Пакеттің негізін арнайы ядро – символдық түрлендірулер бағдарламасы құрайды. Maple-де ядроға жүктелетін пакеттер мен кітапханаларда сақталатын бірнеше мыңдаған арнайы функциялар бар. Пакеттің символдық түрлендіруге (компьютерлік алгебраға) жалпы бағытталғандығы Maple пакетінде есептерді сандық шешуге болмайтындығын көрсетпейді. Maple тек есептеп қана қоймайды, математикалық нысандар мен процестерді графикалық түрде көрсетудің орасан көп мүмкіндігіне де ие.

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IT - PROPOSAL FOR DEVELOPMENT OF MODERN POSTAL SERVICES

Abstract. Development of postal service starts from 6 thousand years BC. Actually, first messages were send and service starts later, but these tam-tam drums laid the foundation of post service. During evolution of humanity people met problems, and then they tried to find solutions, such a smoke camp fire or pigeon.

Time decreasing consumption system proposes the most optimal rack to store the package, optimal by size and distance between rack and delivery stake. Algorithm is intended to decrease time for searching the empty racks and the racks, which have been already, stored the packages. It will make delivery and sorting process at receiving much faster and also will optimize consuming free space in racks.

Automating sorting algorithm is a system, which proposes the most optimal rack to store the package, optimal by size and distance between rack and delivery stake. Algorithm is intended to decrease time for searching the empty racks and the racks, which have been already, stored the packages.

Key words: post, post office, history, algorithm, optimize, time, database, statistics, development, evolution.

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Аңдатпа. Б.з.б 6-ыншы мыңжылдықта пошта сервисінің дамуы өз бастауын алады, там-там барабандары хабарлама жіберудің негізін қалыптастырды. Эволюция процесінде адамзат көптеген қиындықтарға тап болды, сигналдық алаулар және пошта көгершіндері кейбірінің шешімі болып табылды.

Қолдану уақытын қысқарту жүйесі сәлемдемені ұтымды әрі ара қашықтығы және көлемі бойынша оңтайлы, сөреде сақтау әдісін ұсынады. Алгоритм оңтайланған бос немесе сәлемдемені сақтаудағы сөрені іздеудегі уақыттын төмендетуге бағытталған.Осылайша, сәлемдемелерді өткізу және қабылдап алу жылдамырақ жүзеге асырылатын болады, сондай-ақ қосымша сөрелерде кеңістікті тұтынуы оңтайландырылады.

Пошта бөлімшесіндегі орамахатты сұрыптау алгоритмы – бұл пошта жүйе мөлшерін, сондай-ақ беру бекетінің қашықтығын ескеретін ең оңтайлы сақтау сөресін ұсынады. Алгоритм бос және де орамахатты сақталынған сөрелерді іздеу уақытын қысқартуға арналған.

Кілт сөздер: пошта, пошта бөлімшесі, тарих, алгоритм, оңтайландырылған, уақыт, деректер базасы, статистика, дайындау, эволюция.

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Аннотация. В статье представлена история возникновения и развития почтового сервиса, которая начинается с 6-ого тысячелетия до н.э. «Там-Там барабаны» стали основой отправки сообщений. В процессе эволюции человечества люди сталкивались с различными проблемами обмена информацией, которые иногда решались посредством сигнальных костров и почтовых голубей.

В целях сокращения времени доставки в области почтовых услуг авторы статьи предлагают использование особых оптимальных полок для хранения посылок. Таким образом выдача и прием посылок будет осуществляться значительно быстрее, а также оптимизируется использование пространства на полках. Алгоритм сортировки посылок в почтовом отделении - это система, предлагающая самую оптимальную полку для хранения посылки, как по размеру, так и по расстоянию до поста выдачи. Авторы предлагают программу трансформации которая представляет собой полный цикл преобразований системы управления,

разработку стратегического видения, настройку процессов и KPI, внедрение ИТ-решений для управления изменениями и достижениями конечного результата совместно с клиентом.

Ключевые слова: почта, почтовое отделение, история, алгоритм, отимизация, время, база данных, статистика, разработка, эволюция.

