Send Private SMS.

To click “Student info”, gets recorded student information from database as seen in the figure.

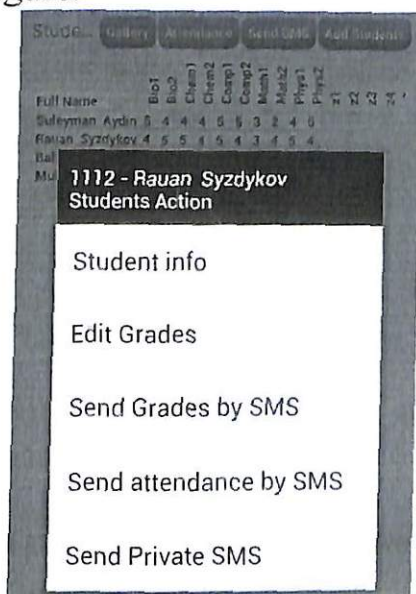


Figure 12: Student action screen

“Send Grades By SMS” and “Send attendance by SMS” using for send grades and attendance information of only current student, not whole class. If the school needs parent’s attention about different subject for one student, “Sending Private SMS” is best option.

### 3.4.1.3.1 Edit Grades:

If we want to add or edit grade marks of a student we need to click this option.

Here, possible to see and edit grade marks. The mark cells accept only numbers as default but it is possible to change text + numbers in settings menu.

1111 - Süleyman Aydın Grade Editing

Total attendance, unauth: 2 days, auth: 0 days

Bio1	Bio2	Chem1	Chem2	Comp1	Comp2
5	4	4	<input type="text"/>		
Math1	Math2	Phys1	Phys2		



Figure 13: Change grades screen

Top of the page has number and name of the student and also total attendance information. Subject name can add and remove with Android Menu button at the Main Screen of the application.

To edit another student, there is a button named "Next" at the bottom of page. Press that button passes to next student. Another way to pass next student is finger slide. Sliding from right to left passes to next student, from left to right passes to previous student due to numbers of students.

### Sample JAVA codes of Grades Menu

```

setContentView(R.layout.activitynotlardetay);

overridePendingTransition(android.R.anim.slide_in_left,
    android.R.anim.slide_out_right);
    if(sc_helper == null){
        sc_helper = new ScHelper(ActNotlarDetay.this);
        if(sc_helper.checkDataBase())
            try { sc_helper.openDataBase();
    }catch(SQLException sqle){ throw sqle; }
    }
    if(sc_helper_w == null){
        sc_helper_w = new
ScHelper(ActNotlarDetay.this);
        if(sc_helper_w.checkDataBase())
            try { sc_helper_w.openDataBaseWriteable();
    }catch(SQLException sqle){ throw sqle; }
    }

```

```

        boolean only_number =
sp.getBoolean("note_only_number", true);
        Bundle extras = getIntent().getExtras();
        if(extras != null){
            int act = extras.getInt("act");
            param = extras.getString("param");
            param2 = extras.getString("param2");
            switch (act) {
                case ACT_DETAY:
                    DetayQuery =
sc_helper.get_ogrenciler("WHERE ogrenci._id="+param);
                    if(param2 != null)
                        white_list = param2;
                    break;
                default:
                    break;
            }
        }
        TextView title = (TextView)
findViewById(R.id.title);
        touch_content = (ScrollView)
findViewById(R.id.touch);
        if(DetayQuery != null)
        {
            startManagingCursor(DetayQuery);
            DetayQuery.moveToFirst();
            title.setText(

                DetayQuery.getString(DetayQuery.getColumnIndex("ogre
nci_no")) + " - " +
                DetayQuery.getString(DetayQuery.getColumnIndex("ad"
))+" "+

                DetayQuery.getString(DetayQuery.getColumnIndex("soya
d"))+" "+
                getString(R.string.not_form_title));

            sinif_id_for_next_row =
DetayQuery.getString(DetayQuery.getColumnIndex("sinif_id
"));
            ogrenci_no_for_next_row =
DetayQuery.getString(DetayQuery.getColumnIndex("ogrenci_
no"));
        }
        if(white_list == null){

