

INFORMATION TECHNOLOGY FOR MAINTAINING RECORDS OF THE IT COMPANY FACILITIES

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Accounting of premises is the process of storing, processing and manipulating accounting data of premises. In IT companies, effective premises accounting is of particular importance: it can help reduce costs, improve staff performance, and increase business efficiency. The need to keep records of the premises of an IT company always arises in the case of many offices or many manipulations of their data. Optimal use of space is one of the key factors in ensuring the efficiency of IT companies. The convenience of operational access to all the relevant information on the premises already greatly simplifies the conduct of business for IT companies. The availability of information technology with an analysis and decision-making system reduces the complexity of some accounting processes to a few mouse clicks by one of the relevant managers of the company. Study object – is the process of accounting for premises in an IT company, including the processes of collecting, processing, analysing, and displaying information necessary for efficient use of space. Scope of research - is the information technology for maintaining records of the IT company facilities, which allows to use of the space as efficiently as possible while minimizing costs. The goal this of research is to develop an IT company's premises accounting information technology that will serve not only as a place to store and review accounting data but also as a platform for reserving places or premises and analysing their condition in accordance with regulatory documents and laws of Ukraine. The development of information technology for the accounting of premises for IT companies is a key component for solving the problem of efficient use of space and reducing costs. The developed technology allows collecting, processing, and analysing information on the use of premises in real-time, which will ensure effective control over the use of space and allow timely response to changes in requirements. This technology should be considered as a decision-making system, which not only manipulates data but also helps analyse and select information according to the user's relevant requests. Among the important features and functions of the premise accounting technology can be attributed: to the creation, editing and deletion of premises from the system; analysis of the condition of the premises; access to all accounting and analytical data using a chatbot, which is built using an artificial intelligence system; booking a place or room for any amount of time during the day; review of current reservations of each room: review of all created reservations of a specific user; manipulation of employee data: registration, editing and deletion of users from the system, which can only be done by the manager.

Key words: information system; accounting information technology; regulatory documents; reservation of premises; automation systems of the condition of premises; client-server architecture; web application; artificial intelligence systems.

Introduction

Information technology (IT) is a necessary element of the successful functioning of business in the modern world, an important component in all spheres of activity, including business and management [1]. The growing volume of data needed to solve various business problems requires an effective toolkit for their processing. Given the rapid development of IT and the growth of competition in the market, IT companies need effective tools to optimize their work. In IT companies, the efficient use of space is of particular importance: it can help reduce costs, improve staff performance and increase business efficiency. However, in the conditions of rapid changes in technology and business growth, manual accounting of premises may not be efficient enough. It is not for nothing that the automation of all processes to solve certain business problems has become widely popular in the last decade. Optimal use of space is one of the key factors in ensuring the efficiency of IT companies. You can't underestimate keeping track of all IT company facilities, because large companies always have a need for large amounts of space for server rooms, communication channels, office workspaces, kitchens, bathrooms, sports areas, and other important infrastructure components. The convenience of operational access to all the relevant information on the premises already greatly simplifies the conduct of business for IT companies. The availability of IT with an analysis and decision support system (DSS) reduces the complexity of some accounting processes to a few mouse clicks by one of the relevant managers of the company. It is also worth considering the fact that competition is growing in the market and the pressure to reduce costs is increasing. The relevance of the chosen topic lies precisely in the need for the existence of such information technology for the accounting of premises, which will allow IT companies to use available resources as effectively as possible and ensure maximum productivity while reducing costs. In other words, the top management of the company should not spend unnecessary money and time on keeping records or analyzing a huge amount of data of premises and other infrastructure components, when it can be invested in directly solving set business problems. The development of IT accounting of premises for IT companies is a key component for solving the problem of efficient use of space and reducing costs. The developed technology will allow collecting, processing, and analyzing information on the use of premises in real-time, which will ensure effective control over the use of space and allow timely response to changes in requirements. This technology should be considered as a decision-making system, which not only manipulates data but also helps analyze and select information according to the user's relevant requests.

The purpose of the research is to develop information technology for accounting of the IT company's premises. The object of the study is the process of accounting for premises in an IT company, including the processes of collection, processing, analysis, and display of information necessary for efficient use of space. The subject of the study is the information technology of accounting of premises for IT companies, which allows to use of the space as efficiently as possible while minimizing costs. To achieve the set goal, the following research tasks must be solved: analysis of requirements for infrastructure components of IT companies; analysis of space management indicators of IT companies; research of the current state of accounting of premises in IT companies; analysis of existing ways of managing space in IT companies; highlighting important elements of automating the accounting of premises of IT companies; determination of key requirements for IT accounting of premises; modeling and designing important IT components, based on modern tools; analysis of software tools that can be used for system development; selection of software, taking into account convenience, functionality, speed and availability; development of a prototype of information technology for accounting of premises for an IT company, taking into account the requirements for efficiency, accuracy, speed and cost minimization; testing of the developed information system on real data of the IT company; analysis of the results of the implementation of information technology for accounting of premises in an IT company and evaluation of its effectiveness.

The scientific novelty of the study consists in the improvement of IT accounting of the IT company's premises, taking into account the specifics of the IT industry based on artificial intelligence (AI), which led to a reduction in the company's costs due to more efficient use of the premises. The implemented room accounting technology introduces a significantly new method of user interaction with the application. In

addition, years of remote work have shown the world that reducing employee visits to IT company offices does not negatively affect productivity. As a result, in many companies, special positions are not reserved for non-critical employees. However, company employees often have to work from the office due to exceptional circumstances, such as power or network outages. The result of all these problems is the urgent need for the existence of a corporate system for the reservation of premises or seats by an employee. Such a system should create comfortable and safe working conditions for its employees. Moreover, the developed IT will provide the process of analysis, processing and selection of the necessary information in the application with booking and overview of available office premises in the form of a map. The basis is the SPPR, which will help to select and book the premises according to the relevant request, taking into account all the wishes of the user. Such a system will be able to analyze and remember previous requests and provide the user with the desired content much earlier. IT will help learn the user's request patterns, and therefore help in the selection of the necessary information. The implementation of such IT will allow to increase the efficiency of the use of space, reduce costs and improve the competitiveness of IT companies.

The practical significance of the obtained results lies in the use of research findings for the creation and operation of a single unified accounting system of premises with functions that go beyond the simple storage and display of accounting data. A universal accounting system should provide easy access to data about office premises and their condition. This will help to isolate inappropriate places and ensure the safety of work for all workers of the IT company. An equally important aspect is the possibility of reserving seats. All the described possibilities will significantly increase work efficiency while minimizing costs, as well as provide confidence in the safety of work and rest for employees of the IT company.

Analytical review of literary and other sources

After the construction or reconstruction of the office, the room is inspected for its readiness for the work of employees. Keeping a complete record of these structures and their components helps to do this as efficiently as possible. The main purpose of creating the premises of an IT company is to create optimal conditions for the organization of work processes. An important aspect of their design is decision-making taking into account the geographical and climatic conditions of the construction site. In addition, the adjacent territory of the building must meet the requirements of regulatory documents, such as DBN 360, DBN II-89, DBN A.2.2.-1, DBN B.1.1-5, etc. Today, special attention is paid to the employee, his gender, religion or state of health. For this purpose, it is necessary to ensure the possibility of hiring persons who need special working conditions. Disabled people are one of these types of workers. To ensure comfortable conditions for their work, buildings must meet all the requirements of DBN B.2.2-17 regarding sanitary and hygienic and special places, organization of the work and rest process, and provision of medical assistance. It is also worth taking into account the requirements contained in the special clauses of this regulatory document regarding certain types of disability. Service entrances must be equipped with ramps to protect visitors to the building from any atmospheric precipitation (these points are defined in DBN B.2.2-9 and DBN B.2.2-17), while providing elevator access to the building or elevator area. In premises that meet all standards, it is necessary to provide for the presence of the following infrastructure components: toilets; recreation areas; places for cooking and eating; heating or cooling devices; devices for providing drinking water; places where employees can take a shower and wash; changing rooms; special type rooms used by office support staff (for example for foreman or security guards) in certain cases smoking rooms. Office buildings often provide such special spaces as places for assembling, cleaning, and drying certain types of inventory, rooms with cold and hot water supply systems and, usually, they are located next to toilets. The area of premises of this type should be calculated as 0.8 m at 100 m for each floor, but not less than 4 m. When the total floor area is less than 450 m, it is allowed to have only one room per two floors that are adjacent to each other.

When equipping workplaces with equipment of large dimensions, it is recommended to increase the area in accordance with the conditions specified in the operation of technical equipment. The area of the managers' offices should not occupy more than 16 % of the entire area of the workplaces of the company's employees. Reception rooms should be near each office of the head or deputies of the enterprise. However,

it is allowed to arrange one reception area for two offices. At the same time, the area of such reception areas should not be less than 11 m. Offices with a total number of more than 295 employees and other personnel are equipped with conference rooms for a conditional 30 % of employees. The area of the conference hall should be calculated so that each seat in the hall is at least 0.9 m, designed in accordance with the requirements of DBN B.2.2-9 and DBN B.2.2-16.

Office buildings must have fire protection systems, as well as technical water supply systems, sewerage and meet the requirements of DBN 2.04.01, DBN 2.04.02, DBN 3.05.01 and the Law on Labor Protection. The hot water supply system of buildings with 10 or more shower cabins must be designed with water storage tanks. In addition, in buildings with air conditioning systems, suitable devices should be used to use the heat of condensation from the cooling elements to heat showers and wash basins that supply water in the summer. At the same time, the permissible water temperature should be at least 37 °C. Hydraulic or electrical heating, ventilation and air conditioning systems in buildings and premises must be installed in accordance with the DBN standard B.2.6-31. Fresh air must be supplied to the dressing area to restore the used air from the shower area. In the upper part near the wall, which technically separates the shower area and the dressing room, it is necessary to provide for the installation of movable partitions.

