

CREATION OF AUTOMATED SOFTWARE FOR ONLINE SALES IN BOOKSTORES

R.G'. Raximov 1,

S. N. Maxamatjonov 2

1Associate Professor of the Department of "Information Technologies", PhD, Namangan Institute of Engineering and Technology, rgrakhimov@gmail.com, +99890-499-99-29

2Student of Group 21AU-20, Namangan Institute of Engineering and Technology, s.maxamatjonov@gmail.com, +99890-858-40-70

Abstract

This article examines the creation of online trading platforms, including book trading, their software interface and its capabilities, the functions of existing devices in the software interface and their analysis, the software tools used in creating an electronic trading platform and their capabilities. In particular, as an example, instructions for creating and using an electronic trading platform dealing with the sale of one book are given.

Keywords: computer, web page, online trading platforms, bookselling, PHP, CSS, domain.

Introduction

Basic concepts of platform management

A website is an address on the Internet that contains some information (text, video, photos, documents, music, etc.). The Internet is a collection of these addresses.

Types of sites. Currently, there are various websites: educational, news, forums, social networks, e-commerce sites (online stores), blogs, online learning platforms, etc.

Website - why do you need it?

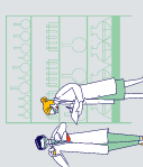
Currently, individuals, companies and organizations that provide services to customers and offer their products have their own websites. So, why is the site on the Internet necessary for them?

Providing detailed information about the company or person - through the website, detailed information about the company, services, order conditions and contacts can be provided to the public.

The site informs your customers about your services or products throughout the year, day and night.

You can provide a link to your site on business cards, during interviews, in advertising materials and catalogs, in search engines, and in various references.

In addition, it is very easy to change and update the information on the site. This avoids the previous costs of designing, printing and sending the brochure to customers.



The number of sites is increasing more and more, it is not wrong to say that "everyone is trying to have his own site". Despite this, the number of quality sites is increasing very slowly. Yes, slowly, because nowadays it is customary to create a site and then abandon it (the domain and host expire, you see, the site is closed).



Fig.1. Simple view of the website

Customer service - the website is a tool for working with existing customers. With its help, you can present various information to customers via the Internet.

Information exchange - the website serves as a means of mutual information exchange between the company's employees and managers.

If you post documents, tasks, reports and other information on the site, the company's management and other employees will be able to get the necessary information from anywhere in the world via the Internet.

Company image - the site is your or your company's image. The existence of the site indicates the development of the company and its compliance with the requirements of the times

What is the content of the site?

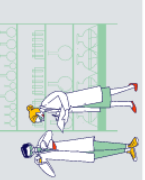
Domain name (domain) is an address, for example: web-aqila.uz, where uz is the domain zone. Server (hosting) - computers/servers connected to the Internet, where web resource files are located.

Is it possible to create a site independently? Nowadays, the concept of the secrets of opening a website is outdated. Now even a 3rd grader can create a site independently using various internet services and CMS system. It does not require any special knowledge, and creating a site is free.

However, it should not be forgotten that all sites created independently are typical template sites, i.e. landing pages, visiting pages, blogs, social networks, online stores, only have the most basic functional capabilities. If you need an exclusive and perfect website with non-standard solutions, then you should contact the experts.

Courses in 4 educational areas are organized on the online platform, these are:

- Android programming;



- Full-Stack Development;
- Frontend Development;
- Data analysis.

The number of sites is increasing more and more, it is not wrong to say that "everyone is trying to have his own site". Despite this, the number of quality sites is increasing very slowly. Yes, slowly, because nowadays it is customary to create a site and then abandon it (the domain and host expire, you see, the site is closed).



Fig.2. HTTPS - Hypertext Transfer Protocol Secure

As for the sites, I will try to give more information about them. A site is a general concept that can be divided into several types depending on its appearance and function. The article is dedicated to the types of sites.

Site views (types).

- sites introduced through the Internet;
- information resources;
- web services;

These types are considered the main ones, and in turn, they are divided into certain parts.

Sites introduced through the Internet:

- business card sites;
- corporate sites;
- Internet stores;
- promo sites.

Information resources:

- thematic sites;
- Internet portals;
- blogs;
- list of sites.

Web Services:

- search engines;
- postal services;

Business card sites are 3 or 4 pages about a person or a company with the simplest appearance. Creating such a site does not require much money. The purpose of companies having such a

site is to provide complete information about themselves, to announce their services, prices and contact information to Internet users.