```

```

        columns = sc_helper.get_notlar_columns();
    }else{
        columns =
sc_helper.get_notlar_columns(white_list);
    }

    float toplam_izinsiz = 0f;
    int toplam_izinli = 0;

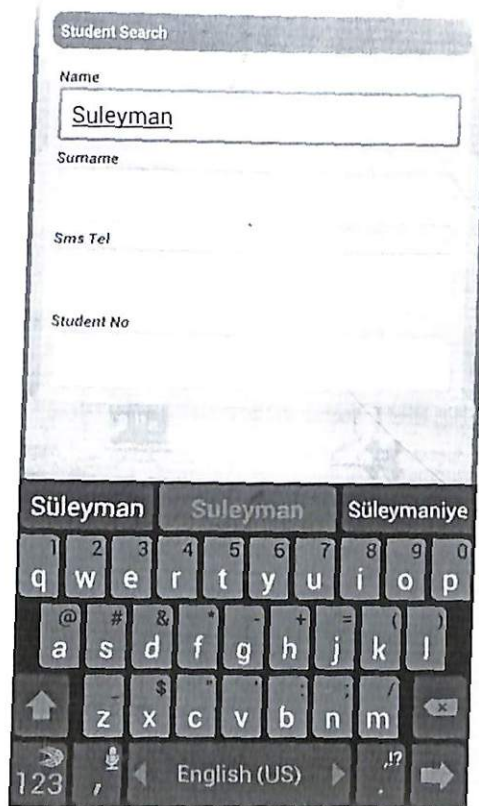
    Cursor TotalDevamsizlik =
sc_helper.get_devamsizlik_all(param);
    while(TotalDevamsizlik.moveToNext())
    {
        int miktar =
TotalDevamsizlik.getInt(TotalDevamsizlik.getColumnIndex(
"miktar"));
        if(miktar == 1)
            toplam_izinsiz +=1;
        else if(miktar == 2)
            toplam_izinsiz += .5f;
        else if(miktar == 3)
            toplam_izinli += 1;
    }

```

### 3.4.1.4 Students

Button "**Students**" searches student information in database. This page contains 4 search criteria: "*Name*", "*Surname*", "*SMS phone number*" and "*Student number*".

One of them is sufficient for searching.



*Figure 14: Student Search Screen*

### Sample JAVA codes for Student Search

case **ACT\_ARA**:

```
where = "WHERE "+param;
```

```
white_list = wht;
```

```
ogrenci_no_ve_sinif_listede_goster = true;
```

```
break;
```

```
default:
```

```

        break;
    }

    if(extras != null && act != ACT_ARA){
        sms_btn = (Button)
findViewById(R.id.btn_sms_sinif_notlar);

        dvm_btn = (Button)
findViewById(R.id.btn_devamsizlik);

        sms_btn.setVisibility(View.VISIBLE);
        dvm_btn.setVisibility(View.VISIBLE);

        galeri_btn = (Button)
findViewById(R.id.btn_galeri);

        galeri_btn.setVisibility(View.VISIBLE);

        galeri_btn.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent galeri_intent = new
Intent(ActOgrenciler.this,ActOgrenciGaleri.class);
                galeri_intent.putExtra("param",
param);
                galeri_intent.putExtra("title",extras.getString("titl
e"));

                startActivity(galeri_intent);
            }
        });
    }
}

```

### 3.4.1.5 Attendance

Button “Attendance” contains list of classes and students, directly connected to database. There are four attendance options for a student, “absent”, “half day”, “permitted” and empty. In this page it is possible to change date and class. And “Send SMS” button, sends attendance to parents for current class.

The screenshot shows a web interface for attendance management. At the top, there are three buttons: "Change Date", "Change Class", and "Send SMS". Below these, the date "27/3/2013" is displayed. A table lists four students with their corresponding attendance status:

Full Name	Attendance Status
Suleyman Aydin	ABSENT
Rauan Syzdykov	HALF DAY
Bahtiyar Omarov	PERMITTED
Muhsin Sahin	ABSENT

Figure 15: Attendance Screen

Send SMS button in this screen share attendance information of a student with parents. In this way the parents know is their child at the school or not.

The screenshot shows a modal dialog box titled "Attendance to be sent by sms". It contains a list of attendance types with checkboxes:

- Select All
- ABSENT
- HALF DAY
- PERMITTED
- Send to the whole class
- Send the total Attendance

At the bottom, there are two buttons: "Cancel" and "Okay".

Figure 16: Select Attendance type Screen

After click “Send SMS” button, appears an option menu.