Office buildings must be equipped with electrical receivers of a special category in accordance with the estimated number of employees, relevant networks and equipment, and, if necessary, with means of telecommunications for general use (telephone, TV, Internet) in accordance with the requirements of DBN B.2.5-23. It should also be taken into account the presence of elevators for public use, which must be installed and function according to DBN B.2.2-9. The waste disposal system of administrative buildings must meet the general requirements for the sanitation of places and equipment, but at the same time, special attention should be paid to the prevention of pollution of circulating air and water. Therefore, it is necessary to establish the appropriate systems of sorting, temporary storage and removal of garbage. Buildings, offices, buildings and premises of administrative and household purposes according to the project and plan must meet the requirements of DBN B.1.1-7, DBN B.1.2-7, DBN B.1.2-14, DBN B.1.2-14 and fire protection GOST 12.1.004. All office premises for the work of employees must provide optimal conditions for the organization of work processes. The location of the premises should not reduce the level of illumination and sunlight. The temperature in the office should depend on the temperature outside, and I would like this process to happen automatically [2]. Numerous studies of human productivity have shown that the workplace itself, along with natural elements such as landscaping, natural light, appropriate colors and shapes, can create benefits for both employees and employers [3]. For the most effective functioning of the office premises of the IT company, prerequisites must be provided for: organization of differentiated and individual work ; introduction of practical and creative elements into the content of work; organization of various non-project activities; organization of conferences and business meetings; personal training of employees to work in various spheres of activity of the IT enterprise, improvement of their scientific and qualification level and further development in the company. However, taking into account the presence of war and recent events in Ukraine, several extremely important points are added to the basic requirements for the functioning of office premises [4]. Namely: availability of uninterrupted power supply systems; availability of stable Internet access; operation of reliable bomb shelters against missile strikes or other dangerous and unpredictable situations during air alarms .

The scientific approach to the accounting of premises of IT companies is determined precisely by the need to take into account the specifics of the activity of this type of enterprises and rapidly changing market conditions. Information technologies allow optimizing the process of accounting and control over the use of premises, ensuring the accuracy and efficiency of reporting, which allows enterprises to make informed management decisions. Research [5] is devoted to the development of a space management system for business, which allowed controlling the use of space, reducing costs and increasing business efficiency. The authors explore the possibilities of using a space management system for business based on information technologies. In particular, they describe the possibilities of integrating information systems for accounting and management of spaces, such as systems for room reservations, access control, energy consumption

monitoring, etc. The authors pay special attention to the issue of ensuring the security of the premises, which is an important aspect of managing the premises of IT companies. The article also mentions the importance of information support for space management, because information about the use of premises can help in managing the company's resources and ensuring maximum efficiency. So, the main issues that were raised in this article was the implementation of a security system, access control and energy consumption monitoring, which can be useful in the development of a premises management system for an IT company. There are such approaches and methods of optimizing the use of space in offices as: using modern IT to collect and analyze data on the use of space in offices; optimization of the location of workplaces and other premises in the office, taking into account the flow of people and their movement; use of modern information technologies to optimize the use of light and heat in offices; the use of modern communication and communication IT, such as video conferencing and online chats, to replace physical meetings and reduce the number of face-to-face meetings; use of flexible workplaces, where employees can choose a place to work depending on their needs; the "puzzle assembly" method, when different departments or working groups are located next to each other, not according to a functional or hierarchical structure; in the use of space zoning into different zones depending on their purpose; method of segmentation of premises; The method of monitoring with the help of video surveillance cameras.

To implement the functions of the premises accounting system, you can use machine learning algorithms that allow you to automatically analyze the received data and forecast possible problems with the premises. In addition, various software solutions can be used to plan and optimize the use of premises, which allows you to use available resources more efficiently and reduce company costs. Further, with regard to software products that are used to account for the premises of an IT company, the following main directions can be distinguished: databases and premises management systems, for example, Archibus, Planon, IBM TRIRIGA, etc.; automated infrastructure management systems, such as Schneider Electric EcoStruxure IT, Nlyte, Cormant-CS, etc.; systems for monitoring and controlling room parameters, for example, Spacewell, iOFFICE Hummingbird, PointGrab, etc.; video surveillance and access control systems, such as Axis Communications Camera Station, Hikvision iVMS-5200 Professional, Milestone XProtect Corporate, Genetec Security Center, etc.

Goal and task formulation

The general goal of the work is the development and implementation of an effective space management system in the office of an IT company using modern information technologies. Analyzing the purpose of the system's operation, the following aspects can be distinguished: maximal optimization of the use of space in the office; provision of a comfortable working atmosphere for employees; reduction of maintenance costs; minimization of the possibility of emergency situations that may cause danger to the life and health of employees. The main options for achieving the goal may include: development and use of specialized software for space management; installation of modern video surveillance and access control systems; purchase of modern equipment to ensure a comfortable microclimate and optimize energy use; conducting regular audits of the premises to identify opportunities for space optimization. Available resources for the implementation of this system may include the budget, the availability of the necessary technologies and equipment, as well as a team of specialists who will be able to implement the project from start to finish. A tree of decisions (goals) is often used to specify the general goal [6]. The goal tree method is a tool that allows you to systematize and summarize information about goals and subgoals in the process of project or research planning. The tree of objectives is presented in the form of a hierarchical structure, where the general goals of the project are placed at the top level, and at lower levels - more specific sub-goals and criteria by which the achievement of these goals can be evaluated.

The general goal: management and use of IT company space optimization (Fig. 1). The general goal can be divided into two important aspects: a management aspect and aspect of use. Sub-goals of the management aspect: manual and quick collection of information about the premises; reliable storage of

information; providing convenient access to data; analysis of the condition of the premises in real time; reservation of places and premises.

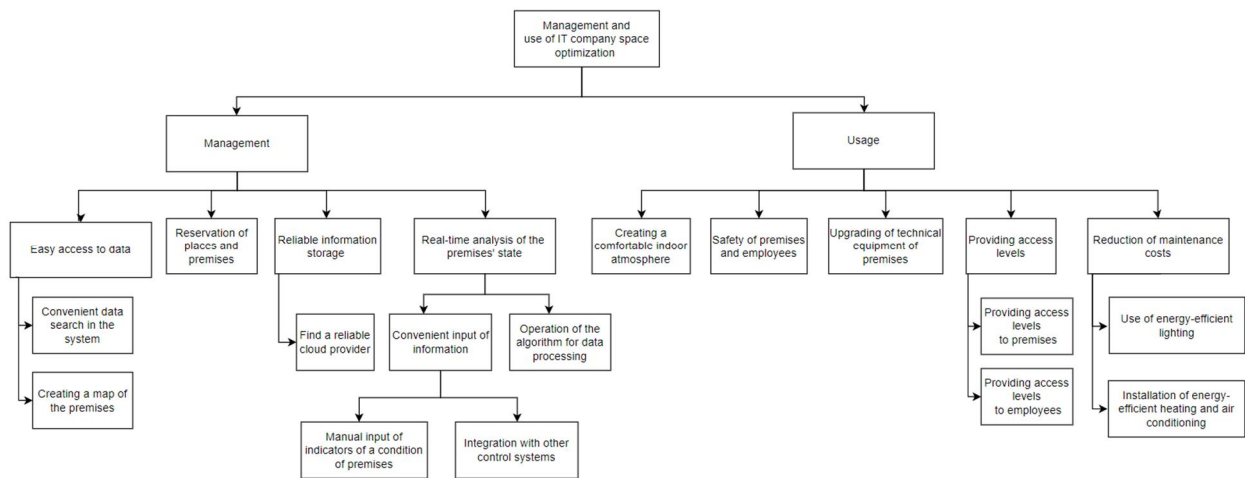


Fig. 1. Tree of solutions (goals) of the IT company's premises accounting technology

Objectives of the use aspect :

- Creating a comfortable atmosphere in the premises. This sub-goal is extremely important for achieving the general goal, because it is the comfort of employees that ensures maximum efficiency in solving business problems, which has a direct and immediate impact on the profitability of the IT company. The implementation of this sub-goal includes improving lighting, sound insulation, air ventilation, increasing the number of living plants, providing appropriate smart equipment that will allow you to work efficiently and not get tired (certain types of chairs with back and neck support, adjustable tables, etc.). The ideal implementation of this sub-goal can be considered the scenario where all (or most) of these processes will be automated or semi-automated (that is, analysis and recommendations from the system – implementation of proposed improvements from the system manager).

- Safety of premises and employees. It is extremely important to take care not only of the comfort of workers, but also of their safety, which is a mandatory component for a country in a state of war. The premises must be equipped and constructed in such a way as to provide the employee with everything necessary for his complete safety. It is clear that not all premises can be like this, but such a number of premises must correspond to the number of employees of the company in order to ensure the safety of everyone in critical situations.

- Update of technical equipment of infrastructure components. It is directly related to technical devices used by employees for work. This also includes the use of modern sensors to collect information about premises (motion sensors, ventilation or climate control systems, video surveillance, etc.).

- Granting access levels. This applies to both the company's employees and its infrastructure components. If this goal is fulfilled, all office premises will have their own access levels, which will limit their visit to persons who do not have the appropriate permissions. That is, the implementation of this sub-goal directly affects the safety and reliability of staff and office workers.

- Reduction of maintenance costs. This also includes the use of energy-efficient lighting, installation of energy-efficient lighting and air conditioning systems. That is, this sub-goal is tangential to the sub-goal of updating technical equipment, but describes a different aspect.

- Different approaches and technologies can be used to fulfill the general goal of optimizing the space management of the IT company's premises. Below is a more detailed description of several possible options:

- Access control system using RFID cards: this approach involves installing an access control system using RFID cards . Each employee receives his card, which must be attached to a special reader to open access to the corresponding room. In such a system, different levels of access can be configured for different groups of employees (for example, managers, developers, technical support, etc.).

- Automatic lighting and temperature control system: this approach involves installing a system that automatically adjusts the lighting and temperature in the room. For this, lighting and temperature sensors can be used, which read data about the state of the room and set the necessary parameters based on this data.

- Video surveillance system using artificial intelligence: this approach involves the installation of a video surveillance system using artificial intelligence, which allows you to automatically detect dangerous situations (for example, thieves or other malicious persons) and respond to them in time.

- Sound control system: involves the installation of a sound control system that allows you to automatically adjust the noise level in the room.

A number of alternative options for building the system:

- The use of modern “smart” technologies that allow you to automate the space management process and maintain optimal parameters in real time.

