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THE USE OF JSOLUTIONS "HOTEL" SOFTWARE IN THE ACTIVITIES OF ENTERPRISES OF THE HOTEL AND RESTAURANT INDUSTRY

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Vilkhivska O. V., Vilkhivskiy V. V. The Use of jSolutions "Hotel" Software in the Activities of Enterprises of the Hotel and Restaurant Industry

The article reveals the features of modern IT using the jSolutions "Hotel" module as an example for the automation and management of hotel and tourism enterprises. The main functions and algorithm of working with the module, which includes the BACK and FRONT-OFFICE parts, are considered. At the same time, the functional part of FRONT-OFFICE is implemented in Touch-interface and TouchScreen mode, which can be used for accounting of visits and reception. Also, a feature of the proposed module is the function of adding a hotel plan. The section contains records of typical sample rooms and actual facility rooms. Rooms can be grouped by buildings, floors, blocks, etc. Thanks to this, the client can view the plan of the hotel and choose the location of the room taking into account his psycho-somatic wishes. Emphasis is placed on the versatility of the module, which can be used in the management system of hotels, hostels, sanatoriums, recreation centers and other institutions of the hospitality business. The jSolutions "Hotel" module allows for comprehensive control of all business processes of hotel and tourism enterprises. Features of the universality of the proposed module, which can be integrated with other modules, are highlighted, namely: with the jSolutions module for restaurant, cafe, bar automation – for ordering meals to the hotel room; with the jSolutions module for clubs of various orientations and for adding payment for additional services to the accommodation bill. Another feature of this module is that it is a national product developed in Ukraine, not inferior in terms of quality and functional characteristics to those of its global counterparts, on the contrary, it represents more advanced product owing to its unique functions. Attention is focused on the fact that the application of the proposed module can help to significantly increase the client base and enhance the competitiveness of the hotel and tourism enterprise.

Keywords: information systems (IS), information technologies (IT), jSolutions module "Hotel", hotel and tourism enterprises.

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Вільхівська О. В., Вільхівський В. В. Використання програмного забезпечення jSolutions «Готель» у діяльності підприємств готельно-ресторанної галузі

У статті розкрито особливості сучасних ІТ на прикладі застосування модуля jSolutions «Готель» для автоматизації та управління готельно-туристичними підприємствами. Розглянуто основні функції та алгоритм роботи з модулем, який включає частини BACK і FRONT-OFFICE. При цьому функціональна частина FRONT-OFFICE реалізовано в режимі Touch-інтерфейсу та TouchScreen, який можна використовувати для обліку відвідувань і ресепшену. Також особливістю запропонованого модуля є функції додавання плану готелю. Розділ містить записи про типові зразки номерів і реальні номери закладу. Номери можуть бути згруповані по корпусах, поверхах, блоках тощо. Завдяки цьому клієнт може проглянути план готелю та вибрати розташування номеру з урахуванням своїх психосоматичних побажань. Наголошено на універсальності модуля, який може використовуватись у системі управління готелями, хостелами, санаторієм, базою відпочинку та іншими установами гостинного бізнесу. Модуль jSolutions «Готель» дозволяє вести комплексний контроль усіх бізнес-процесів готельно-туристичних підприємств. Виділено особливості універсальності запропонованого модуля, який може бути інтегрований з іншими модулями, а саме: з модулем jSolutions для автоматизації ресторану, кафе, бару – для замовлення харчування в номер готелю; з модулем jSolutions для клубів різної спрямованості та для нарахування оплати за використання додаткових послуг у рахунок за проживання. Також особливістю даного модуля є те, що він є національним продуктом, який розроблено в Україні, проте за своїми якісними та функціональними характеристиками не поступається світовим аналогам, ба більше – є більш досконалим завдяки унікальним функціям. Акцентовано увагу на тому, що застосування запропонованого модуля може допомогти значно наростити клієнтську базу та підвищити конкурентоспроможність готельно-туристичного підприємства.

Ключові слова: інформаційні системи (ІС), інформаційні технології (ІТ), модуль *jSolutions «Готель»*, готельно-туристичні підприємства.

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An integral part of the successful functioning of tourism entities is the use of information technologies (IT), which automate the work of enterprises. Processing, collecting, selecting, and storing a large array of information requires the use of modern tools. The market of tourist services includes a large number of various software products, the use of which allows you to improve the informational, methodical and technological components of the management system of the enterprise in the tourism industry.

A large number of Ukrainian and foreign scientists were engaged in scientific research on the automation of tourism business activities: V. Kwartalnova, T. Tymofeieva, A. Tataryntseva, O. Oliinyk, M. Zhukov, I. Zorin, M. Morozov, O. Toffler, F. Ullah etc. The scientific works of these authors consider the peculiarities of the development of the tourism industry, the issue of the use of the latest IT in the tourism business and the effectiveness of their implementation.

The *aim* of the article is to reveal the features of utilization of modern IT, using the *jSolutions "Hotel"* module, which is intended for automation and management of hotel and tourism enterprises, as an example.

The tourism market is one of the most dynamic branches of the economy, characterized by a large number of participants, significant geographic separation, and rapid information updates [1].

Management processes in hotel and tourism enterprises involve numerous procedures for registration, collection, transfer, storage, processing, issuance of information, and decision-making. The efficiency and speed of these processes can be improved through the use of IT, which encompass the means and methods by which these procedures are implemented in various information systems (IS) [2–5].