### 3.4.1.5.1 Sample Codes

```
public class ActOgrenciler extends Activity{
.....
    final public static int ACT_SINIF          = 1;
    final public static int ACT_DERS          = 2;
    final public static int ACT_DEVAMSIZLIK   = 3;
    final public static int ACT_ARA           = 4;
.....
        dvm_btn = (Button)
findViewById(R.id.btn_devamsizlik);
.....
{
        Intent sms_sinif = (Intent)
new Intent(ActOgrenciler.this, ActSms.class);

        sms_sinif.putExtra("act", ActSms.ACT_TUM_SINIFA_DEVAMS
IZLIK_SMS);

        MyDate md = new MyDate();
        md.set_day_start();

        sms_sinif.putExtra("time", md.get_time());
        sms_sinif.putExtra("durum1", true);
        sms_sinif.putExtra("durum2", true);
        sms_sinif.putExtra("durum3", true);
        sms_sinif.putExtra("zorla", true);
        sms_sinif.putExtra("toplaml_devamsizlik", true);
        sms_sinif.putExtra("ogrenci_id", String.valueOf(id));
        startActivityForResult(sms_sinif, 2);
        }
.....
        if(extras != null && extras.getInt("act") ==
ACT_DEVAMSIZLIK)
        {
            where = "WHERE sinif._id = "+param;
            mDay   = extras.getInt("mDay");
            mMonth = extras.getInt("mMonth");
```

```

        mYear    = extras.getInt("mYear");
        Update_UI_Devamsizlik_rapor();
    }
.....
    setContentView(R.layout.activityogrenciler);
    Update_UI_Genel();
    devamsizlik_rapor_acikmi = true;

    btn_yeni_ogrenci.setVisibility(View.GONE);
    sms_btn.setVisibility(View.VISIBLE);
    dvm_btn.setVisibility(View.VISIBLE);

    dvm_btn.setText(getString(R.string.txt_devamsizlik_ta
rih));
    title = getString(R.string.txt_devamsizlik)+" -
"+mDay+"."+(mMonth+1)+"."+mYear;
    MyTextView mtv = (MyTextView)
findViewById(R.id.title);
    mtv.setText(title);
    sinif_degistir_init(1);
    Drawable tablezebra1 =
getResources().getDrawable(R.drawable.tablezebra1);
    Drawable tablezebra2 =
getResources().getDrawable(R.drawable.tablezebra2);
    Drawable ButtonDark =
getResources().getDrawable(R.drawable.buton_dark_single)
;
    TableLayout table = (TableLayout)
findViewById(R.id.tableLayout1);
    table.removeAllViews();
    TableRow row_for_title = new TableRow(this);

```

### 3.4.1.5.2 Attendance Report

Pressing to back button on device shows monthly attendance report of current class. It is possible to change period of date. In this table three different characters are using to show attendance state. The letter "A" means "Absent", letter "P" – permitted and symbol "/" – half day. Those characters are changing with program language and using first letter of the absent and permitted words.

attendance - 27.3.2013		25.2.2013											<input type="button" value="To Excel"/> <input type="button" value="Edit attendance"/> <input type="button" value="Change Class"/>																			
Full Name	27.3	26.3	25.3	24.3	23.3	22.3	21.3	20.3	19.3	18.3	17.3	16.3	15.3	14.3	13.3	12.3	11.3	10.3	09.3	08.3	07.3	06.3	05.3	04.3	03.3	02.3	01.3	28.2	27.2	26.2	25.2	
Suleyman Aydin	A	A	A	A	P	A									A																	
Rauan Syzdykov	/	A	P			A																										
Bahtiyar Omarov	P	P	A	A	A		A																									
Muhsin Sahin	A	P	/					A																								

Figure 17: Attendance Report Screen

Best method for saving and reporting such information is exporting to excel so we decided to add that function to this page. "To Excel" button, exports current information to excel page. That excel file is stored in *sdcard/School/xls* location.

Sms Reports				<input type="button" value="Delete"/> <input type="button" value="To Excel"/>	
Date	Sms Tel	Full Name	Class		
27/03 - 01:43	87019377435	Bahtiyar Omarov	7 / A		
27/03 - 01:43	87022131829	Rauan Syzdykov	7 / A		
27/03 - 01:43	87017184013	Suleyman Aydin	7 / A		

Figure 18: Attendance Report Screen

There is button at the main page to see for SMS report page. That report includes Sending date and time, SMS sent to which phone number, Name of the student, Class, Message Text and Delivery date and time.

```
private void Update_UI()
{
    setContentView(R.layout.activitysmsrapor);

    smsCursor = sc_helper.get_sms_reports();
}
```

```

        Button btn_to_excel = (Button)
        findViewById(R.id.btn_to_excel);
        btn_to_excel.setOnClickListener(new
        View.OnClickListener() {

            @Override
            public void onClick(View arg0) {
                toExcel();
            }
        });
    }
}

```

### 3.4.1.6 Lessons

Lessons part includes subjects such as biology, physics, chemistry, history etc. The grade columns can be linked to lessons and teachers, so a mathematics teacher see only own grade columns. There are two buttons in this scree, first one Delete Lesson and second one is Add Lesson. The subjects can be add or removed here.