- Installation of various sensors (temperature, humidity, light level, etc.) that allow collecting certain indicators of the system.

- Use of additional motion and presence sensors in the room for automatic control of lighting and air conditioning.

- Development of a mobile application for controlling the space system using Bluetooth or Wi-Fi technology.

- Implementation of intelligent control systems capable of automatically adjusting parameters depending on conditions and operating modes.

- Use of touch panels to control lighting, temperature and ventilation in separate areas of the room.

- Using the automatic facial recognition system to identify employees and automatically adjust the parameters of the space depending on their needs and requirements.

- Installation of a video surveillance system with the possibility of real-time monitoring.

- Installation of a video surveillance system with automatic distribution of the video stream using artificial intelligence to optimize the use of space.

- Development of a system of “smart” tables to ensure optimal organization of the work space and increase labor productivity.

- Using a virtual reality system to simulate different configurations of space and experiment with them to achieve the optimal option.

The diagram of use cases is one of the key elements of UML [7–11], which allows describing the interaction of users (actors) with the system and their functional requirements. Fig. 2 shows a diagram of use cases for an IT company’s premises accounting system.

This diagram allows us to get a general idea of what will happen in the space management system of the IT company’s premises. It is worth noting that the question “How will it work?” or “How will it be implemented?” she doesn’t answer. It can be seen from the picture that there are 2 actors: the manager and the user, that is, the employee of the company. The System Manager actor must be authorized before performing any actions with the system itself. His next step may be to enter data about the premises (or the data will be entered automatically by information collection systems and sensors). If all the data is entered, or there are no more new data, then the manager can manipulate them. Since the manager has full access rights, he can: view a list of all available premises of the university; sort lists of university premises according to certain criteria; delete, change and correct data on already existing premises; to approve applications for reservation of premises; analyze the condition of the premises and receive improvements from the system; to give premises a status; form reporting. Instead, the user can only browse, sort and reserve university premises. The use of a class diagram significantly helps to better understand the structure of the system

during development to ensure its optimal functioning (Fig. 3). Business actors, classes, generalization and aggregation relationships, and dependencies were used to construct this diagram. From this diagram, you can see which classes will function in the system and how exactly they will interact with each other.

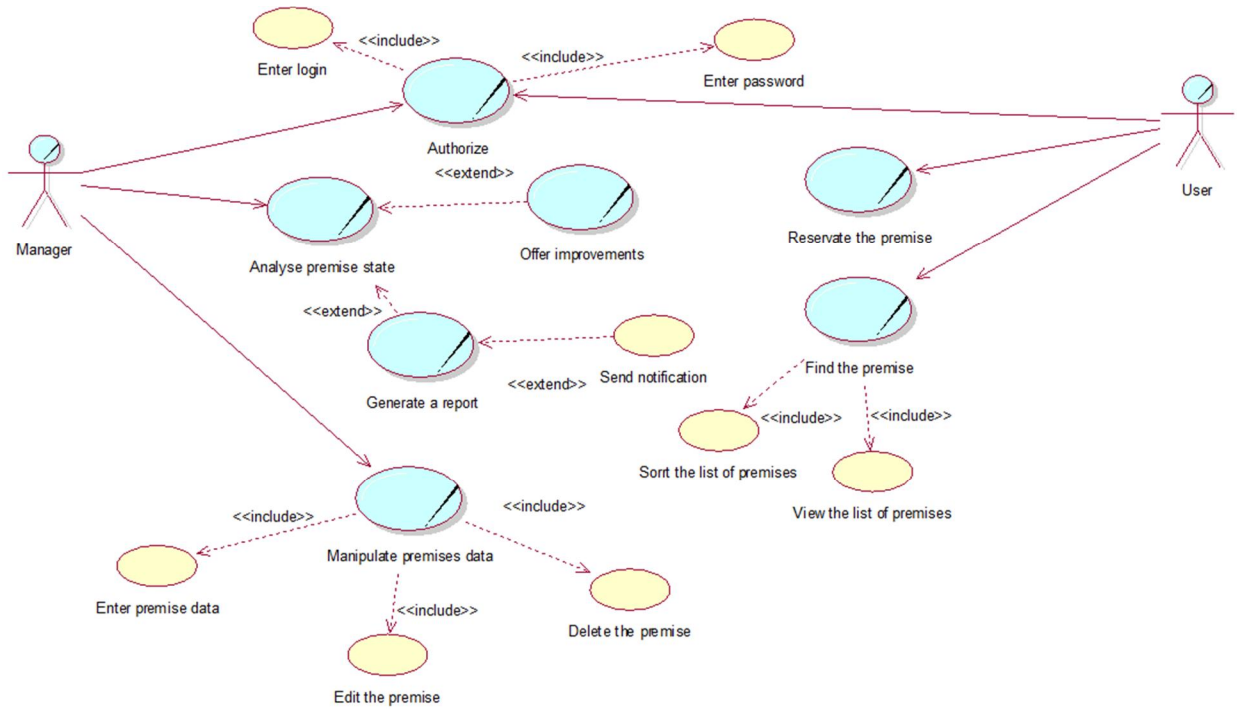


Fig. 2. Use case diagram of premise accounting technology

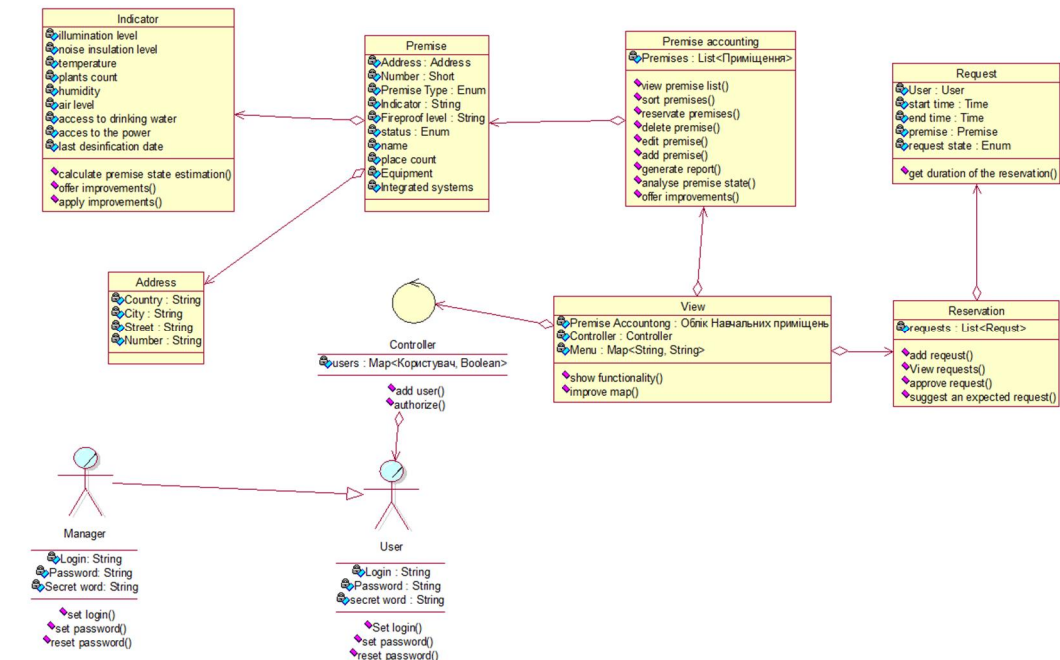


Fig. 3. Class diagram of IT company premises accounting technology

To build a cooperation diagram, we will not use all the classes from the class diagram, but only those that are necessary to illustrate the cooperation between components. For this purpose, we will use such classes as: Reservation, View, Accounting of premises, User, Manager and Controller (Fig. 4).

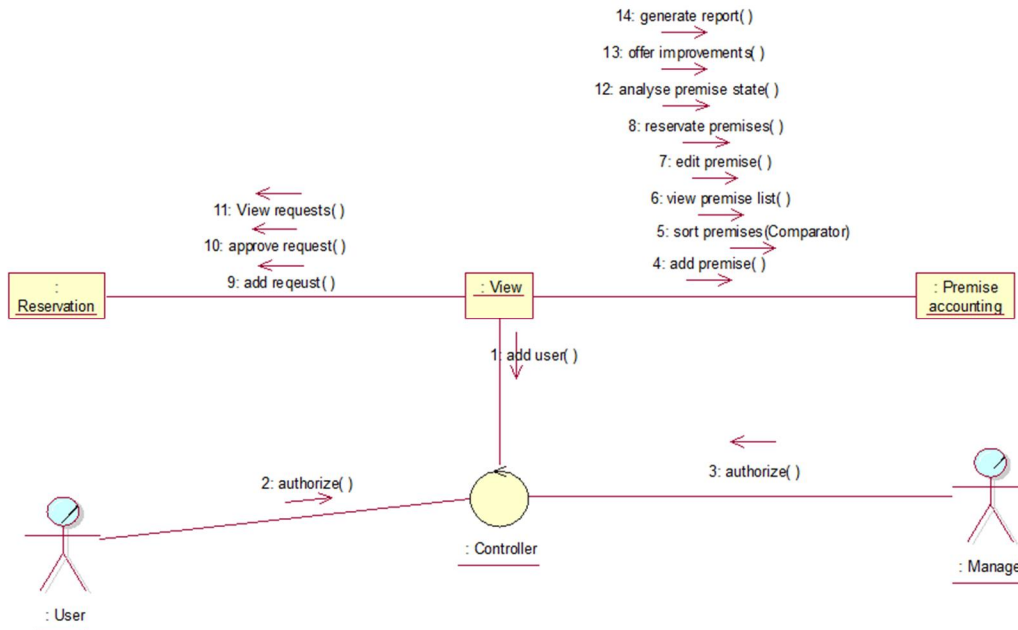


Fig. 4. Collaboration diagram of the IT company’s premises accounting technology

The View class is used to link all other classes together. So, from this picture you can see that the Controller plays the role of a class that controls user access to the system. It adds users and also authorizes them. We can also see that through View we can add, view, sort, edit, reserve, analyze the state of the space or suggest improvements for the management of the company’s space. It is also possible to delete premises from the system, but this operation is not necessary, and therefore is not shown in the figure. The Reservation class is used for any manipulation of requests for reservations, including the approval of requests, which occurs as follows: the View class will check which user is authorized: Manager or not. In the case of a manager, access to the approval of requests is opened (as well as other operations that are not available to the user). Fig. 5 shows a sequence diagram for the IT company’s premises accounting technology.