Corporate sites are complete, sophisticated looking sites. The sites of this type provide complete information about the company, its products (with pictures), and prices. Users will be able to leave their opinions and place orders through the site. Various types of interactive services may also be available.

Internet stores - a site for online sales. We are developing this direction now. The site mainly contains information about products, their prices, and payments. On the main page, new products are presented with pictures.

Promo sites are sites created for a specific time. A site created for conferences, exhibitions, concerts. After these holidays, the site should be closed, but in most cases it is not, the site will continue to work with old messages. This is the result of neglect.

Thematic sites - a site for a certain small group of people, created on one topic. The design of the site should be related to this topic and it should be possible to leave a comment. If possible, there should be a forum.

The Internet portal is a large site that provides links to other sites. A site that directs Internet users. It contains a large number of links and provides various types of information (weather information, announcements, forums, games, etc.). The main thing is that it should be simple, the user should immediately understand where to enter.

A blog is an internet diary of a person, where he writes his thoughts on a topic. Students express their views on this idea.

List of sites - on such sites, a brief description of other sites will be provided. After reading this short text, if you are interested, you can go to this site. Through this, sites raise their level. The list of sites is divided into certain sections.

Search engines are sites that have their own robot searches. Such sites collect information from all sites and release it at the right time. Google, Yandex search engines are examples of these. Postal services are the most popular services on the Internet, sites that perform tasks such as opening e-mails, sending and receiving letters to other mails. Currently, such sites offer other services besides postal services (search services, file storage, etc.). For example, mail.ru, yandex.ru and others can be cited.

Internet forum - sites that carry out communication, such sites can be a separate part of a site or a separate site itself. The main task is to communicate through writing, to solve a problem. It is also useful for advertising products.

Hosting sites - such sites store various types of files (video, audio, image). Users will add these files to the site and when necessary, they will be able to get their files via the Internet. For example, img.uz.

Bulletin boards are sites that publish advertisements of various types entered by users. These sites are useful for selling something. It can also be called an electronic market. The torg.uz site can be taken as an example.

Social networks are user-paid sites. A place to create different groups with the same world view, to share interests with others, to post pictures, and to enter various smart words. In my

opinion, it is the most optimal site for self-promotion. It seems that examples of sites of this type are not necessary, just one.

Our idea is to create, develop, install, configure and operate a perfect online education management web application, and apply new principles of automatic control systems to stability issues. If this is taken into account, the relevance of the topic will be known. Designing a technical object is creating an image of an object that does not yet exist, changing it and presenting it in an accepted form. The image of an object or its components can be created in the imagination of a person as a result of a creative process or created according to some algorithms during the interaction of a person with a computer.

The way the website works is as follows:

1. **Home page.** This page will be opened to any user visiting the platform site.
2. **Management.** Management, in a broad sense, means the organization of any process that ensures the achievement of a set goal. The control panel will be in the section of higher organizations or dean's offices and rectors' offices. The teacher can manage only the group and students assigned to him.
3. **Automatic control.** The platform is said to be controlled by technical means without human intervention. The information in the database of the platform is automatically integrated into android, ios and web site. That is, if the user visits the website from a mobile version or a computer at any time, the information will be the same.



The image shows a login page with the following elements:

- Log in** (Section Header)
- Username** (Label) with a text input field containing "Enter your username"
- Password** (Label) with a text input field containing "Enter your password"
- Keep me logged in (for up to one year)**
- Log in** (Blue Button)
- [Help with logging in](#)
- [Forgot your password?](#)
- Don't have an account?** (Text) with a **Join Wikipedia** (Text) button below it.

Fig.3. Login page

4. **Create an account.** Register on the website or app by providing your name, address, phone number and email address.

5. **Choose your book.** Look at the library menus and choose the book you want to order. Add them to your cart and specify any special instructions or preferences.

6. **Wait for delivery.** Choose a payment method and provide the necessary information. After placing the order, wait for delivery. You will receive updates on the status of your order via email or text.