*Figure 19: Lessons screen*

If press and hold on a subject, it shows options menu which has included "Edit", Delete and Cancel. In edit option, name of the subject and linked grade columns could change.

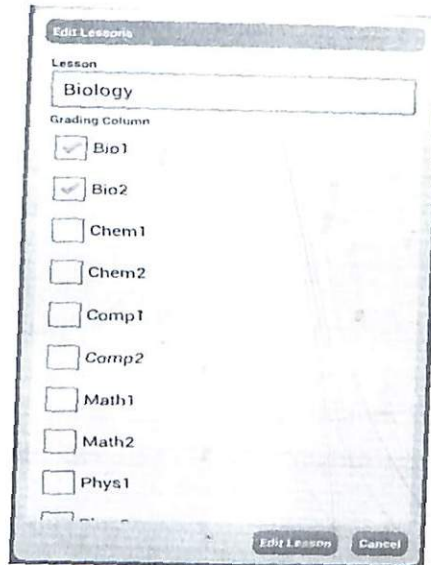


Figure 20: Link columns to Lesson screen

Stude... [Gallery](#) [Attendance](#) [Send SMS](#) [Add Students](#)

Full Name	Bio1	Bio2
Suleyman Aydin	5	4
Rauan Syzdykov	4	5
Bahtiyar Omarov	4	5
Muhsin Sahin	4	2

Figure 21: Lesson grades screen

### 3.4.1.7 Teachers

Teachers' part shows list of teacher. All necessary information of teachers can be recorded here including name, surname, middle name, branch, number of periods, e-mail, phone numbers, university information, category, experience, address and additional information about him/her.

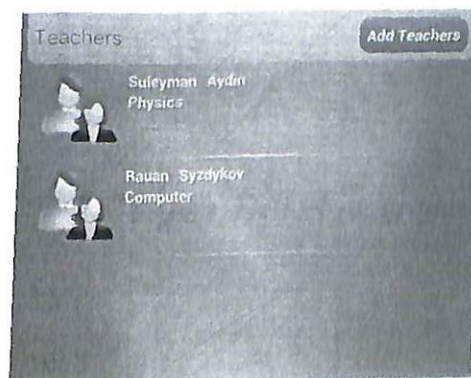


Figure 22: Teachers screen

### 3.4.1.8 Settings

Application has a settings menu. The settings part allows very wide customization option.

#### a) Language Settings

Application has four language options which are English, Kazakh, Russian and Turkish languages. All of the interfaces, including SMS texts change to selected language.