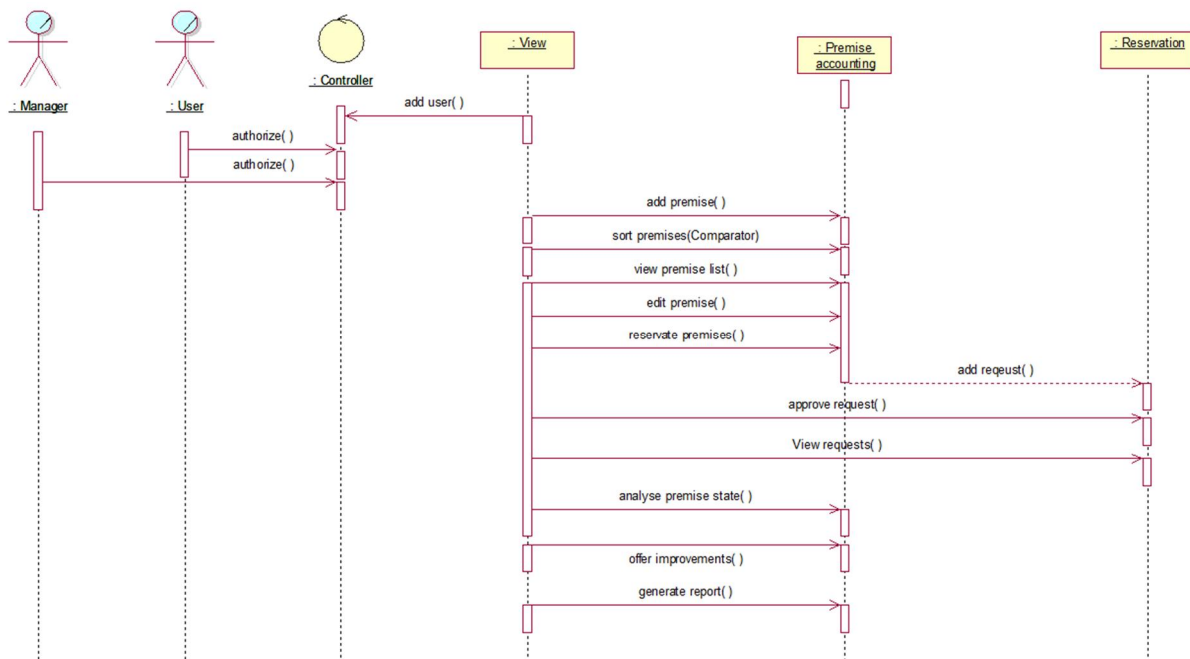


Fig. 5. Sequence diagram of the IT company’s premises accounting technology

To build a sequence diagram, it is necessary to distinguish the necessary classes: User, Manager, Accounting of premises, Reservation, View and Controller. Each of these classes is a necessary link in the functioning of the designed system. The User and the Manager are linked by a generalization relationship, which means that the Manager is also a User, and therefore inherits all the fields and methods of the User. The accounting of premises contains a list of premises, as well as all the necessary methods of working with them. The View class exists to bind all other classes together: it displays all information to the user. This class uses methods of other classes depending on what the user chooses. The View also contains a Reservation class that contains a list of reservation requests. When a client creates a reservation request, this request is stored in the Reservation class. From pic. 5 can clearly see the sequence of operations due to the two dimensions that were described earlier. So, you can see the following sequence of operations: adding a user; user authorization to the system; manipulation of users with the system: adding a room, sorting, editing information about the room, viewing and reserving a room; adding a reservation request and its subsequent approval; review of reserved premises, analysis of the condition of the premises, suggestions for improvement; reporting and accordingly sending this report to the manager.

An activity diagram was also built (Fig. 6). Everything starts with the View class, from where other processes are called. These processes can be described as follows:

- The process of adding a user is carried out by the system controller.
- The process of user authorization to the system is carried out by the Users or the Manager, respectively.
- System manipulation processes (adding a room, adding a room, sorting a room, editing a room, analyzing the state of a room, suggestions for improvement, viewing and reserving a room) are performed through the Room Accounting class.
- The process of adding a reservation request and its subsequent approval is carried out in the Reservation class. The process of viewing reserved premises is also carried out here.
- The process of receiving and reviewing the report is carried out by the Manager.

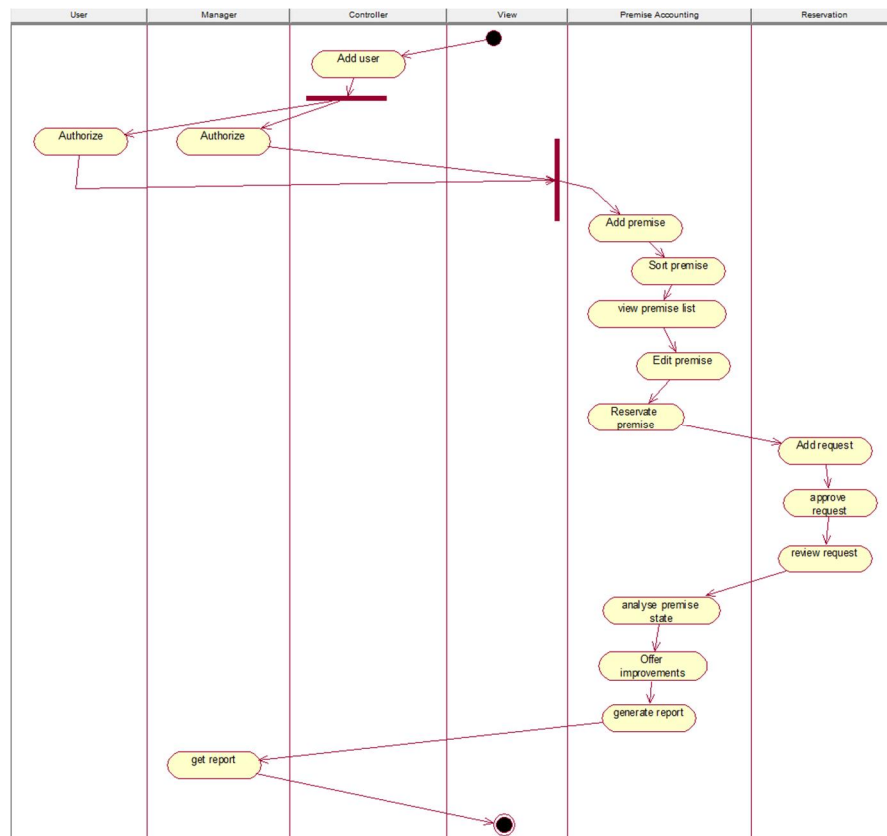


Fig. 6. Activity diagram of the IT company's premises accounting technology

A component diagram was also constructed (Fig. 7). A component diagram in UML is a graphical representation of system components, their interactions and dependencies. Components can be of any level of abstraction, including software modules, packages, physical devices, and others. The main purpose of a component diagram is to demonstrate how the components of a system work together, which in turn allows the integration and testing of individual system components.

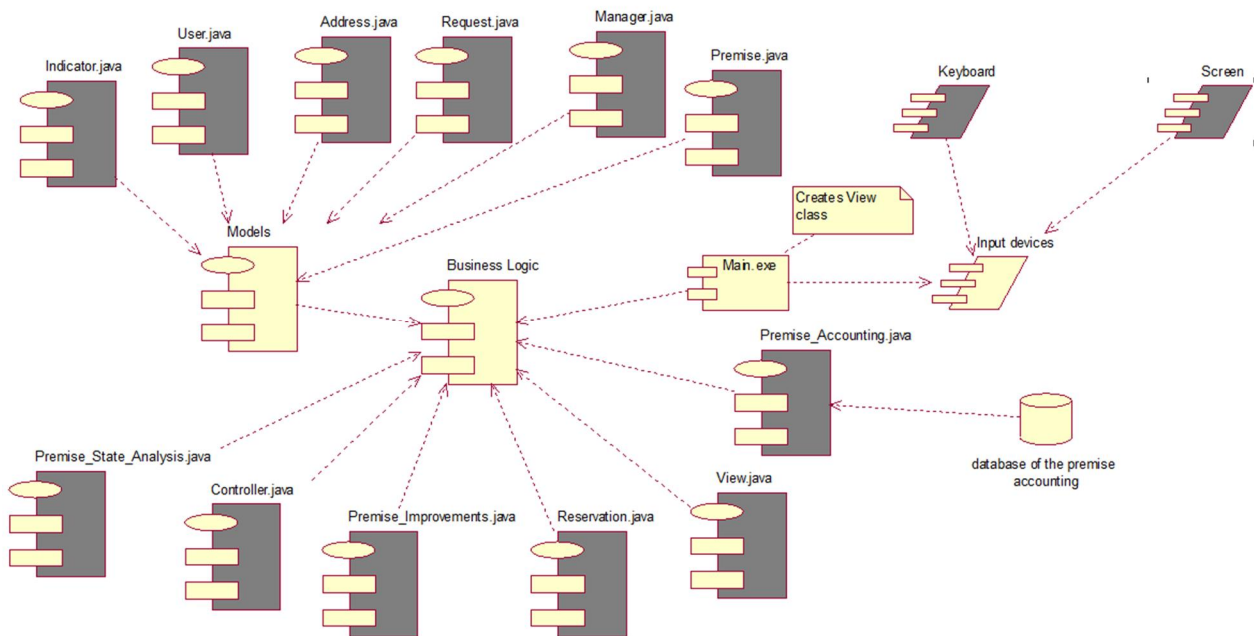


Fig. 7. Components diagram of the IT company's premises accounting technology

Fig. 7 shows the following: the program has a Models package, which contains the Address, User, Manager, Request, Indicator and Premises models; the program also contains a Business Logic package, which contains such files as: Controller, Reservation, View, Premise_Accounting, Premise_Improvement, Premise_State_Analysis; Main.exe creates the View class, which is already used by other business logic classes, which use the above models; the system includes a database that stores information about the premises, i.e. keeps track of them; the program has access to the input and output devices: screen and keyboard.