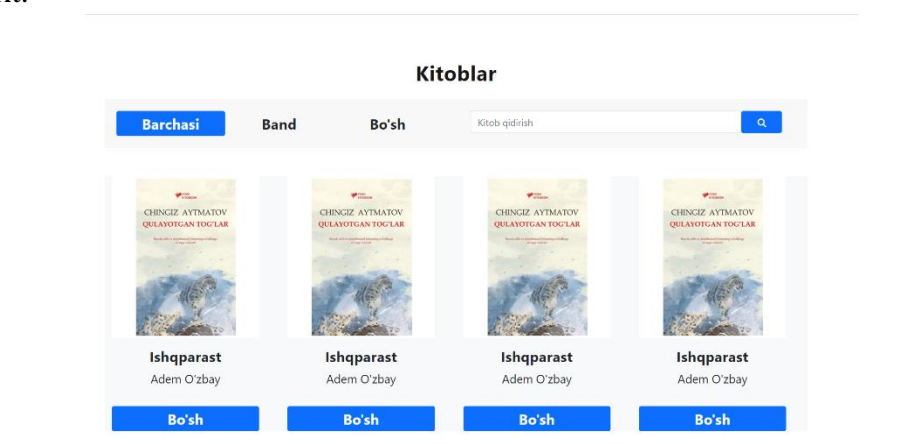


Fig.4. Books' section

7. **List of books.** Enjoy the book once it arrives. If there are any problems with your order, please contact customer support through the website or app.

8. **Evaluation of product quality.** Product quality assessment refers to the process of evaluating a product's characteristics, features, and overall performance to determine whether it meets desired standards of quality and functionality. This includes various methods such as testing, inspection and analysis to identify defects, flaws or weaknesses that may affect the product's performance or user experience. The purpose of product quality assessment is to ensure that the product meets the expectations, needs, and satisfaction of users, along with compliance with relevant regulations, standards, or guidelines. It plays a decisive role in maintaining brand reputation, customer loyalty and product market competitiveness.

9. **Working with customers.** Online library customer service refers to the support and assistance provided to customers using online book delivery services. This includes responding to customer inquiries, addressing their concerns, resolving issues with the online ordering process, and ensuring a smooth and trouble-free experience for customers. This includes guiding them through the online menu, helping them place their orders, providing updates on delivery status and addressing any complaints or feedback they may have. Effective online grocery customer service can help increase customer loyalty and increase business for online grocery delivery platforms.

Burxonov Sardor	1300	6200	12 May 2023, Jum 15:09	12 May 2023, Jum 00:00	Qarzni to'lash	Batafsil
Qahharov Jabbor	90000	5000	11 May 2023, Pay 18:57	18 May 2023, Pay 00:00	Qarzni to'lash	Batafsil

Fig.5. Trading platform

MANAGEMENT PRINCIPLES OF THE PLATFORM

In the advanced 21st century, management without the human factor is a more advanced and effective method. In particular, it will help to save time, prevent unnecessary distractions and fight against corruption. This management is done over the internet.

About the Internet

The Internet (Latin: inter - aro and net - network) is a worldwide and publicly accessible collection of computer networks that exchange information through the standard Internet Protocol (IP). The main transport protocol for this data is TCP/IP. TCP/IP is a set of interrelated protocols that plays a central role in the transmission of information on the Internet. The Internet consists of thousands of academic, government, commercial and home networks. The Internet consists of e-mail, chat, and linked pages and other World Wide Web services.

The Internet is a global computer system connecting large (global) and small (local) computer networks. In it, regardless of geographical location, time and space, some computers and small networks form a global information infrastructure in mutual cooperation. All derivative networks managed by the system of records in cooperation allow consumers to store, publish, send, receive, search and exchange information in all known options (text, sound, video, photo, graphics, music, etc.). creates

The Internet is a system of standards. He follows the philosophy of self-correction and self-management in his work. Until now, there is no single organization that manages it. The rules for its operation were developed as entry criteria.



Fig.5. Internet network

Website creation history.

In the early days, creating a website was not easy. This required a deep understanding of programming languages such as HTML, CSS and JavaScript, which were quite difficult to work with. Only a few people had the technical skills to create websites, and website design usually consisted of text and static images.



Fig.6. Website SOFTWARE TECHNOLOGIES

Online control of the training system through the web platform requires high-speed internet. To do this, a large-capacity server and the area where it is located must be provided with a constant supply of electricity.

The server memory is also required to be large, considering that many users visit the platform at the same time. Otherwise, there will be a solidification of the platform or a decrease in the connection speed.



Network

Devices and technologies that will be needed for the platform :

- Computer.
- UI / UX Builder technology
- Internet
- Domain.
- Software.
- Database
- Security system.