It is proposed to use the *jSolutions "Hotel"* Module as such a system. By IS, we understand the totality of the tourism information database, specialized IT for its processing, as well as technical means [3]. The *jSolutions "Hotel"* module is designed to automate information accounting in the hotel industry and allows you to perform the following functions: room rental;

accounting of the material base, including hotel rooms; customer registration (check-in, check-out, and stay of guests); reservation and provision of additional services; sale of goods; taking boarding orders; handling cash and non-cash payments; issuing invoices; keeping records; cleaning rooms; and registering requests from guests and administrators [6–8].

The module includes two parts: BACK-OFFICE and FRONT-OFFICE. The functional part of the FRONT-OFFICE is implemented in Touch-interface mode, where a TouchScreen can be used for accounting visits and reception. The Touch-interface mode (Accounting of visits, Reception) contains functions for registering clients with specialists, halls, group classes, and services. The TouchScreen mode is tied to a specific point of sale, but two TouchScreen modes cannot be enabled simultaneously at the same point of sale.

The *jSolutions "Hotel"* module has an intuitive interface that is easy to configure and includes three main user roles: administrator, manager, and registrar. System users are configured with the help of the *jAdmin* module, where the authorizations for the created users to work in the module are set (Fig. 1).

Granting full access rights to users is carried out in the directory panel in the root directory "System applications", using the option "Inherit" and "Full access" (Fig. 2).

The most convenient way to configure rights is to grant rights to a specific group of users, followed by adding users to one or more groups to inherit rights. A single user can be included in multiple user groups. The rights of the group and the personal rights of the user are combined using a logical addition operation. This means that a user will have rights to a certain section if such rights are granted to the user directly or to at least one of the groups to which they belong.

System settings for the "Hotel" module are configured in the "System Settings" window, where all necessary catalogs and document types are filled in. When working with the Touch-interface, the system creates records in various sections of the system (particularly

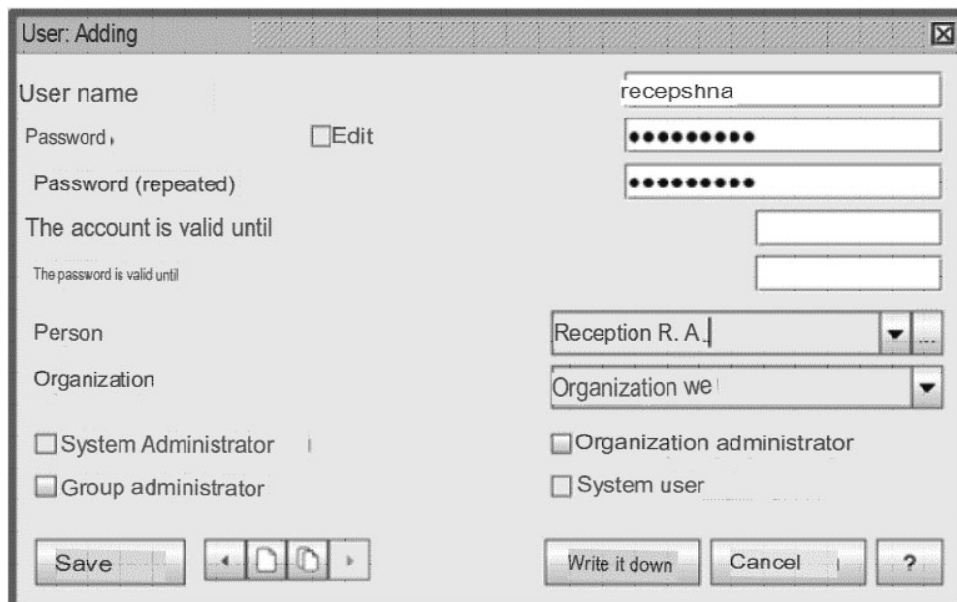


Fig. 1. User creation window in the jAdmin module [6–8]

in the "Documents" section). For documents that are automatically created in the system, the document type and the location directory are filled in through the "System Settings" window (Fig. 3).

In the System Preferences form, selecting the Colors tab, you can configure the colors that will be used in your personal user interface. If you do not fill in the fields on this tab, the default colors will be kept.

The system also allows you to add authorization functions and access to hotel premises using the "Management of access to objects" passes. This function is implemented through the jSolutions module "Management of access" (jDoor) (Fig. 4).

The jSolutions "Hotel" module allows you to configure the "Places of Sale" and "Point of Sale" sections. The "Places of Sale" section includes the tables "Points of Sale" and "Equipment" and is intended for registering points of sale (hotels, recreation centers, camping sites, etc.) and organizing the work of administrators and reception workers through the Touch-interface.

By "place of sale," we mean an establishment that provides services in one area, such as a hotel, recreation center, camping site, dormitory, hostel, etc. Points of sale are automated locations within the establishment (at the place of sale) equipped with a computer running the jSolutions "Hotel" programs. Here, you can book a room, register check-in/check-out, order additional services, pay for hotel services, and more (Fig. 5).

When working with the "Point of Sale" window, you must fill in the fields with the IP and MAC addresses of the workplace. If the IP addresses are not

static, but dynamic, then the IP address fields are not filled in (only the MAC address).