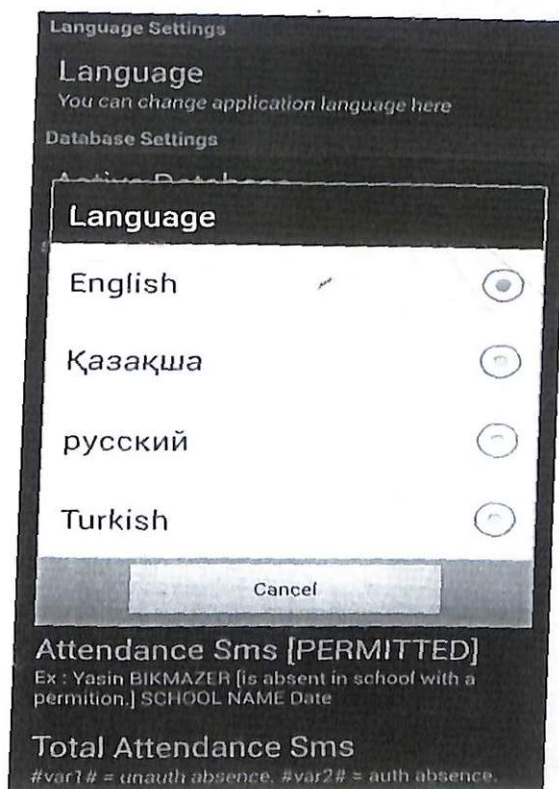
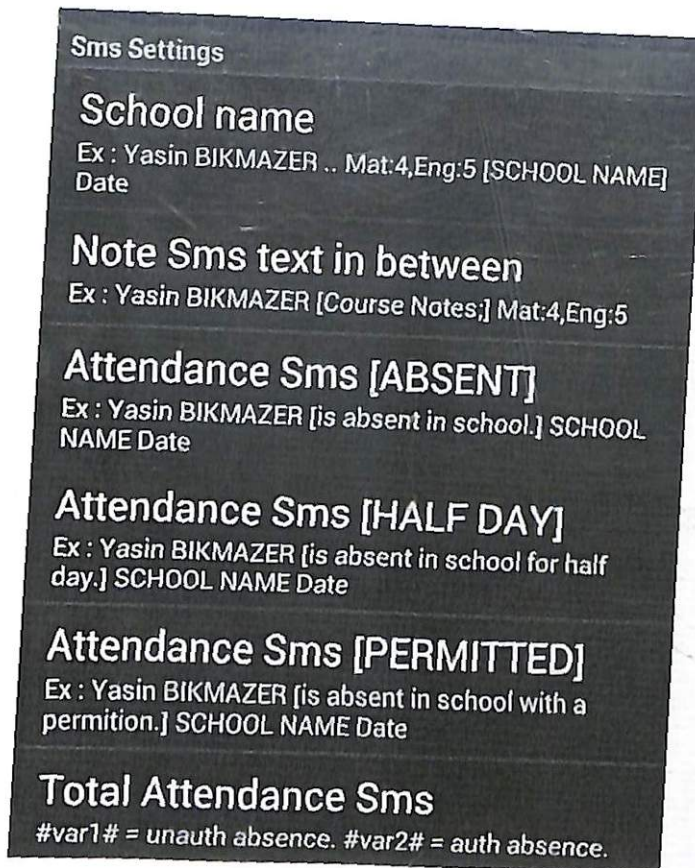


Figure 23: Language Options Screen

The codes below show language options in AndroidManifest.xml file:

```
<string-array name="settings_language_listval">
    <item>English</item>
    <item>Қазақша</item>
    <item>русский</item>
    <item>Turkish</item>
</string-array>
```

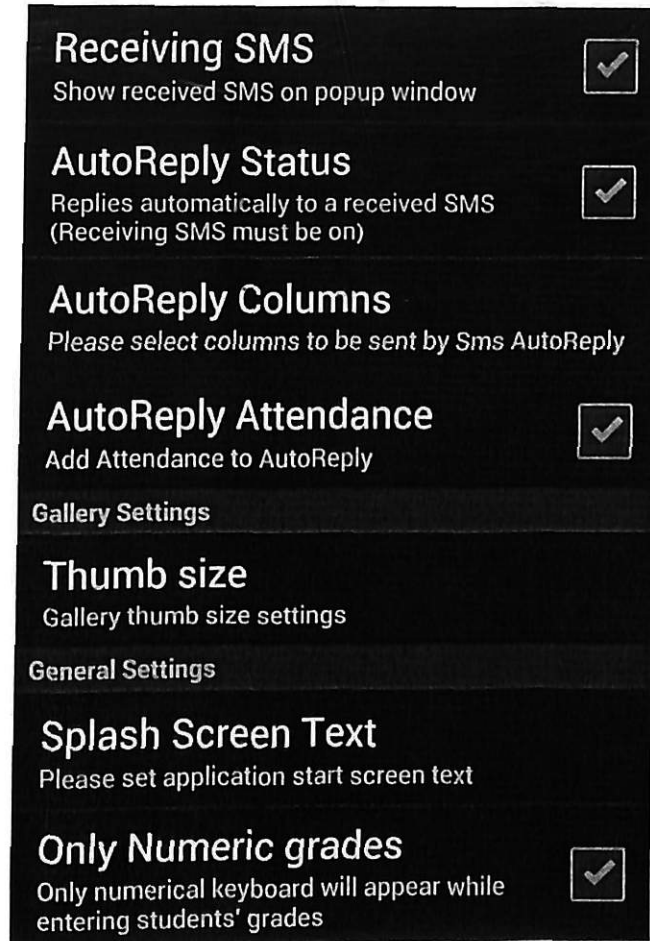
```
<string-array name="settings_language_listkey">
```