Presenting main material

The following tools were used to build the IT company's premises accounting technology with the Client-Server architecture type: an environment with a programming language (Intelij Idea, Java); tools for building a project with all its files in automatic mode (Maven); auxiliary plugins and frameworks (Lombok); file interaction tools (GSON); document management and logging tools (Log4j2); tools for testing and checking the correctness of work (Postman); tools for starting and functioning of the server (Spring boot); tools and frameworks for building, managing and managing a database (MySQL, Hibernate); tools for creating web pages (HTML, Thymeleaf); tools for writing various scripts for web pages (JavaScript); tools for giving specific styles and appearance to web pages and their elements (CSS); tools with templates to solve common problems (Bootstrap); tools for creating unique images (Inscope).

The technology of accounting for the premises of the IT company PremiseAcc was developed using Java, Spring, Hibernate Thymeleaf, ChatGPT API, as well as other important software tools that were described earlier. PremiseAcc is designed to optimize the processes of management, control and interaction of employees with the space of IT company offices. This technology is implemented in the form of a web application, which indicates the absence of any technical problems before its use. Thus, the functionality of

the program does not depend on the operating system: access to the functionality of the program can be obtained from any device with a browser and a stable Internet. A large number of classes, files and components have been created that provide the program with all the necessary functionality. Each file is grouped according to its role and the specific task it performs. Thus, the following groupings of files can be distinguished: model classes: are representations of objects from the database or other auxiliary objects; resource files: provide a custom GUI. In HTML files, the structure of the DOM tree is prescribed, which has a direct impact on the output of data to the user. It also contains CSS and JavaScript files, or any related images, maps, logos, etc.; configuration classes: exist to configure the server in its various states; configuration files: exist for additional server configuration or text output methods; utility classes: provide additional functionality to the system (classes for reading the contents of files, classes for storing constants, classes for validating input data from the user, analyzing the condition of the IT company's premises). This technology works according to the algorithm:

The first stage "Definition of indicators". A list of indicators was determined that are important for optimizing the use of the company's office premises. These include: air temperature (in degrees Celsius); level of illumination (in lux); date and time of the last disinfection of the premises; noise isolation level (in decibels); number of green plants; availability or absence of drinking water; availability of access to electricity supply; availability of access to water supply; level of air cleanliness; air humidity.

The second stage "Expert evaluations". During the second stage, all indicators were given expert assessments of importance. That is, the more the indicator affects the employee's stay in the premises, the higher his coefficient, the sum of which is equal to one. It was decided to make the coefficients lower than one, since this method allows you to easily calculate the final state of the room and display it in the form of a number, namely a percentage ratio. List of indicators with their coefficients: air temperature – 0.144; light level – 0.144; date and time of the last disinfection of the room – 0.109; sound insulation level – 0.075; number of green plants – 0.096; presence or absence of drinking water – 0.029; availability of access to electricity supply – 0.117, availability of access to water supply – 0.058; air cleanliness level – 0.144; air humidity – 0.086.

The third stage "Calculation of percentage deviation". Numerical values of all indicators are translated into their percentage value for ease of calculation. When determining the percentage value, the deviation of the indicator from the sanitary and hygienic requirements for working conditions prescribed in regulatory documents is taken into account. As a result of this stage, each indicator has its own percentage value.

The fourth stage "Calculation of the condition of the premises". The coefficient of the indicator is multiplied with its percentage deviation and added to all other products of such coefficients and percentage values. Next, the algorithm outputs the result in the form of a numerical value with two digits after the decimal point, which belongs to the interval [0, 100]. Thus, the main part of the algorithm is completed.

The fifth stage "Output of information". The information is presented to the user in the form of a number and the corresponding intuitive color, namely: If the result belongs to the interval (0; 20], then the color is displayed as red (critical condition); in the interval (20; 40] it indicates a bad condition of the premises of the IT company and is displayed in orange color; in the interval (40, 60] the user claims normal and acceptable conditions for work and is displayed in yellow color; the limit (60, 80] indicates a good level of compliance with sanitary and hygienic standards of work and is displayed in light green color); If the result belongs to the interval (80; 100], then this indicates the ideal condition of the room. The display color is bright green.

It is important to remember the point that the number 0 does not belong to any of the segments. If the program shows 0, then this indicates the absence of all the necessary data for the execution of the algorithm.

- Repository classes that are templates for establishing a connection with the database.
- Security classes responsible for access to the program and security in general. Such classes are responsible for authorization and authentication of system users.

- Service classes, which, in fact, ensure the connection of the program with the database. Such classes are responsible for recording, changing, viewing or deleting certain system objects.

- Initializer class: created to run the program.

- Controller classes: represent the highest level of business logic, where the majority of data processing processes and their logical output are carried out. It is here that the main functionality of the decision-making system, which is built on the basis of artificial intelligence ChatGPT API, is performed. The decision-making system is built in the form of a chatbot, to which all users of the system have access. The algorithm of this technology is as follows:

The first stage is “Sending a message”. The application user enters the chatbot and sends a message to the system. The IS receives the incoming message, records it in the database along with the date and time it was sent.

The second stage is “Initial processing of the request”. The system accepts data from the user and converts the words into a query to the database using the ChatGPT API. It is important to note that all previous requests are stored in the system, so each subsequent request will be sent to the ChatGPT API together with the previous ones. The technology checks all user messages: if the user’s question does not relate to the office or premises of the IT company, then stages 2–4 are skipped, instead the program makes a direct request to the ChatGPT API and proceeds to the fifth stage.

The third stage “Query to the database”. The generated query is sent to the database, from where the response comes in the form of a collection of text.

The fourth stage is “Transforming the answer”. The database schema, previous user messages, the current user question, the generated database query, and the database response are all combined into a single query and sent to the ChatGPT API. The request is formed in such a way that the received response looks like a message from the system manager.

Fifth stage “Answer from the chatbot”. The received answer is displayed to the user in the form of a message from the company manager, which provides a comprehensive answer to any user question.

There are, of course, many different groups of classes, but in the program there are only 4 levels that create a logical structure: the basic level (Core layer), data layer (Data layer), business level (Business layer) and the compile and run layer (Application). All levels are shown in Fig. 8.

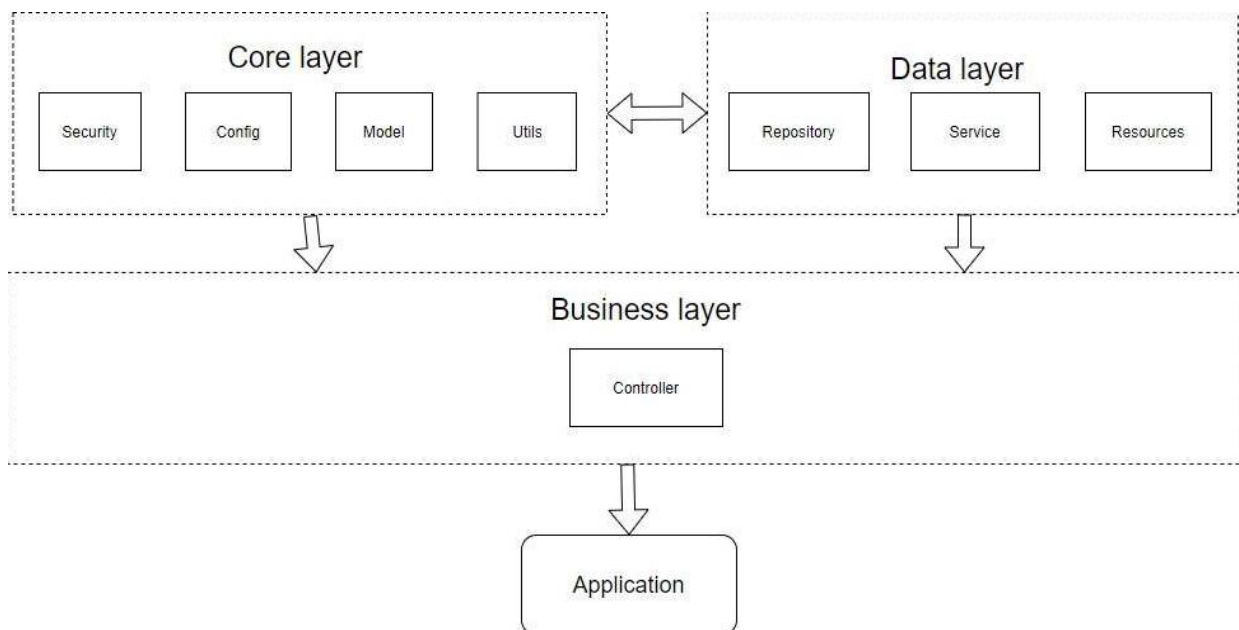


Fig. 8. Logical structure of the PremiseAcc program

All levels interact with each other in a certain defined order: in tilt and model classes are used within the limits of the entire program; repository classes are used only in service classes; service classes are used purely in controller classes; the controller interacts with the HTML files and provides them with the information to be displayed. The controller is responsible for the key function – creating a web service. The user sends a request through a URL in the browser, which is sent to the controller class for further processing and generating a response to the client. The web service issues information in the form of a resource file with the extension .html, which is displayed by the browser as a site. The initializer class starts the program and displays the contents of the HTML files to the system user. Script classes or controller classes respond to any user actions. In this way, the inter-file interaction of classes is implemented. Fig. 9 shows the database scheme with all the connections between the tables for the IT company’s premises accounting technology.

- Address is a table for storing address data of all available offices. This is a table containing an address identifier field, the name of the country, city, street and, if available, the house number. This table is the result of normalizing the database to the first normal form. It is worth noting that the country field indicates that this database can be used by large IT companies that have a large number of offices located in different countries.

- Equipment_type – a table that ensures the preservation of information about the possible types of technical equipment of a place or room. The table contains only the identifier and name of the technical equipment.

- Place – a table containing all the necessary information about the places of the room. The table contains the following columns: location ID, location number, a field that informs about availability of the location, the date and time of the last disinfection process, and the foreign key of the location ID. Location availability is a number (0 or 1) and represents a Boolean value. The value of the field “1” indicates that the place can be reserved, in 3 cases “0” – not.