The Touch-interface tab includes: the "Price List" section, which displays the Touch-interface of the point of sale; "Client Directory" with information about clients; "Payment log catalog" in which payment documents are stored; "Product catalog" which stores data about available additional goods and services sold at the hotel (Fig. 6).

In the "Types of payments" section, the corresponding types of payments for the services provided, which will be used at the point of sale, are set (Fig. 7).

The "Payment documents" section will be used/registered during sales at particular point of sale according to the payment types selected on the previous tab.

In the point of sale menu there are commands for additional settings, namely "Equipment settings", "WEB interface settings".

In the "Hardware Settings" section, you can adjust the appearance of the Touch-interface, including window opening modes, the location of virtual forms and buttons, fonts, and the color scheme of the interface. In the "WEB Interface Settings" section, you can adjust the appearance of the Web interface.

The jSolutions "Hotel" module includes the "Room Stock" section. This section stores data on real estate objects (rooms, premises) provided by the hotel complex for accommodating customers. The directory tree is created by the user. Catalogs and hotels are added in the catalog panel using context-sensitive add functions.

The section contains records of both standard sample numbers and actual facility numbers. Rooms can be grouped by buildings, floors, blocks, etc. (Fig. 8).

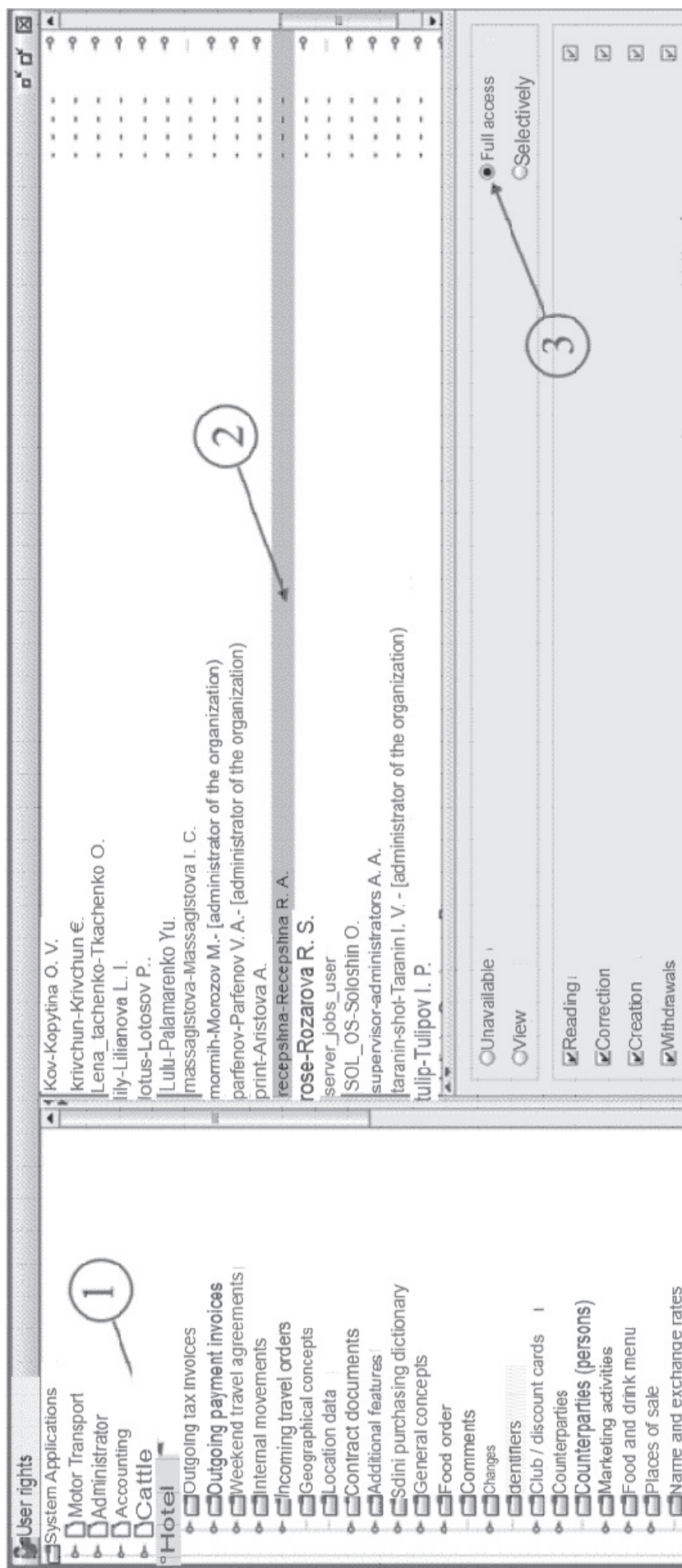


Fig. 2. The window for granting full access rights to users [6-8]

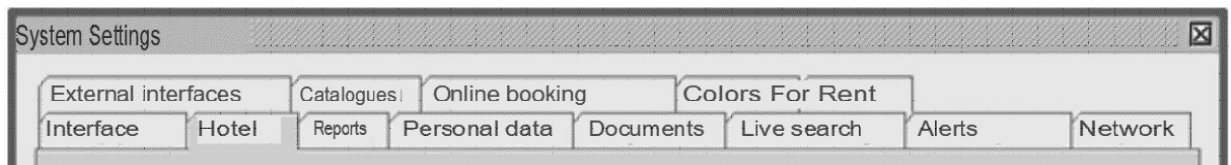


Fig. 3. System Settings window [6-8]