Introduction

Prehistoric people used voice to convey important information, which contributed to the emergence of articulate speech. However, the oral transmission of messages was imperfect, since the human voice is heard only at close range. To enhance the transmitted sound of a millennium ago, hollow tree trunks and later drums (about 6 thousand years BC) began to be used. With the help of conditional shock signals, news was transmitted from one settlement to another. In addition, people used to transmit news fire and smoke. Tam-tam drums are still used for long distance communications by African tribes [1], and smoke from campfires as far back as the twentieth century was used for the same purposes by the Indians of Canada [2].

Early Middle Ages. With the fall of the Western Roman Empire in Europe, there was hardly any functioning system for conveying news. Only Clovis (king of France from 482 to 511) tried - without much success - to recreate the postal connection from the remnants of Roman state mail. By the time of Charlemagne (768-814), messages were delivered with great difficulty. Charlemagne and his successors did not make serious attempts to restore Roman state mail. The establishment of the messengers, which existed under the Carolingians, adjoined the people's division into stamps and with the rapid disintegration of the monarchy did not receive wide development. The princes-feudal lords sent letters and things through the messengers and the drivers who were provided by their subjects [3].

Monastic and university mail. In the feudal medieval Europe of the 11th-15th centuries, with the fragmentation of state power, the dispatch of news was mainly undertaken by individual spiritual and secular corporations. In the exchange of thoughts, the church was most in need then, both because its structure rested on the beginning of centralization, and because for a long time it was the only bearer of the intellectual life of peoples. Archives of church institutions and the registers of the Roman Curia testify that at the very beginning of the Middle Ages there was a lively exchange of messages between the head of the Catholic hierarchy and its members; But there is no indication of the existence of a special church institute of couriers or couriers. Only between numerous ramifications of spiritual orders were the right relations maintained through mediocre wandering monks, who served as messengers and took with them reports. Monasteries thus had their own system of communications - monastic mail. Monastic couriers maintained contact between individual monasteries and the head of the church in Rome, between

monastic orders and their brotherhoods. In the lands of the German order for this purpose a special administration arose and stations for changing horses were established.

New time. In the 16th-17th centuries, a centralized royal post appeared in France, Sweden, England and other countries. The idea of postal regalia, that is, the exclusive right of the government to keep postal institutions within the state territory, was first put forward at the end of the 16th century, and in the 17th century it began to be carried out in life. The first of the German princes, who founded the government post and recognized the nature of the monopoly, was the great Elector Frederick William (1646). His example was followed by other significant imperial ranks. At the same time, the content of mail began to be viewed not only as a right, but also as a duty of governments.

In those days, the arrival of a postal coach to a small town was a whole event. About the approach the postman loudly blew in a post horn. News was delivered at a speed of 70 km per day - so much traveled the mail diligence [2]. In the XIX century a radical revolution in the postal business was caused by the spread of railways and shipping companies. The appearance at the beginning of the XIX century of a steam locomotive and steamer, and at the beginning of the 20th century the aircraft significantly increased the speed of sending mail. Postal communication became a nationwide one and began to serve the entire population.

By the combination of rail and steamship lines, it was possible to establish correct post messages between the most remote countries. The first experience in this direction was made in 1835 by Lieutenant Veghorn, who was in the English service, who organized the Anglo-Indian mail, which was transported from Marseilles to Alexandria by steamers, from there first through the Mahmudie channel and then by rail to Suez, then again delivered by steamships In Bombay and Calcutta. At the beginning of the 20th century, this mail was delivered through the tunnel of Mont-Seni to Brindisi, from where it was directly transported by mail steamers through the Suez Canal to India and the countries of the Far East.

Thanks to the timing of the arrival of the Atlantic steamers with the Pacific Railway trains in North America, and the latter with the shipping lines coming from Vancouver and San Francisco, it became possible to send a letter from Europe to Japan in 30-35 days. Being immediately sent from Japan further (to India), such a letter could make a round-the-world trip in 85 days [4]. With the end of the Great Siberian Railway at the beginning of the 20th century, the journey from Europe to Japan was reduced by 6 days, and the letter could bypass the globe in less than 80 days.