*Figure 25: SMS options menu in*

- **Attendance SMS [ABSENT]:** If the student is absent in school, application send a SMS to parents, that option change the absent text after name of the student.
- **Attendance SMS [HALF DAY]:** If the student in school not whole day, that option send SMS to parents, such as not in school for half day.
- **Attendance SMS [PERMITTED]:** If the student is not in school but it has permission from school management or parents, a confirmation sms is sent to parents, this option allow to change that text.
- **Total Attendance SMS:** How is the attendance of the student for whole education year? That option sends sms to parents with that information and optional text of the SMS can change here.
- **Receiving SMS:** if an SMS sent to parents about the student, they can reply the received message. If that option is enabled, application receives that message and show as pop-up menu. That pop-up menu shows student and his/her parent information with text by sent the parents. Also that information record to SMS report part.

- **Autoreply Status:** If a parent wants to know student's grade marks and attendance states, he/she can send a SMS with the text "info". If this option is enabled, application receives that message and finds the student information using phone number, and creates information SMS then sends that message to current phone numSettingber. That events record to report.



*Figure 26: Settings Menu*

- **Autoreply Columns:** In database, there are many grade columns, sometimes one sms not enough for all information so with this option, it is possible to select, which grade mark columns will send in autoreply messages.
- **Autoreply Attendance:** If this option is enabled, while the application

f) **Only Numeric Grades:** Grade columns limited with numbers as default option, if this option is disabled application allows to write text, symbols and numbers together.

g) **SMS settings Codes:**

```
if(bool_devamsizlik)
    {
        LinearLayout ll = (LinearLayout)
findViewById(R.id.content);
        ogrenciCursor =
sc_helper.get_ogrenciler_for_devamsizlik_sms(where)
;

        while(ogrenciCursor.moveToNext())
        {
            final String id =
ogrenciCursor.getString(ogrenciCursor.getColumnIndex("_id"));
            final String ad =
ogrenciCursor.getString(ogrenciCursor.getColumnIndex("ad"));
            final String soyad =
ogrenciCursor.getString(ogrenciCursor.getColumnIndex("soyad"));
            final String sms_tel =
ogrenciCursor.getString(ogrenciCursor.getColumnIndex("sms_tel"));

            TextView isim = new
TextView(this);
            isim.setText(ad+" "+soyad + " (
"+ ((sms_tel == null || sms_tel.length() == 0) ?
getString(R.string.sms_no_girilmemis) : sms_tel) +
" )");

            isim.setTextAppearance(ActSms.this,
R.style.popup_content_label);
            String extra_metin = "";
            Cursor devamsizlik;

            devamsizlik =
sc_helper.get_devamsizlik(id,time);

            if(devamsizlik.getCount() > 0)
            {
```

```

        devamsizlik.moveToFirst();
        String sql_tarih =
devamsizlik.getString(devamsizlik.getColumnIndex("t
arih"));

        MyDate tarih = new
MyDate(Long.valueOf(sql_tarih));
        String tarih_text =
sp.getString("sms_okul_ismi",
getString(R.string.settings_sms_okul_ismi_default))
+ " "
+
tarih.get_date_formatted("dd/MM/yyyy");

        int sql_durum =
devamsizlik.getInt(devamsizlik.getColumnIndex("mikt
ar"));

        if(sql_durum == 1 && durum1)
            extra_metin += "
"+sp.getString("dev_sms_yok",
getString(R.string.settings_dev_sms_yok_default))+
" " + tarih_text;

            if(sql_durum == 2 && durum2)
                extra_metin += "
"+sp.getString("dev_sms_yarim",
getString(R.string.settings_dev_sms_yarim_default))
+" " + tarih_text;

                if(sql_durum == 3 && durum3)
                    extra_metin += "
"+sp.getString("dev_sms_izinli",
getString(R.string.settings_dev_sms_izinli_default)
)+" " + tarih_text;

            }
devamsizlik.close();
if(toplam_devamsizlik){
    float toplam_izinsiz = 0f;
    int toplam_izinli = 0;

    Cursor TotalDevamsizlik =
sc_helper.get_devamsizlik_all(id);

    while(TotalDevamsizlik.moveToNext())
        {