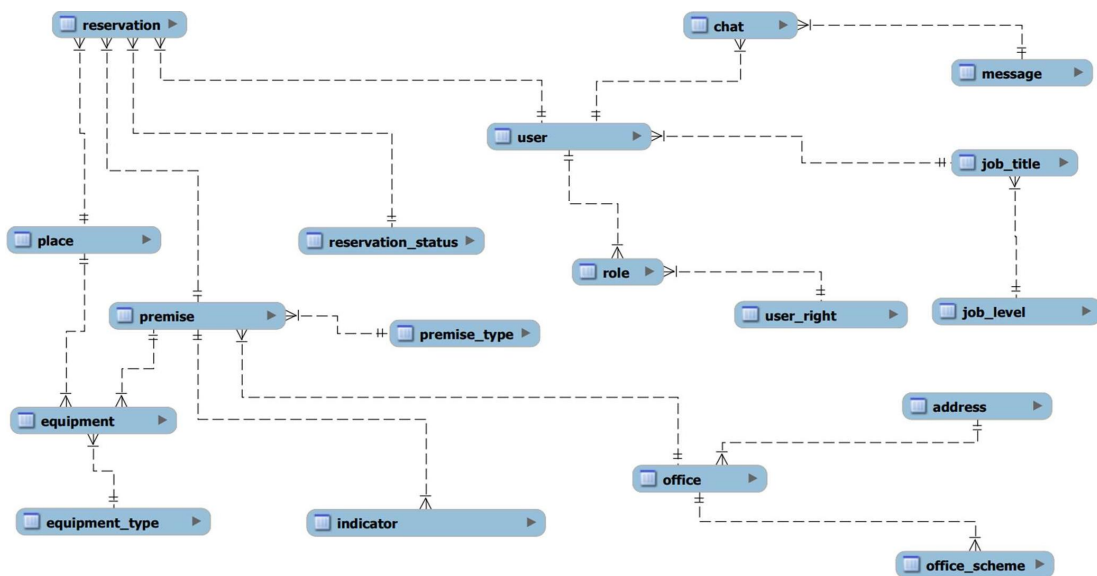


Fig. 9. Scheme of the PremiseAcc technology database

- Premise_type – contains all possible types of office premises. The table consists of an identifier and a type name. This table is also a consequence of achieving the first normal form, which ensures the atomicity of the data.

- Office – a table with a brief description of the IT company’s offices. The contents of this table: identifier, foreign key of the identifier of the address of the premises and the date of creation. The IT company’s premises accounting technology does not require a large amount of data about the office premises, so it was decided to limit itself to such fields.

- **Premise** – a fact dimension for storing information about all available office premises. The premises table consists of the identifier and type of the premises, the numeric value of the area in square meters, an optional name field, the foreign key of the premises scheme and the foreign key of the office. An additional `shape_path` field was also created, which provides an opportunity to place the premises on the map and subsequently interact with it. Thus, this field is a critical component for the functioning of the interactive map of the office.

- **Equipment** – measurement for saving information about the available technical equipment of a place or room. The list of fields is as follows: equipment identifier, an optional field of the equipment model (not all equipment has a model), a detailed description or instruction, the date of entry into the database, the external key of the location and room to which this equipment belongs. It is worth paying attention to the unusual logic of adding records to this table: if the external key of the place is NULL, then it can be assumed that the equipment is in the room and does not belong to any specific place.

- **Indicator** – measurement for saving all the necessary indicators about the condition of the room. This table consists of the largest number of fields, namely ten, which emphasizes its importance for analyzing the condition of the room. All fields of the Indicator table: date and time of the last disinfection of the room, level of illumination of the room, temperature of the room, number of green plants, level of air humidity in the room, noise insulation level, level of access to water supply, access to electrical energy, Boolean value of access to drinking water, air cleanliness and external key of the premises. Speaking about the level of water and electricity supply, it is worth saying that they are stored as the date when failures in these systems were last noticed. This table may be supplemented with new fields over time, as sanitary and hygienic standards change, as do the requirements for the system.

- **Job_level** – measurement of data on the qualification level of a system user who is an employee of an IT company. In addition to the level identifier, this table contains the name and designation in the form of a code, which is often used by IT companies in their systems.

- **Job_title** – dimension of employee job title data. Consists of a field ID, a job title, and a level ID, which is a foreign key in this table.

- **Office_scheme** – a table containing an office map. The office map is presented in the form of a set of maps of each floor, and therefore contains the floor number, an image of the floor, an additional field `viewbox`, which is necessary for the correct display of the map to the user, as well as the external key of the office.

- **Reservation_status** – measurement of data on the statuses of room or place reservations. In addition to the status identifier, this also includes the reservation status name and an optional description field, which is set to NULL by the database management system by default.

- **User** – measurement of required data of system users. The table fields are as follows: first and last name of the employee, e-mail, login password and external key of the position. The user's e-mail address is also a login for entering the system.

- **Reservation** – measurement of data on the reservation of office premises or places of work. Contains an ID field, the date the reservation will take place, the time the reservation starts and when it ends, the user ID (which is a foreign key), the foreign key of the reservation status, and the foreign key of the room and location. It should be noted that the processes for reserving a room and place are different. For this table, there is a similar logic that is present in the Equipment table: if you want to create an entry in the table about room reservation, then NULL is placed in the place identifier field. Otherwise, both the place identifier and the room identifier are filled.

- **Message** – stores all user messages and chat bot responses. Consists of the message identifier, the text message itself, which has no size restrictions, the date and time it was sent, and the Boolean variable `isBot`. If `isBot` is equal to one, then this is a response from the chat bot, in the case of 0 – a message from the user to the chat bot.

- Chat is a fact dimension that consists of its own identifier, as well as the foreign keys of the message and the user. That is, through this table, you can get all the correspondence of each user with the chat bot.
- User_right is a data dimension containing all possible levels of access to the technology. Consists only of the access name and its identifier.
- Role is a fact dimension that combines the system user table and the access level table. It consists of only the foreign keys of the user ID and the access level, and of course it has its own ID.

MySQL tools, a detailed diagram of the database, shown in Fig. 10, was built. The diagram is built with a detailed description of all fields, their types and restrictions.

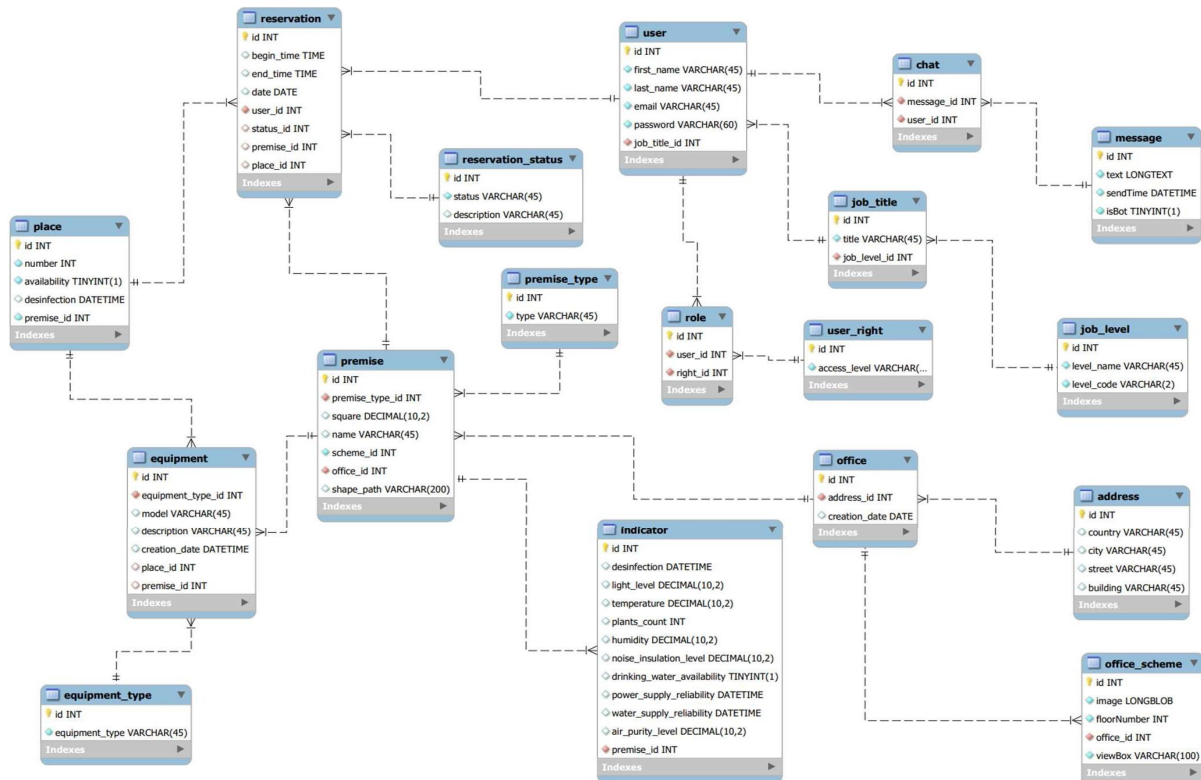


Fig. 10. Detailed diagram of the database of the PremiseAcc system

PremiseAcc IT company's premises accounting technology provides program users with the following functionality:

- Authentication and authorization of application users:
 - Administrator – an administrator user who has unlimited access to all the functionality of the application. This includes: manipulation of all data about the premises, access to the chatbot, creation of an office map, reservation of seats or premises, entry of indicators of the state of the premises, creation of new users of the system and giving them different roles.
 - Owner – owner user. It also has unlimited access to all system capabilities, but exists separately for cases when the system administrator wants to send the reporting of the recorded premises of the premises directly to the owner of the office or the company in general.
 - Standard – represents an ordinary user of the system with limited access. Such a user has access to view a map of office premises with all related information about the premises and its condition, booking and chatbot.
 - Observer – has access only to information viewing functions, that is, limited in the processes of creating any data. That is, such a user has the same access as a standard user, but room reservation is not available for him.