With the invention of the Telegraph (1832), the telephone (1876) and the radio (1895), postal communication has not lost its important role of a means of communication of millions of people. In the telegraph office, the post found powerful assistance and completion, as a result of which almost all

states, following the example of Germany, combined postal business with telegraphic to a great benefit for both departments.

In 1874, at the First World Postal Congress, 22 countries, including Russia, signed the Universal Single Postal Agreement and formed the Universal Postal Union (since 1878 - the Universal Postal Union). In 1878, the Universal Postal Convention regulating the exchange of correspondence was concluded, which contains written communications [5] [6] [7] [8].

World of drones. Inspired by Novosibirsk technicians and inventors to create an unmanned convertoplan, the head and founder of the Amazon.com Internet company Jeff Bezos, simultaneously developing the aerospace company Blue Origin. At the end of 2013, an American entrepreneur announced a delivery service with the help of unmanned vehicles, called Amazon Prime Air.

«The idea of creating a business for me appeared shortly after Bezos uttered his famous phrase - said that in the coming years, Amazon Prime Air will be as frequent in the sky as wagons on highways. After that, many companies around the world turned in the direction of drone. Interest in this market has multiplied», - recalls the owner and CEO of the company «Optiplein Unmanned Systems" Kirill Yakovenko. And the Novosibirsk businessman wanted not only to make drones, but to create his own network of dronomats - not yet existing in the world network of automatic receiving and issuing small-size shipments of UAVs.

At the time of the creation of the business in 2014, the head of the Optiplein Unmanned Systems had a clear understanding that none of the ultra-small UAVs on the world market meets the requirements for fast, cheap and long-distance (tens and hundreds of kilometers) delivery of goods through the air. «We went to the market at the moment of colossal public interest in multi-copters. By this time, a large number of models appeared on the market, but if they met the requirements of private photo and video shooting, they were completely inadequate for the delivery of goods or for long-term monitoring. Multicopters have too low horizontal speed, short range and short duration of horizontal flight», - says Kirill Yakovenko.

Kazakhstan post service. The joint-stock company Kazpost is a Kazakh company, the operator of the Kazakh national postal network. The headquarters are in Astana.

The postal branch of Kazakhstan conducts its history from the pre-revolutionary and Soviet periods. With the acquisition of Kazakhstan's independence, the history of the formation and activities of Kazpost JSC as a national postal operator and legal entity began.

Since 1992, Kazakhstan is a full member of the Universal Postal Union (UPU) [9]. On April 5, 1993, according to the resolution of the Cabinet of Ministers of Kazakhstan "On improving the structure of management of the telecommunications industry in the Republic of Kazakhstan", mail and

telecommunications were divided. In November 1995, the State Post became an independent economic entity, having been transformed into the Republican State Postal Communication Enterprise (RGPS) [10].

In the summer of 1999, a radical reform of the postal service began after the adoption of the government's decision of May 27, 1999, "On measures to stabilize and improve the financial health of the postal industry." On December 20, 1999, the RSEPS was transformed into Open Joint-Stock Company Kazpost with 100% state participation in the authorized capital; It was registered with a total capital of KZT903.66 million, the initial authorized capital of the company was formed exclusively in the form of buildings and equipment. The situation was exacerbated by the severe financial condition of the postal industry - the debt of the RSHPP for the period from 1993 to 2000 to accumulative pension funds, wages and taxes was KZT 140 million, the accumulated losses of past years for these years amounted to more than KZT250.6 million [10] .

The program for the development of the postal industry and the formation of the postal savings system for 2000-2003 marked the beginning of the creation of a postal savings system in Kazakhstan on the basis of a retail network of postal communication departments. As a source of financing for its implementation, a loan from the Islamic Development Bank in the amount of $ 9 million for state guarantees, the issue of domestic bonds worth KZT1.4 bn., As well as the constant increase of the company's authorized capital by the government. Kazakhstan became the first state in the CIS to develop a postal savings system. The results of the activities of Kazpost JSC for the creation of a full-fledged postal savings system were recognized as successful Regional Commonwealth in the field of Communications (RCC).