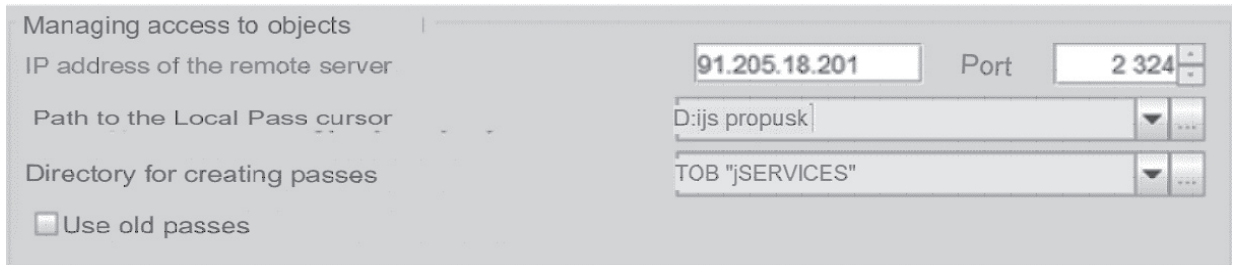


Fig. 4. Object access control settings window [6-8]

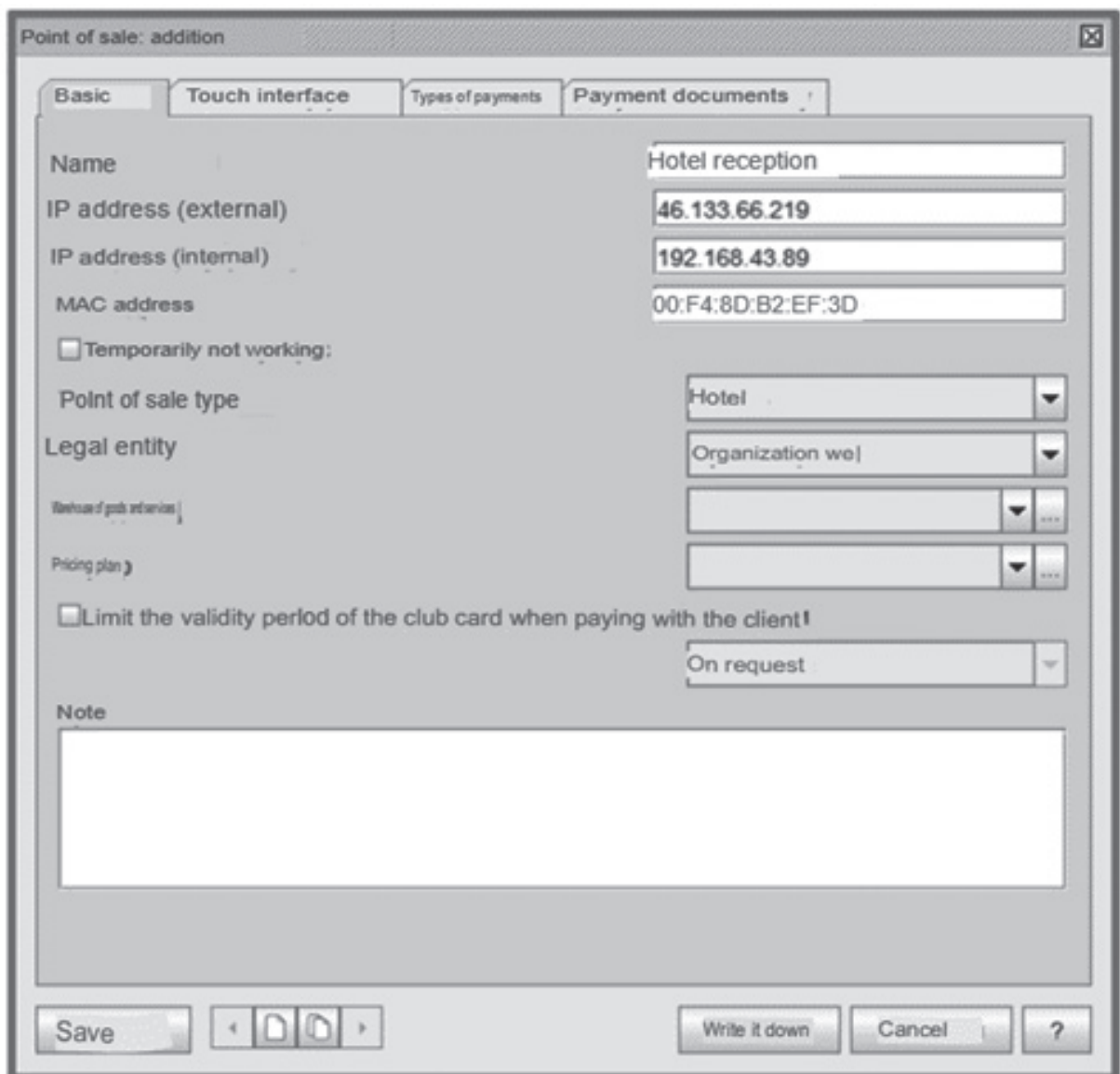


Fig. 5. Point of sale settings window [6-8]