- Administrator-observer – has unlimited access to view all data on the premises, but any data modification process is prohibited.
- Banned – a user who has been blocked for certain reasons. Such a user has absolutely no access, but his data remains in the database.
 - Convenient entry of data about the IT company's office premises. The system will not function without entering the necessary credentials. PremiseAcc provides an opportunity to enter data about the premises directly using the program, which simplifies all accounting processes.
 - View account data about the premises in the form of a map. All credentials about the premises of the IT company can be viewed in the form of an office map. This function helps the user to quickly and conveniently find the necessary information and to have an idea of the layout of the office premises.
 - Convenient interactive graphical interface. Through the available map of the premises, the application user can conveniently interact with the system, since almost all the main functionality of the application is opened from here. All premises on the map are interactive, and therefore respond to user actions and display all available information about the selected premises.
 - Reservation of places or premises. To work in an office, an employee must first reserve a room or a specific place for a certain period. When booking a place or room, the employee can view information about the available equipment, seats or the general sanitary and hygienic condition of the room. The space reservation function simplifies the processes of interaction of company employees with office space, which ultimately facilitates work processes.
 - Analysis of the condition of the premises. This function is available only to the program manager. The function uses a special algorithm to analyze the accounting data of the sanitary and hygienic condition of the premises, which were entered into the database by the system manager, or by other physical sensors.
 - Chatbot. The program provides the possibility of user interaction with the artificial intelligence system in the form of a chat. The chat is able to answer any questions about the premises, as well as any other. Moreover, the user can delete the message or the chat in general. The chatbot has two modes of operation:
 - “Friendly mode”. This mode does not have access to information from the database. The main purpose of its functioning is to help the employee to reflect, relax and simply give some advice on work.
 - “Premise related mode”. It is the key mode of operation of the chatbot, as it can answer any questions related to office premises.

PremiseAcc's premises accounting technology, you need to run the maven command `clean install` in the created framework. This command will create an executable file with the extension `.jar`, after which it should be run. The web application is available on port 5000. Using a browser, you need to go to the generated server. PremiseAcc automatically redirects all requests from unauthorized users to the relative `login / session / login` address. If the user is authorized, the system sends the main page, which is accessible via the `/ session / home` address. Therefore, PremiseAcc prohibits any unauthorized access to the application's functions without authentication and authorization processes.

After the successful completion of the authentication and authorization processes, the system takes the user to the main page of PremiseAcc (Fig. 11). The main page of PremiseAcc has the following components: a description of the purpose and functionality of the web application, precautions while staying in the office premises, and information about the main offices with buttons that provide a jump to the detailed description of the office.

On each page of the web application, there is a navigation bar at the top of the page. This panel contains buttons for accessing maps of office premises, booking, manipulating data of company employees, chatbot, personal account, or to go to the main page of the application. Users without the Administrator role do not see the button to navigate to the IT employee data manipulation page. If an authorized user accesses the Users panel without the appropriate role, PremiseAcc blocks his actions and redirects to a page with a

detailed description of the reason for unauthorized access to the resource (Fig. 12). The navigation bar also has a button to log out of the current session, after which PremiseAcc deletes all keys that were created during the authentication and authorization processes.

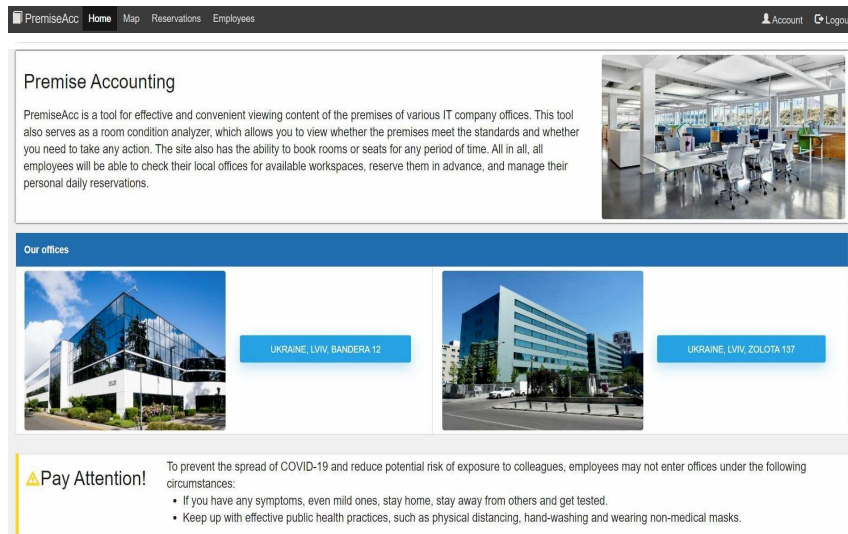


Fig. 11. View of the initial page of the system

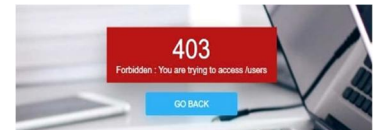


Fig. 12. Page for resolving conflict events

To access credentials about company employees, the administrator must click on the Employees button located on the navigation panel, after which the user will be redirected to the corresponding page (Fig. 13). On this page, the company administrator can add new users, change the data of existing users, or even delete data about them. All described processes are accompanied by a check of input data.

PremiseAcc Home Map Reservations Employees Account Logout						
Employee's lists + Add employee						
Id	First name	Last name	Email	Job Title	Role	Actions
1	Ihor	Chushchak	ihor.chushchak@piecorp.com	Middle Test Automation Software Engineer	• STANDART	
2	Hurii	Heriak	hurii.heriak@piecorp.com	Middle Test Automation Software Engineer	• ADMIN	
3	Illia	Balush	illia.balush@piecorp.com	Senior Software Engineer	• OBSERVER	
4	Rostyslav	Fedchuk	rostyslav.fedchuk@piecorp.com	Middle Manager in Resources	• OWNER • ADMIN	
5	Liubomyr	Mulyarchuk	snyezhok@piecorp.com	Junior Manager in Resources	• ADMIN	
7	Ivan	Pravak	ivan.pravak@piecorp.com	Senior Tester	• STANDART	
8	Ivan	Pravakf	pravak.iva@piecorp.com	Middle Test Automation Software Engineer	• STANDART	
9	Gromming	Session	Gromming.session@piecorp.com	Shief Tester	• ADMIN OBSERVER	
14	Jenya	Kachyn	jenya.kachyn@piecorp.com	Junior Software Engineer	• ADMIN OBSERVER	

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Fig. 13. Employees page

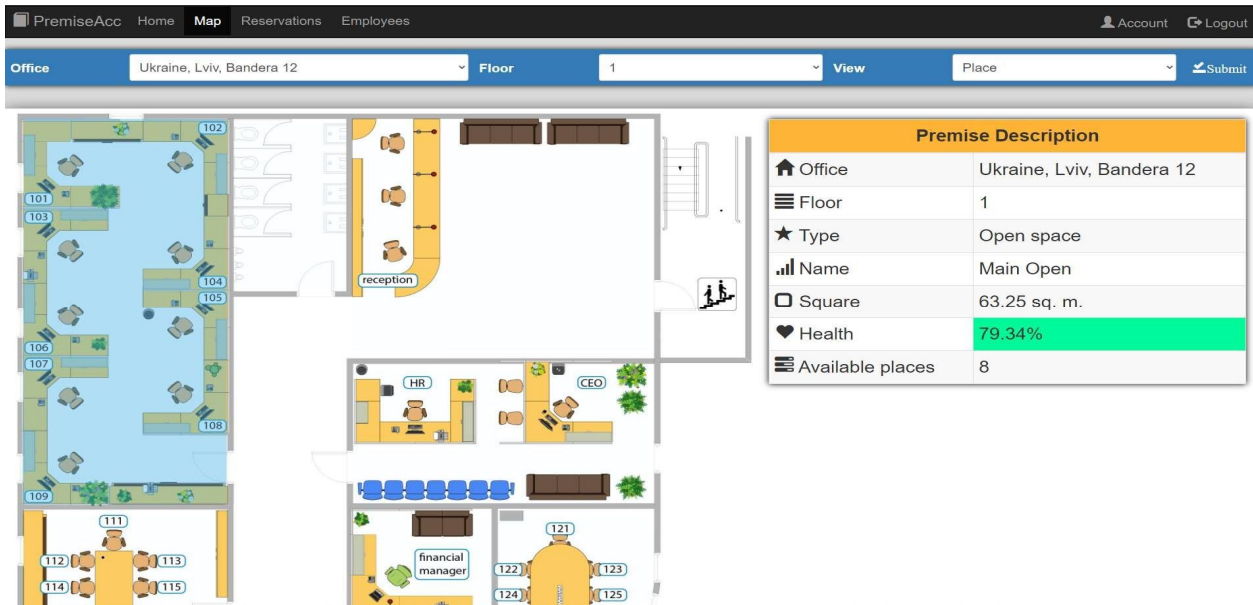


Fig. 14. Page for displaying the office floor plan

The page with the map of the premises is shown in Fig. 14. At the top there is a panel for setting the search parameters, namely: the name of the office, the floor and the desired information on this floor. After displaying the necessary floor of the office, you need to choose a specific room, which is accompanied by the output of brief information about it. More detailed information about is under the floor plan.

There are the following types of presentation of information about the premises:

- Place view – displays data about the locations of the selected room with the possibility of their further modification or reservation (Fig. 15).
- Equipment view – displays data about technical equipment (Fig. 16).
- Indicator view – displays data about the state of the room (Fig. 17).
- Reservation view – displays data about room reservation (Fig. 18).