In December 2007, Kazpost received the status of an associate member of the international payment system Visa International and started issuing payment cards Visa [10]. In January 2013, Kazpost became a principal member of MasterCard Worldwide, since August 2013 - a principal member of Visa International [11].

In February 2008, a subsidiary company, Kazpost GmbH, was established in Germany together with German partners to perform logistics functions, catalog trading, collecting and forwarding mail correspondence from Germany to Kazakhstan.

On December 19, 2012, within the framework of the postal network modernization carried out by Kazpost, the first 24-hour post office in Kazakhstan was opened in Astana. The first 24-hour customer service area «Post-24» provides postal and financial services, servicing employees of more than 30 ministries, departments, state holdings, national companies and residents of the capital [12].

The transformation program

The goal of the Transformation Program is to standardize and optimize business processes and conditions that ensure the quality of service delivery, increase the efficiency of the company's activities, create a single information space and corporate culture.

The transformation program is a complete cycle of transformations from a management system, development of a strategic vision, setting of processes and KPI, implementation of IT solutions to the management of changes and achievements of the final result jointly with the client.

Stages of the Transformation Program:

Stage 0 "Preparation and mobilization" (March - June 2014);

Stage 1 "Diagnostics and Design" (July 2014 - June 2015);

Stage 2 "Planning" (July - October 2015);

Stage 3 "Implementation" (beginning - 4th quarter 2015-2020).

Innovations and innovations

In September 2014, in Almaty, Kazpost JSC put into commercial operation the first automated mail station - post-office.

December 28, 2015, in Astana, Kazpost JSC opened the first supermarket of parcels.

Proposed decreasing time consumption

Algorithm of automating sorting system explained below: previously, database must be filled by racks with their sizes and quantity: parameters will be id of rack, name of rack, X, Y, Z, volume. In addition, there must be accessory fields: x free, y free, z free, volume free 1, volume free 2 and volume free 3. Just received new package will have parameters like: id, tracking code, sender id, receiver id, x, y, z, volume. Then, system makes query for data base to get from it all racks, which`s at least one free volume is greater than package`s volume. It takes all, because even if volume is greater it may not be appropriate by shape. Here, system starts to look over every rack`s x free, y free and z free are they greater or not. But package may be placed horizontally or vertically, by front side or back side, and in that case xyz parameters of package will not be actual. To find actual xyz parameters let`s remind Statistics Permutation. Permutations in Statistics refer to different ways of arranging a given set of variables. Package has 3 parameters: x y z.

Factorial property, which used by Permutation is $n! = n(n-1)!$, n is number of variables.

$$1! = 1 = 1$$

$$2! = 2 \times 1 = 2$$

$$3! = 3 \times 2 \times 1 = 6$$

$$4! = 4 \times 3 \times 2 \times 1 = 24$$

Fig.1.

In case x y z, n will be equal to 3. Accordingly to 3! the result is 6, number of permutations will be six permutations. Let`s see them: xyz, xzy, yxz, yzx, zxy, zyx.

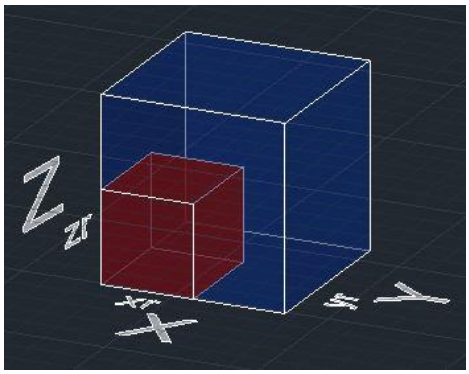

Fig.2. One package in the rack.

In Figure 1 shown example of one package in the rack. Blue one is rack, red one is package. X, Y, Z are parameters of rack, xr, yr and zr are resultant parameters of package.