Software is the most basic most expensive part. Computer engineers and programmers are engaged in this work.

Software is a tool developed on a computer to perform a specific type of task.

It was this software that destroyed the term computer - "dry iron". Software is a collection of all programs used by a computer. In English, this term Software means "soft" and "ware" means "product". Software is divided into 3 groups: 1-System programs (it includes programs that perform various auxiliary tasks: Task Manager (available in Windows OS)), 2-Application (it includes programs that provide the user with data processing and processing in a specific field of use, e.g. : Microsoft Office), 3-Hardware programs (these are programs used for programming).

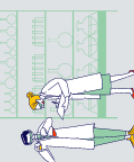
Thus, the software is divided into two parts:

- management of hardware in the form of system software and
- practical programs aimed at solving problems

In addition, there are a number of programming languages and application services to facilitate system and application development and computer maintenance.

Definition of program: A program is a repeating sequence of working constructs in the form of instructions that are understandable to the computer, that activate, control and control all the hardware to process the data in the way the user wants. is to serve. At the same time, the system software allows you to use the computer and its peripherals. System programs include operating systems that provide input and output management without requiring the user to have further technical knowledge of the principles of operation of the data processing system. Service-defined and utility programs are also related to system programs that facilitate interaction with operating systems, such as handling media during formatting and copying. Windows XP, Windows 2003 with client-server architecture Novell, various variants of UNIX and LINUX are popular operating systems. Practical programs from the economic, technical and scientific spheres are used or developed to solve professional and everyday problems. According to the number of users and the amount of usage, this application can be further divided into pieces.

- The amount of users
- Amount of use
- Application software



- Standard software

Software technologies required for our book trading platform:

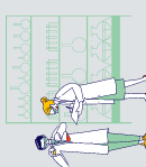
1. For the front-end part of the website:
 - **HTML – Hyper Text Markup Language;**
 - **CSS – Cascading Style Sheet;**
 - **Bootstrap – Web framework;**
 - **JavaScript – Programming language;**
 - **React JS – JavaScript framework;**
 - jQuery –Web store;
2. **For the backend part:**
 - PHP – Programming language;
 - Python – Programming language;
 - Laravel – PHP framework ;
 - Django – Python framework ;
3. For Android version:
 - **Java – Programming language;**
 - Python – Programming language;
 - Android studio;
 - Kiwi - Python framework;
 - **Kotlin – Programming language.**
4. iOS versiya uchun :
 - **Swift – Programming language;**
 - **Objective C – Programming language;**
 - **Dart – Programming language;**
 - **Flutter – Dart framework;**

Other technologies:

- **reCAPTCHA – For safety;**
- **Google Analytics – For project analysis;**
- **Google Tag Manager;**
- Postman – For testing;

The software algorithm of the platform provides:

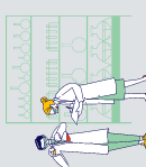
- Centralized management, i.e. being able to see the data of all HEIs by a single management center;
- Automatic account books;
- Students can find out their current, intermediate and final grades, attendance indicators through a personal cabinet;
- SMS notification;
- Parental control;



- Tutor and dean's supervision;
- Determining the rating of teachers;
- To be able to control the grades and attendance indicators of students in the group, department and dean's section;
- Uniquely designed platform and convenient management system;
- Avoiding excessive distraction and efficient use of time;
- Enjoy learning through new technology.