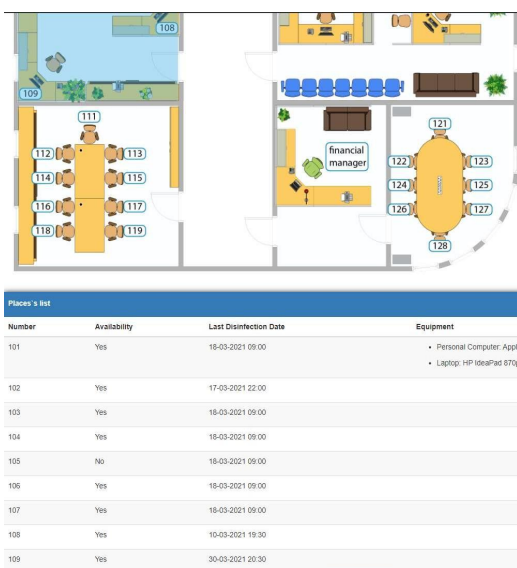


Fig. 15. Page about jobs



Fig. 16. Page about technical equipment of the premises



Fig. 17. Page about the condition of the premises



Fig. 19. Pop-up window for booking a seat

User Email	Date	Begin Time	End Time	Reservation object	Status	Actions
snyezhok@piecorp.com	2021-04-23	09:00	18:45	Place №102	APPROVED	
rostyslav.fedchuk@piecorp.com	2021-04-23	10:00	19:00	Place №101	APPROVED	

Fig. 18. Part of the page with information about available room reservations

It is very convenient to book a room while viewing the map of the room. To do this, you need to choose the desired place for reservation, as well as set the date and time of the reservation (Fig. 19).

If the user tries to reserve an unavailable place, or specifies the wrong date and time, PremiseAcc will display a pop-up window with a detailed description of the error (Fig. 20), otherwise the program will notify the user about the successful completion of the reservation (Fig. 21).

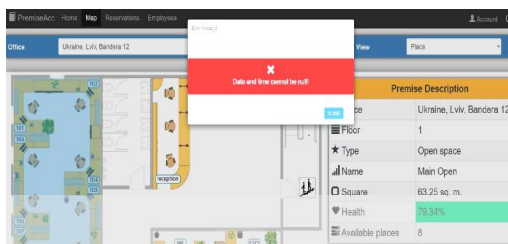


Fig. 20. Error during booking

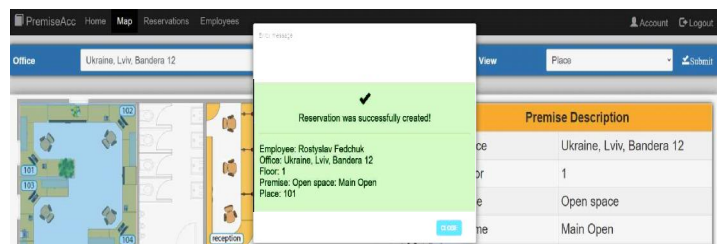


Fig. 21. Notification of successful booking

On the Reservations page, you can monitor your own reservations for the entire time and their related information (Fig. 22). After the booking period ends, PremiseAcc automatically closes all bookings.

Employee	Office	Floor	Date	Begin Time	End Time	Reservation object	Status	Actions
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-07	09:12	18:13	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-08	12:27	15:27	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-09	13:47	16:47	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Zolota 137	2	2021-04-09	09:47	19:47	Meeting room	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-09	11:10	11:11	Place №105	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-09	10:46	10:47	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-09	10:40	10:41	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-10	09:45	18:46	Place №105	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Zolota 137	2	2021-04-10	06:45	21:45	Meeting room	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-12	13:02	15:02	Place №101	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-13	10:13	22:13	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-19	10:36	10:37	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-21	02:47	04:47	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-22	10:21	22:21	Place №110	APPROVED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-23	10:00	19:00	Place №101	APPROVED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-24	10:37	10:38	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-24	01:07	03:07	Place №110	CLOSED	
Rostyslav Fedchuk	Ukraine, Lviv, Bandera 12	1	2021-04-30	10:24	22:24	Place №110	APPROVED	

Fig. 22. Page with information about all your own reservations

The basic page of interaction with the chatbot is shown in Fig. 23. Chat with artificial intelligence is intuitive and provides the user with answers to any questions (Fig. 24).

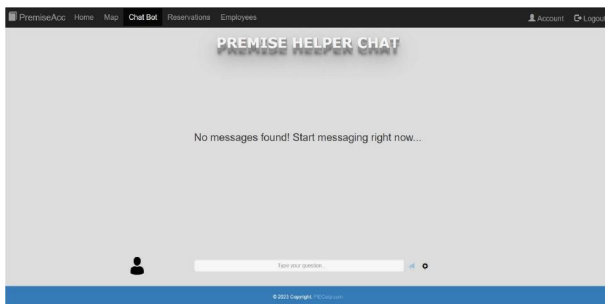


Fig. 23. A page with a chat bot

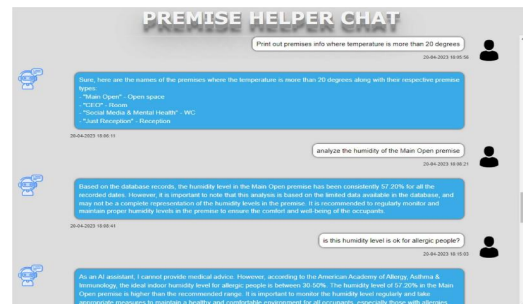


Fig. 24. An example of user communication with a chatbot

Also, on this page there are auxiliary functions that improve the experience of interacting with the chat, namely deleting a message, deleting a chat, or switching between chat modes (Fig. 25).

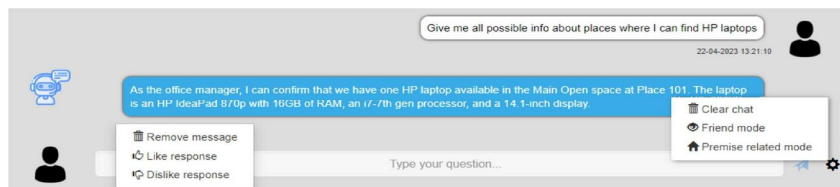


Fig. 25. Additional features when working with a chatbot

Conclusions

During the execution of the work, the technology of accounting of the premises of the IT company PremiseAcc was created. To achieve this, an analysis of legal documents, laws of Ukraine, which regulate sanitary and hygienic standards in offices, as well as other literary sources that raised the issue of creating information technologies to optimize accounting processes, was carried out. An analysis of existing systems and technologies that solve similar issues of accounting of premises was also carried out. After the analytical review, specific methods and approaches were singled out, by dividing them into positive and negative aspects of the system's functioning. In this way, the foundation for the further development of the system was provided: some advantages were borrowed, while the disadvantages were singled out in order to avoid their appearance in the newly created technology. Next, the general purpose of the entire work in general and the functioning of the technology in particular was formed. The general goal was divided into aspects and detailed with specific goals, the achievement of which approaches the main goal of the work. After a detailed description of all aspects and sub-goals, a tree of decisions (goals) was built on their basis, which made it possible to visualize the process of achieving the general goal. IT companies used: Spring to develop the technology for accounting of premises Boot, Java, IntelliJ Idea, Thymeleaf, Maven, JavaScript, HTML, CSS, Bootstrap, Hibernate, MySQL, Postman, Inkscape, Log4j2, ChatGPT API. Each choice was thought out in detail and contained detailed reasoning. The argumentation of the choice included not only a description of the advantages of the tool compared to other analogues, but also a description of the disadvantages. All the selected tools have a good integration with each other, and therefore their interaction led to a convenient and reliable development process of the PremiseAcc software product. A detailed description of the created components of the IT company's premises accounting technology and their interaction with each other is provided. The logical structure of the PremiseAcc program is presented and an explanation is given of the path the input data takes before and after processing. Particular attention is paid to the structure of the database with all its connections. As a result, a clear understanding of the processes that occur in the program during its execution, as well as how data is entered, processed and displayed to the

end user, is formed. The description of all processes was accompanied by its detailing. A description of the functionality of the technology, which was implemented during the development process, is given, including booking, analysis of the state of the premises and chatbot.

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ІНФОРМАЦІЙНА ТЕХНОЛОГІЯ ОБЛІКУ ПРИМІЩЕНЬ ІТ-КОМПАНІЇ

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Облік приміщень – процес зберігання, опрацювання та маніпулювання обліковими даними приміщень. У ІТ-компаніях ефективний облік приміщень має особливе значення: це може допомогти знизити витрати, покращити роботу персоналу та підвищити ефективність бізнесу. Потреба у веденні обліку приміщень ІТ-компанії завжди виникає у випадку великої кількості

офісів чи численних маніпулювань їхніми даними. Оптимальне використання простору – один з ключових факторів забезпечення ефективності роботи ІТ-компаній. Зручність одного лише оперативного доступу до актуальної інформації приміщень спрощує ведення бізнесу ІТ-компаніям. А наявність інформаційної технології з аналізом та системою прийняття рішень зводить складність деяких облікових процесів до декількох натискань мишки одного із відповідних менеджерів компанії. Об'єкт дослідження – процес обліку приміщень у ІТ-компанії, урахуваючи процеси збирання, опрацювання, аналізу та відображення інформації, необхідної для ефективного використання простору. Предмет дослідження – методи та засоби обліку приміщень для ІТ-компаній, що дає змогу максимально ефективно використовувати простір, мінімізуючи витрати. Мета дослідження – розроблення інформаційної технології обліку приміщень ІТ-компаній, що слугуватиме не лише місцем зберігання та перегляду облікових даних, а й платформою для резервування місць чи приміщень та аналізу їхнього стану відповідно до нормативних документів та законів України. Розроблення інформаційної технології обліку приміщень для ІТ-компаній є ключовою складовою для вирішення проблеми ефективного використання простору та зниження витрат. Розроблена ІТ дає змогу збирати, опрацьовувати та аналізувати інформацію щодо використання приміщень у режимі реального часу, що забезпечить ефективний контроль за використанням простору та допоможе вчасно реагувати на зміни вимог. Цю технологію варто розглядати і як систему прийняття рішень, що не лише маніпулює даними, а й допомагає аналізувати та підбирати інформацію за відповідними запитами користувача. До важливих особливостей та функцій технології обліку приміщень можна зарахувати: створення, редагування та видалення приміщень із системи; аналіз стану приміщення; доступ до усіх облікових та аналітичних даних через використання чат-боту на основі штучного інтелекту; бронювання місця чи приміщення на будь-яку кількість часу протягом дня; перегляд актуальних резервувань кожного приміщення; перегляд усіх створених резервувань конкретного користувача; маніпуляції з даними працівників: реєстрація, редагування та видалення користувачів з системи менеджером.

Ключові слова: інформаційна система; інформаційна технологія обліку; нормативні документи; резервування приміщень; системи автоматизації стану приміщень; клієнт-серверна архітектура; вебдодаток; системи штучного інтелекту.