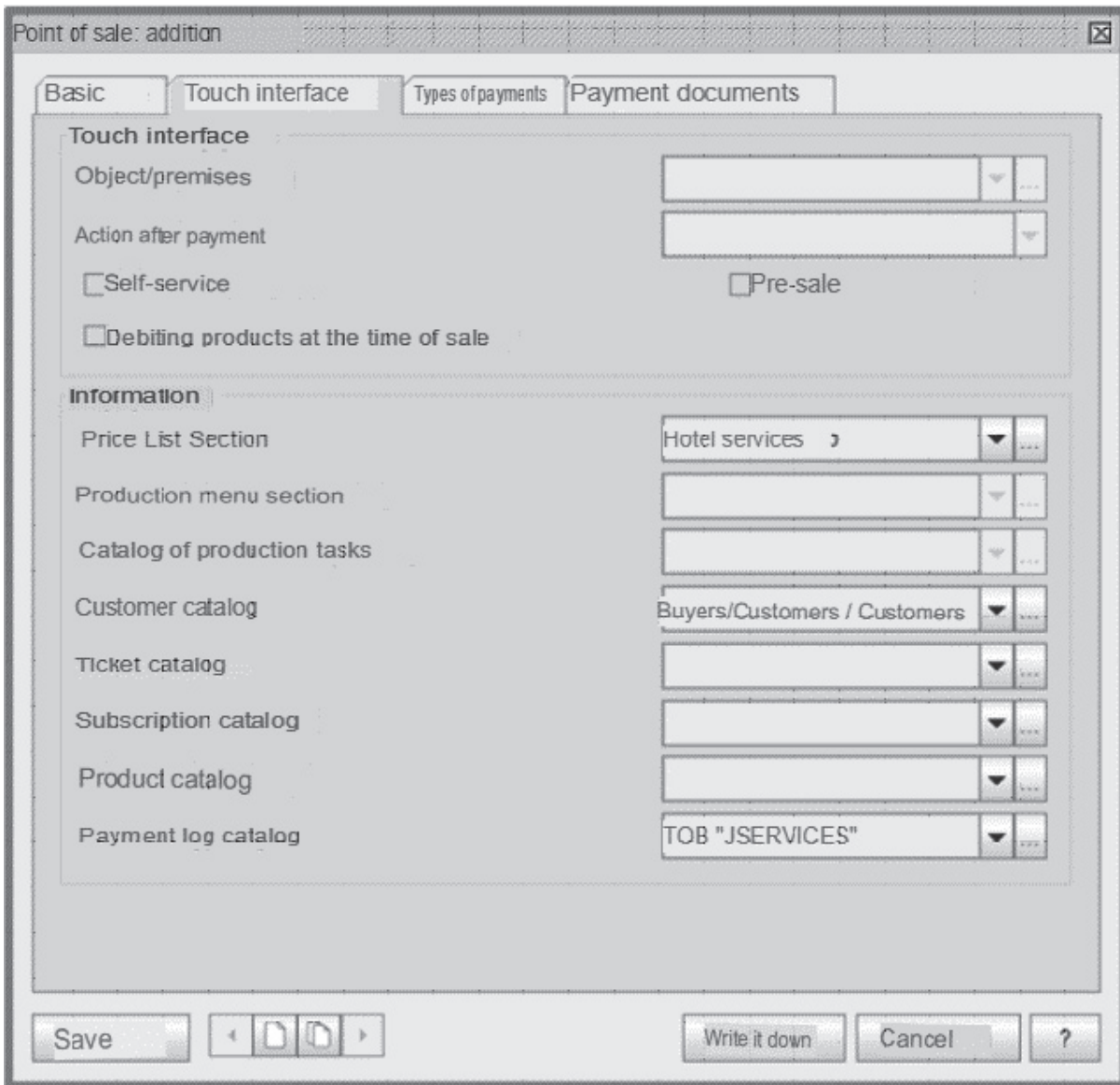


Fig. 6. Point of sale settings window, Touch-interface section [6-8]

