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ERP system for analyzing business|
ERP-система для анализа бизнес-процессов

ABSTRACT

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INTRODUCTION

Technology today plays a huge role in the various fields or areas to which the shopping center system belongs. This leads to the conduct of various studies and research. It is essential to ensure a system that is technologically appropriate, equitable, low-cost, efficient, and environmentally adaptable and consumer friendly, designed to take full advantage of ICT for maximum benefit in mall management. Here computers have a great affinity for storing data securely and easily accessing it in a short period of time. In order to exploit information and communication technology, an information system for the management of shopping centers is being built. Shopping Management System is a system designed to improve wastage and enhance safety and efficiency. It is a automated system that helps the user to find the information about the shopping center, which he previously saved in the special database in the system, in the fastest and least effort.

The system allows the user or manager to find stores, suppliers, customers, sales, purchases and items by entering complete information. The system will also provide a report that shows the list of products to sold and the quantity of products available in the center that are expired so that the system is always updated.

A shopping center management system (SCMS) is designed in this thesis and a detailed explanation of how to work in it.

In general, the shopping center management system is based on computer technology that provides service to the users, managed by administrators who provide relatively efficient job implementation in times, easy access to data, items and stores, database can be saved and can be easily reloaded.

GENERAL DESCRIPTION OF WORK

The importance of this work lies in the need to study and choose the optimal method of the synchronization algorithm of information systems to design effective integration solutions that will ensure the acceleration of interaction processes, tolerance for system faults, security of data transmission, etc.

To successfully solve problems that meet the conditions described above, a systematic approach and deep analysis of existing integration approaches is required. To ensure the evaluation of the considered algorithms, integration criteria have been introduced. They are indicators that have to be taken into account when designing an integration solution.

Developing a high-quality integration solution is an important strategic step for any organization of any size and type of business. Therefore, the significance of the study is very high, and its results to reduce integration costs and choose the optimal synchronization method under certain conditions.

The aim of the master's thesis is to review and describe the integration criteria, describe the main methods of systems synchronization, present their advantages and disadvantages, analyze and compare them. It is also necessary to consider examples of synchronization of information used in practice. To collect the data and operations of the organization in one system and create a unified database that serves the functions of all the different departments such as finance, human resources and warehouses. The ERP system combines all the separate systems from all the departments into one integrated program that manages a unified database that enables different departments to share information, communication, action and standardization of operations.

During the work on this master's thesis, the following tasks were performed:

- The concept of open source software.
- Factors Affecting ERP System.
- pros and cons of open source.
- Reasons for releasing the source code.
- Study of algorithms used in the work of the specialized program in Enterprise resource planning.

The main theses of this master's thesis were published in the collection of the 55th anniversary scientific conference of postgraduates, undergraduates and students of the educational institution "Belarusian State University of Informatics and Radio electronics.

Applicant's personal contribution

The applicant obtained the results presented in the dissertation personally. The contribution of the supervisor Gourinovith A.B. lies in the formulation of the aim and objectives of the study.

Publications

The study results have published in two articles

The structure and scope of the dissertation

The treatise consists of an introduction, a general description of the work, four chapters, a conclusion, a list of the sources used and a list of the author's publications and appendices.

The first section, provides a general description of systems synchronization, formulation of the synchronization problem and a description of the associated problems. It introduces the main factors of integration, describes the criteria for the complexity of the integration and possible options for reducing its negative impact, and takes into account the methods that ensure the efficient implementation of the integration solution. It also describes the main methods of synchronization of information systems, lists the criteria for choosing the optimal integration method, and describes the development of integration approaches.