```

```

        int miktar =
TotalDevamsizlik.getInt (TotalDevamsizlik.getColumnI
ndex("miktar"));

        if(miktar == 1)
            toplam_izinsiz +=1;
        else if(miktar == 2)
            toplam_izinsiz += .5f;
        else if(miktar == 3)
            toplam_izinli += 1;
    }
    TotalDevamsizlik.close();
    // Zorlama varsa gönder Veya
    Öğrenci devamsızlığı zaten var e gönderirken
    toplamıda gönder bari
        if(zorla ||
!extra_metin.equals("")){
            if(toplam_izinsiz != 0 ||
toplam_izinli != 0){
                String dev_sms_total =
sp.getString("dev_sms_total",
getString(R.string.settings_dev_sms_total_default))
;
                dev_sms_total =
dev_sms_total.replace("#var1#",String.valueOf(topla
m_izinsiz).replace(".0", ""));
                dev_sms_total =
dev_sms_total.replace("#var2#",String.valueOf(topla
m_izinli));
                extra_metin += "
"+dev_sms_total;
            }
        }
    }
    TextView SmsMetni = new
TextView(this);
    SmsMetni.setTextColor(Color.BLACK);
        if(extra_metin.equals(""))

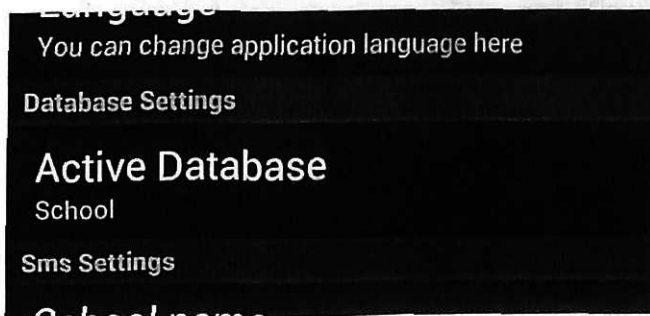
        SmsMetni.setText (getString(R.string.devamsizlik
_girilmemis));
        else
        {
            SmsMetni.setText (ad+"
"+soyad+" "+ extra_metin);

```

```
<item>en</item>
<item>by</item>
<item>ru</item>
<item>tr</item>
</string-array>
```

## b) Active Database

The application has four different databases, located at sdcard/school folder in device. All default information is recorded to School.db database file. But it is possible to change active database to Dormitory.db, Teachers.db and UHD.db. Other three databases can use for different purposes such as checking dormitory at evening, or to send sms to teachers etc.



*Figure 24: Active Database Option*

## c) SMS Settings

When the application tries to send sms, there are a few options. These are;

- **School Name:** Shows the school name at the end of the sent SMS.
- **Note SMS text in between:** SMS text starts with the name and surname of the students, after that an optional text then grade notes. This option changes that optional text.

```

        if( extra_metin.length() != 0
)
        if(! (sms_tel == null ||
sms_tel.length() == 0) )
        {
            sms_nolar.add(sms_tel.toString());
            String metin =
SmsMetni.getText().toString();
            int limit1 = 160;
            if(metin.length() <
limit1 )
                limit1 =
metin.length();
            metin =
metin.substring(0,limit1);
            SmsMetni.setText(metin);

            sms_metinler.add(metin);

            sms_ogrenci_idler.add(ogrenciCursor.getString(o
grenciCursor.getColumnIndex("_id")));

            Email_metni.append(isim.getText()+"\n"+SmsMetni
.getText()+"\n\n");
        }

        ll.addView(isim);
        ll.addView(SmsMetni);
        SmsMetni.append(" (
"+SmsMetni.getText().toString().length()+ "
"+getString(R.string.sms_karakter)+" )");
    }

} // While