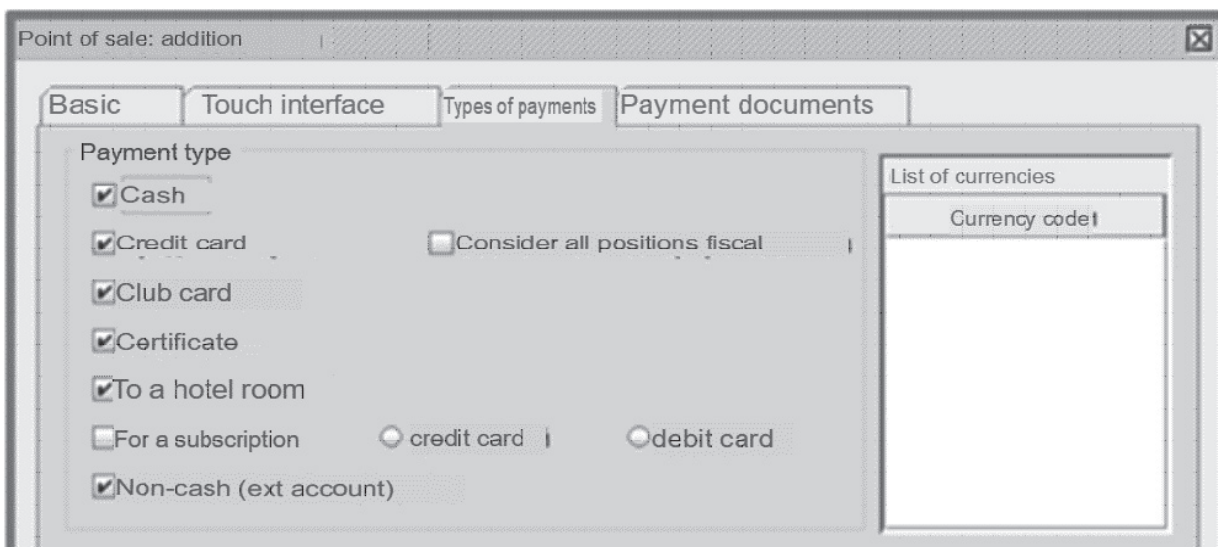


Fig. 7. Section "Types of payments" [6-8]

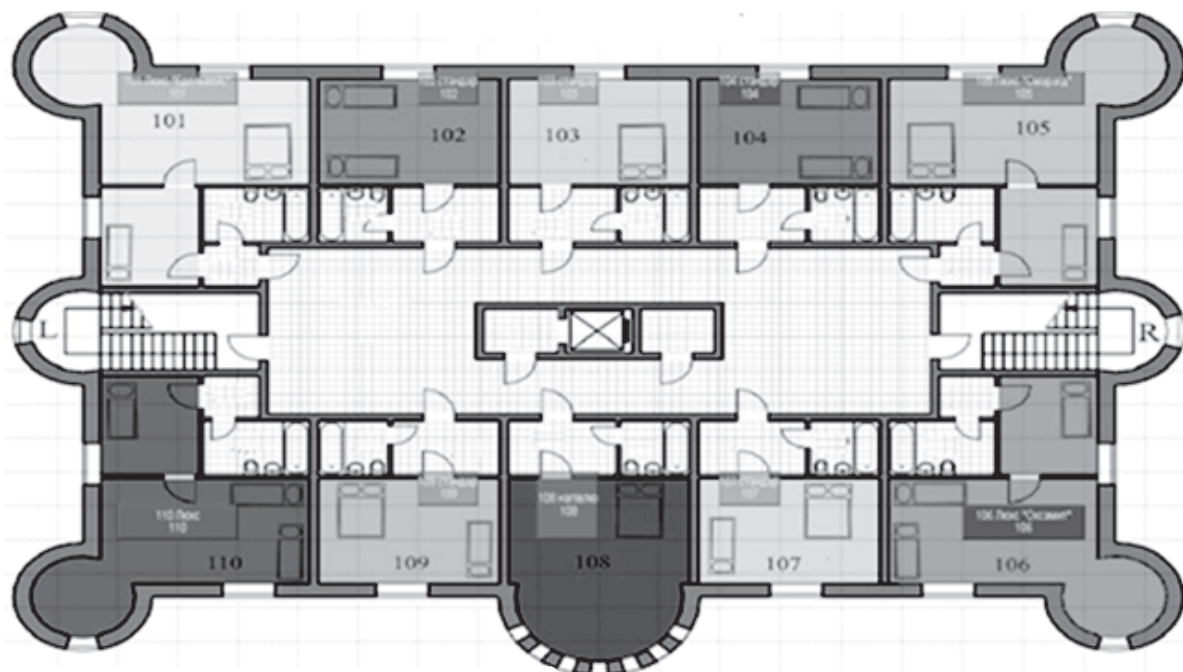


Fig. 8. Room Stock window [6-8]

The rooms in the jSolutions "Hotel" module are located according to the floor plan of each floor. The density of the grid is regulated in the module by the values of the fields Number of columns/Number of rows. Using the Change Background button, you can load a floor plan image from a file. At this, you can add specific characteristics such as "sunny/shady side" for rooms.

The "Maintenance" section is designed to display room service according to the schemes (types of service, quantity, frequency) specified in the dictionary "Service Schemes" (Fig. 9).

On the "Room Service" panel, entries will appear with the types of service for each occupied room according to its service scheme selected in the room's basic service settings. Additionally, at the end of the service, you can mark the time of actual performance; this data is displayed on the "Room Service" panel.

In the "Room Service" section, using the "Place Data" section, you can display data on the current occupancy status of the hotel's rooms, including those under repair. Individual cells have different colors depending on the state of the room and the number of days it will be or has been in that state. The "Room Fund" section contains the following panels: "Reservations," "Place Availability," "Loading Calendar," and "Accommodation Scheme". The "Reservations" panel contains information for registering the room reservations, specified by two dates. It also displays a grid of room categories (types) and tariffs, indicating the number of rooms available in each category for the

specified period (and the percentage of free rooms) within the selected premises in the directory tree. By selecting a category, you can create a reservation for a room of that category.

In the "Place Availability" panel, in addition to the "Period from... to..." fields, there is a "Room Type" field with a drop-down list of room type values (including the "No Type" option). A grid of available rooms of the specified type (or all types if "No Type" is selected) for the specified period is displayed within the selected premise in the directory tree.