The second section, presents literature review, review and description of integration criteria, description of the main methods of system synchronization, presentation of their advantages and disadvantages, analysis and comparison. It is also necessary to consider examples of synchronization of information used in practice. To collect the data and operations of the organization in one system and create a unified database that serves the functions of all the different departments such as finance, human resources and warehouses. An Enterprise Resource Planning (ERP) system combines all separate systems from all departments into one integrated program that manages a unified database that enables different departments to share information, communicate, work and standardize operations. While working on this master's thesis, the following tasks were carried out: the concept of open source software. Factors affecting the enterprise resource planning system. The pros and cons of open source. Reasons for editing the source code. Study the algorithms used in the work of the program specialized in enterprise resource planning.

The third section, the structure of the software unit is explained and designed, and the general characteristics of the problem are studied, as well as an explanation of the database in detail. In this part, the hardware and software requirements for the operation of the system are mentioned, and the work environment is also explained.

The fourth section, it is concerned with explaining the program in detail, with pictures and a detailed explanation of the program.

The total volume of work is 83 pages, of which the main text - 63 pages, 31 figures on 21 pages, 8 tables on 4 pages, a list of references from 60 titles on 7 pages and 2 applications on 9 pages.

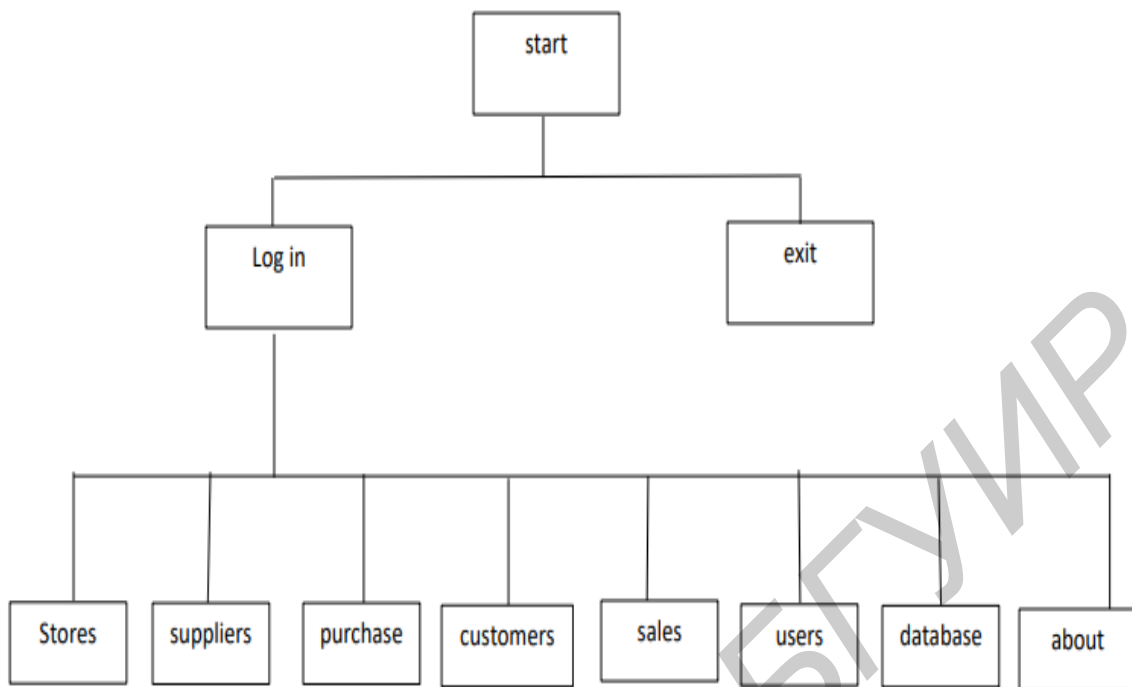
MAIN CONTENT

In the introduction, the area is defined and the main directions of the research are indicated, the relevance of the topic of the dissertation work is shown, a brief description of the issues under study is given, and the practical value of the work is indicated.

In the first chapter, the structure of the system has been studied and described briefly with a detailed explanation of each part of the system, as well as an explanation of how the database works in the system. Also, in this chapter, some companies that create enterprise resource systems have been mentioned. However, the wording of the tasks is explained in detail. There is also a conclusion to this chapter.