```

### 3.4.1.9 SMS Samples:

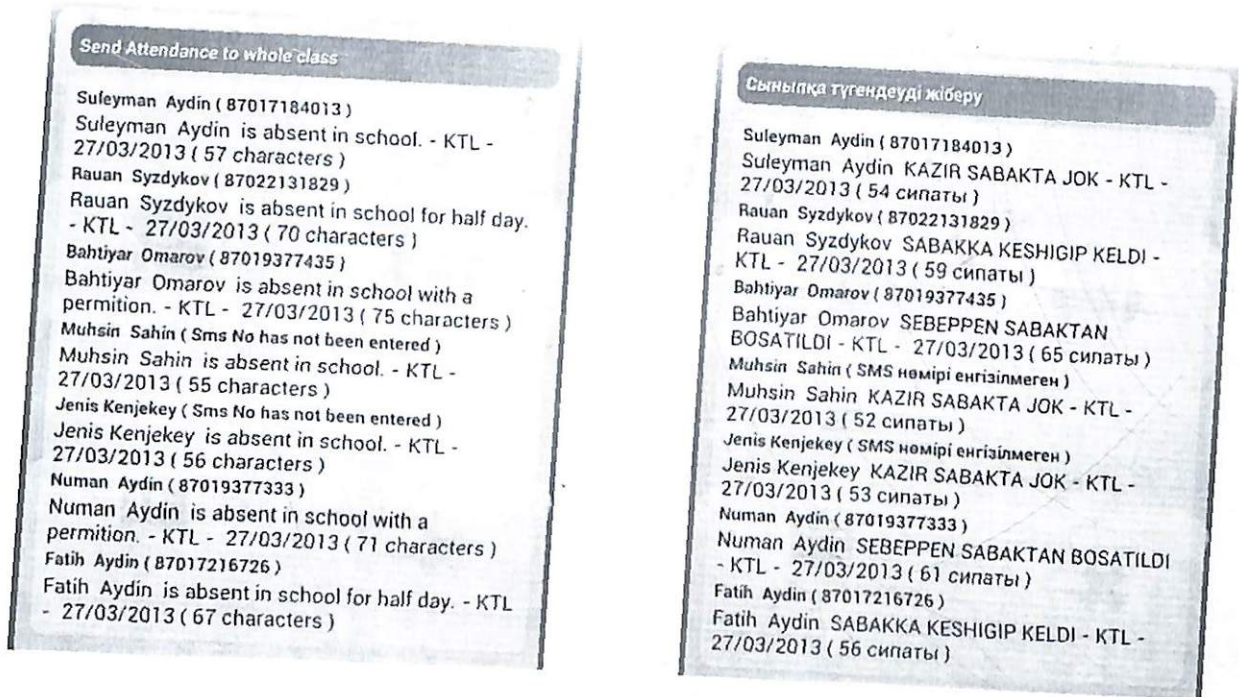


Figure 27: SMS Confirmation screen in English and Kazakh Language.

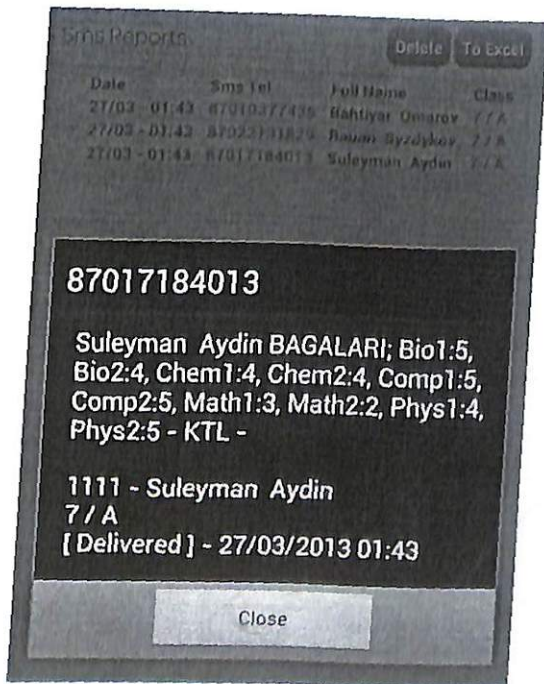


Figure 28: SMS report details.

27/03/2013 Wed

Suleyman Aydin BAGALARI;  
Bio1:5, Bio2:4, Chem1:4,  
Chem2:4, Comp1:5, Comp2:5,  
Math1:3, Math2:2, Phys1:4,  
Phys2:5 - KTL -

01:43

*Figure 29: Received SMS Text by parents.*

## Conclusion

Communication between home and school helps a teacher know a student better, which in turn helps the teacher know the student better to teach more effectively.

Parents are the most important partner in a child's education and schools can reap large dividends by capitalizing on their support. To be sure, such relationships require a lot of work by both educators and parents.

This work, tries to establish easy and fast communication between school and parents. In the test of application, students' behavior changed a little. In Oskemen KTL, before this application, daily average of students do not come to school was 13 (for one month) and 4-6 students are permitted (ill, Olympiad etc.), so about 8 students don't have any reason. Next month, that amount decreased to 6 (daily average). Because next month we used that application and communication between parents and school was better than before.

Similarly average grades have also increased in that time period. Grades mark tested on only 8th classes which have 48 of students. Before the average marks was 3.9 for one term, and next term that average increased to 4.2.

That results and positive feedbacks from both parents and schools are show; KTL-SMS application makes better the communication between school and parents that dialog increases students' success and positive behaviors.

## References

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