The "Loading Calendar" panel displays a grid of all rooms within the selected premise in the directory tree. Dates for a month-long period are placed horizontally on the grid. Cells at the intersection of room numbers and dates are colored to reflect the room's status on a specific date: no color if the room is free; yellow if the room is booked for certain dates; red if the room is occupied; blue if the room is under repair; gray if the room is unavailable (Fig. 10).

Download data is also displayed in the "Accommodation Scheme" panel (Fig. 11) in the form of colored rectangles.

The color of the rectangle of a certain number depends on the status (occupied, booked, under repair, unavailable). In the same way, on the "Accommodation scheme" panel, you can register actions on rooms: booking, putting up for repair, marking unavailability for booking/check-in. It is convenient to use the scheme when you need to choose a room, taking into account the location of the room in the premise, the

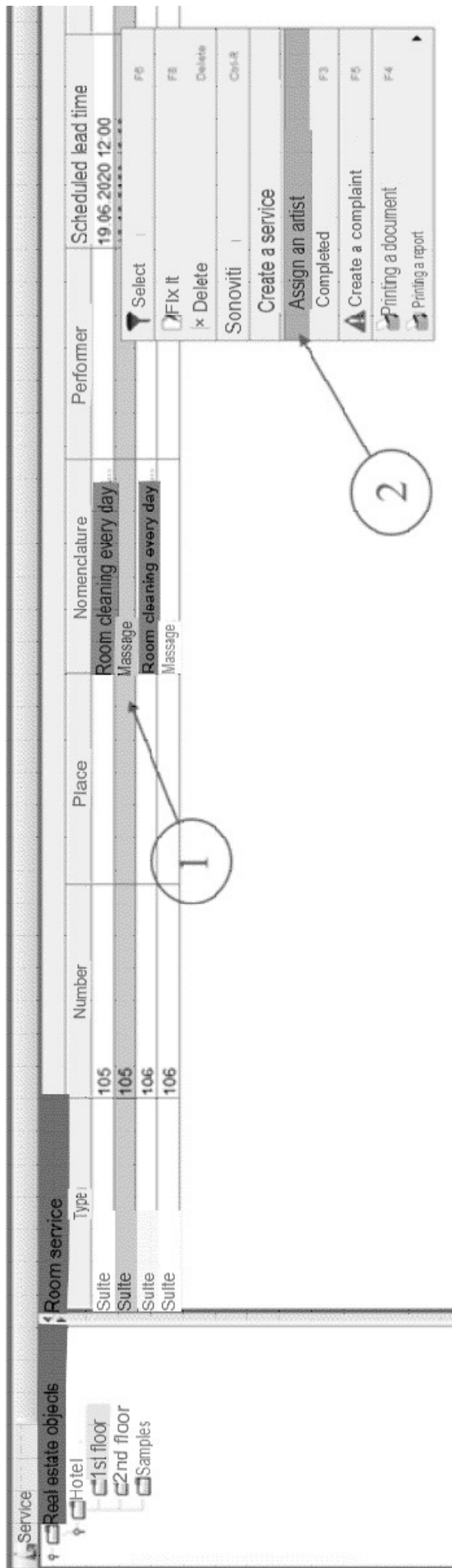


Fig. 9. Room service window [6-8]

view from the window, the distance from the stairs/elevator, the number and location of beds/rooms/bathrooms, etc.

The "Check-ins Data" section contains information about current check-ins and reservations (Fig. 12).

Current check-ins are accommodations whose start (check-in) date is less than or equal to the current date, and the end (check-out) date has not yet arrived or is the same. A current reservation is a booking for which the check-in date is the same as the current date. If the settlement data panel contains many lines, you can limit the necessary information under the selection conditions using the context menu commands for convenient searching.

The Clients section has the same directory structure as the Counterparts dictionary. On the top panel "List of clients", the form for adding/editing a client is the same as the similar form for the "Counterparties" dictionary (Fig. 13).

The bottom panel of the section contains tabs with information about the selected client: "History of visits" – a history of accommodations in hotel rooms; "Client invoices" – invoices issued to the client for services rendered (including accommodation) and goods sold (paid and unpaid); "Restaurant" – meal orders at the hotel's restaurant; "Price list" – a list of services provided to the client according to the price list; "Bonuses" – the list and amount of bonuses earned when paying for services received, and their use for future payments; "Chronicle" – a chronicle of the client's events by type.

The "Tourist groups" section is intended for the registration of groups of guests who usually arrive on the same date by advance order from a travel agency, another organization, or a private person. During the registration of the accommodation of such group members, it is necessary to fill in the "Tourist group" field with the corresponding link to the entry in the "Tourist groups" section. In the "Calendar" download, rooms occupied by guests from the same tourist group can be marked with the same specific color.

The "Complaints" section is intended for the registration of requests for tasks to be performed, requirements, complaints, and reminders to hotel employees, with references to the rooms to which these requests apply. Entries in this section can be added directly through the Back-office interface, but more often they are added automatically when complaints are submitted from other sections, including through the Front-office interface.