After placing one package rack will store 3 possible free volumes. Here they are:

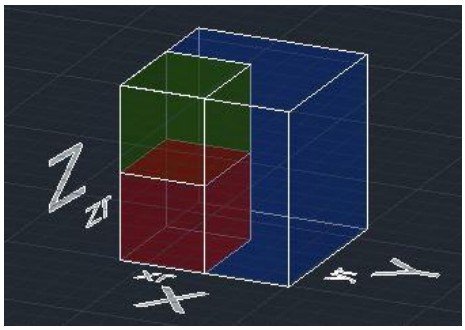

Fig. 3. First possible free volume.

In Figure 2, by green shape shown first possible free volume. Also, system must store it`s xyz parameters, in this case they are:

Volume free 1 = (X – xr) * (Y - yr) * (Z – zr)

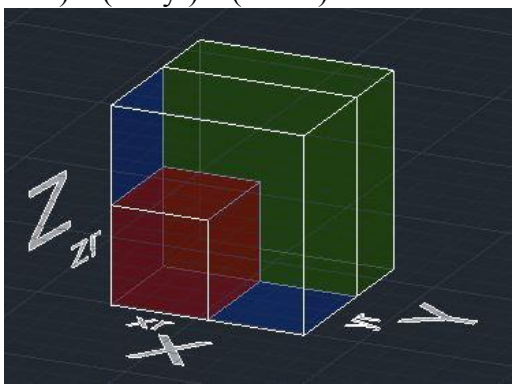

Fig.4. Second possible free volume.

In Figure 3, by green shape shown second possible free volume. Also, system must store it`s xyz parameters, in this case they are:
Volume free 2 = X * (Y - yr) * Z

In Figure 4, by green shape shown third possible free volume. Also, system must store it`s xyz parameters, in this case they are:
Volume free 3 = (X – xr) * Y * Z

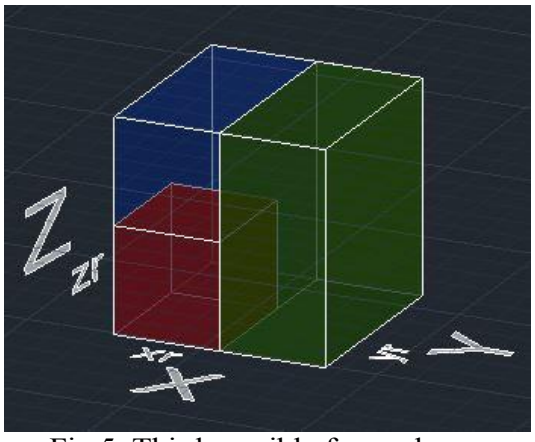

Fig.5. Third possible free volume.

Optimized free volume will be the first met greater and according parameters volume because the set of volumes is sorted and starts from the least.

After placing second package free volumes will be changed by same logic.

Conclusion

Nowadays post services system is becoming more and more optimized every day. A lot of people around the world work for making human life better, more comfortable and easier. Specially - information technology scientists. Hundred years ago decreasing months and weeks of delivery was discussed, but now every minute and second is important. Even if this algorithm is a very small portion of that huge system, it would help to save time, make clients stay calm and use space optimized. According to development of post service, starting from basics, it seems that every second will be important and consumed optimized in next 10-20 years.

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КӨП ПАРАМЕТРЛІ ӨЛШЕУ КОНЦЕПЦИЯСЫ

Аңдатпа. Бұл мақала көптеген концепцияның көптеген қасиеттерін көрсетеді. Көп функционалды датчиктерді түрлендіру әдістерін сипаттау, сонымен қатар олардың схемалары ұсынылған. Ракеталы–космостық және ұшу техникасын (РКҰТ) жасауда және сынауда негізгі бақыланатын параметрлерге (60...80% дейін) қысым, температура және діріл жатады. РКҰТ–ның аэродинамикалық зерттеулер кезінде туындайтын акустикалық және дірілдік жүктемені, қысым пульсациясының шамасын және температуралық өріс градиенттерін бір