In the Second chapter, in this chapter, the literature for the ERP system is presented and the concept of open source software is also explained with a full explanation and what are the factors affecting the ERP system and how to solve this problem. In this chapter, the pros and cons of open source software are mentioned and what are the reasons for releasing the source code and explaining how the database works for Microsoft servers and explain the general structure of the database.

In the Third chapter, this chapter is considered the most important chapter because it explains the design of the structure and unit of the program and the general characteristics of the problem. There is also an illustration of the general structure of the program.



General System Structure

It was also explained how the system works, who controls the system,

There are two representatives of the system (administrator and user), and there are eight instances that a manager can use which are all functions in the system. There are seven functions that the user can access to all functions except for adding a new user or controlling user roles.

User access is controlled by the administrator only.

The operations are: add store, add item, add customer, add purchases, add supplier, add sales, add user, backup restore.

In this chapter, the database work is explained in detail with the contents of the database within the system, and what are the relationships between the database tables.

At the end of this chapter, the requirements for system hardware and software are mentioned in order for the program to run.

	Windows requirements
Operation system	32/64-bit windows 7 or later
processor	Celeron/Intel Pentium/AMD or Later
Memory	512 MB minimum
Internet connection	Required

Requirement' table

In the fourth chapter, in this chapter, the entire program is presented with pictures and a full explanation of how the system works and controls it and what are the contents of the program.

Software implementation and programming tools.

In this program used a language, **C# (C sharp)**, **Net Framework** the Net Framework is a technology that supports building and running the next generation of applications.

In this program used SQL Server **SQL Server**.

And at the end of this chapter there is a user manual in which the program realization is explained.

This is the main interface of the program:



Main interface of the program

CONCLUSION

The main scientific results of the dissertation.

Information technology has a great influence in the modern world through using of software and technology systems.

The shopping center management system helps to take full control of the shopping center with high ease In this Dissertation was prepared: - In the first chapter, some companies that build the ERP program were mentioned. - In the second chapter, a review of the literature was clarified and a detailed explanation of the role of open source systems in the world of technology. - In the third and

fourth chapter, it is specialized in explaining the created system with a user manual and the used algorithms implementation.

This Dissertation aim is to find the fastest and easiest way to manage shopping centers. Without pressure and with full control, with a database to save all files Information about the shopping center from suppliers, stores and customers, Purchases, sales and items.

Recommendations for the practical use of the results

1. The obtained results form a theoretical and practical basis for the development of software for computer systems for solving problems of managing shopping centers using general-purpose computers operating in real time. They are to update and upgrade the management system.

2. The developed methods and algorithms are to analyze and program the system in the management of the shopping center, as the system makes an inventory of all the items in the store, and it is possible to control the information of suppliers and customers, and to monitor and evaluate the work of the shopping center.

3. This algorithm and realized application are to use in all types of the shopping centers management system.

PUBLISHED WORKS LIST

1. Hussein, A. T. Enterprise resource planning for startups in Iraq / Hussein A. T., Gurinovich A. B. // Информационные технологии и системы 2021 (ИТС 2021) = Information Technologies and Systems 2021 (ITS 2021) : материалы международной научной конференции, Минск, 24 ноября 2021 г. / Белорусский государственный университет информатики и радиоэлектроники ; редкол.: Л. Ю. Шилин [и др.]. – Минск, 2021. – С. 176–177.
2. Hussein, A. T. Enterprise Resource Planning (ERP) / A. T. Hussein // Информационные технологии и управление : материалы 57-ой научной конференции аспирантов, магистрантов и студентов по направлению 2, Минск, 19-23 апреля 2021 года / Белорусский государственный университет информатики и радиоэлектроники ; редкол.: Л. Ю. Шилин [и др.]. – Минск, 2021. – С. 129.