The "Marketing events" section is intended for the registration of events held at the hotel. These can be events initiated and hosted by the hotel itself, or events planned by third-party organizations and private indi-

| Booking | | Availability of seats | | Download calendar | | Placement scheme | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|-----------------|-----------------------|--------|-------------------|----|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|
| Download calendar for June 2020 | | Type | Number | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 1 | 2 |
| Room 201 | Standard P(202) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Standard P(204) | Suite 205 Suite | | | | | | | | | | | | | | | | | | | | | | | | | |
| 206 Status | number 207 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number half 208 | Status number | | | | | | | | | | | | | | | | | | | | | | | | | |
| 209 Suite 210 | | | | | | | | | | | | | | | | | | | | | | | | | | |

Fig. 10. Window with data about places [6–8]



Fig. 11. Accommodation scheme window [6–8]

viduals on the hotel's premises, usually with accommodation for event participants in rooms of the hotel.

The "Replenishment of rooms" section is used to replenish rooms with materials, inventory, and to restock the minibar. This section displays data on occupied rooms, whose service plans provide for the availability of materials (e.g., disposable slippers, soap, and shampoo), inventory (e.g., bed linen, bathrobes), and minibar items. Room stocks are replenished with materials based on the service provision times specified in the "System Settings" section on the "Hotel" tab, as well as according to the frequency specified in the "Service Schemes" dictionary.

The "By rooms" tab of the main table in this section contains a list of registered hotel rooms. In the bottom panel, the Materials, Minibar, and Inventory tabs display the lists of materials, minibar items, and inventory according to the selected hotel room's ser-

vice plan. The corresponding columns display the number of items, automatically calculated based on the algorithm specified in the service scheme component, as well as the actual number.

The "Materials," "Minibar," and "Inventory" tabs in the upper panel of this section display lists of materials, minibar items, and inventory for all occupied rooms in the selected hotel.

Items from the materials, minibar, and inventory lists (either individually or in bulk) can be processed, which means they can be prepared for write-off. To register the fact of writing off used minibar items and materials, you can prepare a "Discharge Invoice." To prepare the invoice, the "Warehouses" section on the "Hotel" tab in the "System settings" must specify from which warehouses the selected items are written off.

The possibility of preparing a document for "Internal transfer" (for example, to send dirty laundry

group of selection condition fields for displaying settlement data

Reservation number PST

Settlement data

| Check-in 4 | Vidod | Number | Room | Dor. | Dit. | Group | Total amount owed for Resstruvay | Date | № | Code amor... | Note |
|------------|-----------------|--------|------|------|------|-------|----------------------------------|------------|---|--------------|------|
| 11.06.2020 | Standard with U | 207 | 1+0 | 0+0 | | | 10 200.00 | 11.06.2020 | 1 | | |
| 12.06.2020 | Volynka N | 102 | 1+0 | 0+0 | | | 6 800.00 | 12.06.2020 | 3 | | |
| 15.06.2020 | Asakhtov A | 205 | 2+0 | 0+0 | | | 31 000.00 | 15.06.2020 | 2 | | |
| 15.06.2020 | Standard C | | 2+0 | 1+0 | | | 19 000.00 | 12.06.2020 | 4 | | |

booking a specific room

booking a room category

current settlements

current bookings

Reminder and notification services provided

| Date | Name | Razurok | Quantity | Amount | Payment date | PST | Переплата | Гривня |
|------------|----------|---------|----------|----------|--------------|-----|-----------|--------|
| 13.06.2020 | Standard | | 1 000 | 1 700.00 | | | | |
| 16.06.2020 | Standard | | 1 000 | 1 700.00 | | | | |
| 15.06.2020 | Стандарт | | 1 000 | 1 700.00 | | | | |
| 14.06.2020 | Стандарт | | 1 000 | 1 700.00 | | | | |
| 11.06.2020 | Standard | | 1 000 | 1 700.00 | | | | |
| 12.06.2020 | Standard | | 1 000 | 1 700.00 | | | | |

Fig. 12. "Check-ins Data" window [6-8]

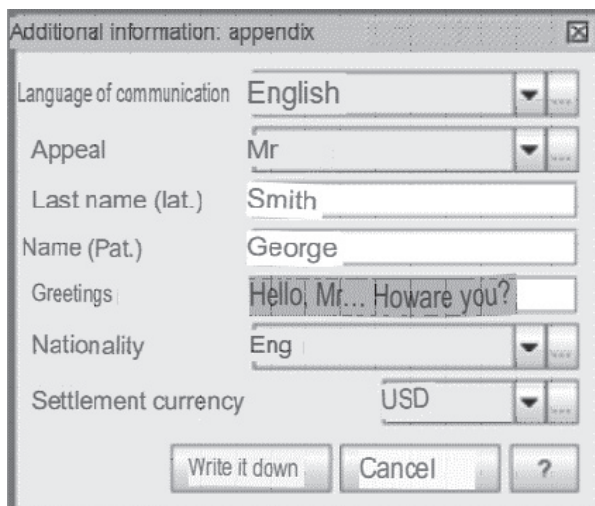


Fig. 13. Additional information window [6–8]

from a room to the laundry or a piece of furniture to a repair shop) is provided for each used inventory item in the "System".

The considered system includes a wide range of functionalities, which cover almost all aspects of hotel operations. Additionally, the system is modular and can be integrated with a large number of software modules from jSolutions, such as jSolutions "Restaurant" and others.

CONCLUSIONS

The use of the proposed jSolutions "Hotel" module will enhance the efficiency of hotel and tourism enterprises by facilitating user interaction within a unified information space. Future research should focus on the scientific substantiation of methods for a gradual transition to electronic management of most processes in the tourism business. ■

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