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| Solution manuscript |
| **TERMS OF REFERENCE** |
| the development of the program "Chat-bot for ordering medicines in city pharmacies" for the messenger "Telegram" |
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7. INTRODUCTION
   1. Program name

Сhatbot for ordering medicines in city pharmacies

* 1. Purpose and scope of the program

The program is designed to manage the content of a SQLite database with the following data:

* + 1. User orders.
    2. Pharmacies and currently available medicines.

The chat-bot provides the user with an interactive interface with buttons, input fields and an on-screen keyboard.

1. PROGRAM REQUIREMENTS
   1. General operational requirements

The chat-bot must be able to perform the following functions:

* + 1. Providing an automated process of accepting orders from the consumers;
    2. Providing users with information about the nearest pharmacies in the city;
    3. Providing information on the medicine availability;
    4. Possibility of adding products to the shopping cart;
    5. Ability to place an order by the user;
    6. Output various data to the interface.
    7. Providing an information interaction mechanism between the chat-bot and The ordering customer's information resources
    8. Providing

The ordering customer's employees with full access to information - from any personal computer or mobile device (smartphone) connected to the Internet.

* 1. Reliability requirements
     1. Requirements to ensure reliable operation of the program

The reliable (stable) functioning of the chat-bot must be ensured by the implementation by The ordering customer of a set of organizational and technical measures.

* + 1. Failure recovery time

The recovery time after a failure caused by a power failure (other external factors), a non-fatal failure (not a crash) of the operating system should not last more than 30 minutes, provided that the operating conditions for hardware and software are observed.

Recovery time after a failure caused by hardware malfunction, fatal failure (crash) of the operating system should not last more than the time required to troubleshoot hardware and reinstall software.

* + 1. Failures due to incorrect actions of system users

Program failures due to incorrect user actions when interacting with the chat-bot through a special interface are unacceptable.

1. OPERATIONAL CONDITIONS
   1. Climatic operating conditions

The climatic operating conditions must meet the requirements for technical means in terms of their operating conditions.

* 1. Employee qualification and quantity requirements

The minimum number of employees required for the program operation must be at least 1 staff unit - a system administrator, a program user - an operator, a customer of The ordering customer.

The system administrator must know the relevant subject area. The list of tasks performed by the system administrator includes:

1. the task of maintaining efficiency;
2. the tasks of installing and maintaining of the system software operability;
3. the task of creating backup copies of the database.
   1. Requirements for the composition and parameters of facilities
      1. A hardware environment should have an IBM-compatible personal computer (PC) acting as a server, with the following characteristics and software:
         1. Processor. 1 GHz \* or faster with PAE, NX and SSE2 support;
         2. RAM. 1 GB (32-bit) or 2 GB (64-bit);
         3. HDD, 40 Gigabytes, not less;
         4. Operating system Windows 8 or Windows 10;
         5. Python version 3.8 and later with aiogram library.
      2. The chat-bot works with external services (messenger) and must be hosted on servers on the Internet
   2. Information and software compatibility requirements
      1. Requirements for information structures and solution methods

The database runs under SQLite with Multi-threaded database access. It is necessary to ensure simultaneous work with the chat-bot and with the same database.

3.4.2 Integration requirements

Integration with the Customer's system via API (to be specified at the stage of forming private terms of reference).

* + - 1. Value exchange format:
* pharmacy ID;
* code;
* price;
* remainder;
* item;
* factory;
* expiry date.
  + - 1. Requirements for program operation modes:
* twenty-four-hour system availability;
* protection of information from unauthorized access;
* the possibility of a gradual increase in both productivity and functional composition of the system.
  + 1. Requirements for source codes and programming languages

A chat-bot for ordering medicines from city pharmacies is created in the Python programming language

* + 1. Program software requirements
    2. Security requirements

The system must ensure data integrity and protection against unauthorized access.

* 1. Special requirements
* the chat-bot must provide constant user interaction through the interface.
* the chat-bot must comply with the extensibility principle, i.e. be able to increase its functionality, add new data sources;
* the chat-bot must work with mobile devices;
* the chat-bot cannot be the first to start communication with the user (initial communication, spamming should be prohibited).

1. Software documentation requirements
   1. Preliminary software documentation

Software documentation:

* + 1. Terms of reference.
    2. User namual.

1. TECHNICAL AND ECONOMIC VALUES
   1. Economic benefits of development

An increase in the number of consumers of the ordering customer's services

1. STAGES AND PHASES OF DEVELOPMENT
   1. Development stages

The development should be carried out in three stages:

* 1. The terms of reference development.
  2. Detailed design.
  3. Software product development.
  4. Deployment.
  5. Development phases

The phases: development, agreement and approval of the terms of reference must be completed at the stage of the terms of reference development.

At the stage of detailed design, the following phases of work should be completed:

* 1. The chat-bot development;
  2. the software documentation development.
  3. Work content by phases

At the phase of the terms of reference development, the following must be performed:

* + 1. A task description;
    2. Determination and clarification of facility requirements;
    3. Determination of the chat-bot requirements;

Programming(coding) and debugging of the program should be done at the phase of program development.

The development of program documents in accordance with the requirements for the software documentation should be done at the phase of developing program documents.

At the program testing phase, the following types of work should be performed:

1. Development, agreement, approval and methods of testing;
2. Acceptance tests.

The preparation and transfer of the program and program documentation for launch at the ordering customer's facilities should be performed at the stage of preparation and transfer.