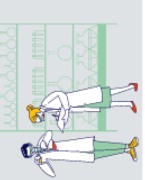
REFERENCES

1. M. Aripov, B. Begalov, U. Begimkulov, M. Mamarajabov, Information technologies. Study guide, Tashkent, 2009, p. 20-25.
2. I.V. Gordeeva, Multimedia texnologiyasi, Novosibirsk, SSGA, 2010, 104-105 b.
3. Kakharov A.A. Network planning and construction. Study guide - T.: Publisher, 2012, 224 p.
4. Musaev M.M. Computer systems and networks. Study guide. -T.: Alokachi, 2013, 394 p.
5. Tomas H. Cormen. Algorithms unlocked. - Cembridge, Massachusetts. London, 2013.
6. R.G. Rakhimov. Regarding the advantages of innovative and pedagogical approaches in the educational system. NamDU scientific newsletter. Special issue. 2020
7. R.G. Rakhimov. Clean the cotton from small impurities and establish optimal parameters. The Peerian Journal. Vol.17, pp.57-63 (2023).
8. R.G. Rakhimov. The advantages of innovative and pedagogical approaches in the education system. Scientific-technical journal of NamIET. Vol.5, Iss.3, pp.292-296. 2020
9. R.G. Rakhimov. Clean the surface of the cloth with a small amount of water. Scientific Journal of Mechanics and Technology. 2023. 2(5), Special Issue. 293-297
10. U.I. Erkaboev, G. Gulyamov, J.I. Mirzaev, R.G. Rakhimov, N.A. Sayidov, Calculation of the Fermi–Dirac Function Distribution in Two-Dimensional Semiconductor Materials at High Temperatures and Weak Magnetic Fields, Nano. 16(9), Article No 2150102 (2021)
11. G. Gulyamov, U.I. Erkaboev, R.G. Rakhimov, J.I. Mirzaev, N.A. Sayidov, Determination of the dependence of the two-dimensional combined density of states on external factors in quantum-dimensional heterostructures, Modern Physics Letters B, 37(10), Article No 2350015 (2023)
12. G. Gulyamov, U.I. Erkaboev, R.G. Rakhimov, J.I. Mirzaev, On Temperature Dependence of Longitudinal Electrical Conductivity Oscillations in Narrow-gap Electronic Semiconductors, Journal of Nano- and Electronic Physics, 12(3), Article No 03012 (2020)
13. U.I. Erkaboev, U.M. Negmatov, R.G. Rakhimov, J.I. Mirzaev, N.A. Sayidov, Influence of a quantizing magnetic field on the Fermi energy oscillations in two-dimensional



- semiconductors, *International Journal of Applied Science and Engineering*, 19(2), Article No 2021123 (2022)
14. U. Erkaboev, R. Rakhimov, J. Mirzaev, N. Sayidov, U. Negmatov, M. Abduxalimov, Calculation of oscillations in the density of energy states in heterostructural materials with quantum wells, *AIP Conference Proceedings*, 2789(1), Article No 040055 (2023)
 15. U. Erkaboev, R. Rakhimov, J. Mirzaev, N. Sayidov, U. Negmatov, A. Mashrapov, Determination of the band gap of heterostructural materials with quantum wells at strong magnetic field and high temperature, *AIP Conference Proceedings*, 2789(1), Article No 040056 (2023)
 16. U. Erkaboev, R. Rakhimov, J. Mirzaev, U. Negmatov, N. Sayidov, Influence of the two-dimensional density of states on the temperature dependence of the electrical conductivity oscillations in heterostructures with quantum wells, *International Journal of Modern Physics B*. (2023). <https://doi.org/10.1142/S0217979224501856>
 17. U.I. Erkaboev, R.G. Rakhimov, Determination of the Dependence of Transverse Electrical Conductivity and Magnetoresistance Oscillations on Temperature in Heterostructures Based on Quantum Wells, *e-Journal of Surface Science and Nanotechnology*, (2023). <https://doi.org/10.1380/ejsnt.2023-070>
 18. U.I. Erkaboev, N.A. Sayidov, R.G. Rakhimov, U.M. Negmatov, Simulation of the temperature dependence of the quantum oscillations' effects in 2D semiconductor materials, *Euroasian Journal of Semiconductors Science and Engineering*. 3(1), pp.47-55 (2021)
 19. U.I. Erkaboev, G. Gulyamov, J.I. Mirzaev, R.G. Rakhimov, Modeling on the temperature dependence of the magnetic susceptibility and electrical conductivity oscillations in narrow-gap semiconductors, *International Journal of Modern Physics B*. 34(7), Article No 2050052 (2020)
 20. G. Gulyamov, U.I. Erkaboev, N.A. Sayidov, R.G. Rakhimov, The influence of temperature on magnetic quantum effects in semiconductor structures, *Journal of Applied Science and Engineering*, 23(3), pp.453-460 (2020)
 21. R. Rakhimov, U. Erkaboev, Modeling of Shubnikov-de Haas oscillations in narrow band gap semiconductors under the effect of temperature and microwave field, *Scientific and Technical Journal of Namangan Institute of Engineering and Technology*, 2(11), pp.27-35 (2020)
 22. U.I. Erkaboev, R.G. Rakhimov, N.A. Sayidov, Mathematical modeling determination coefficient of magneto-optical absorption in semiconductors in presence of external pressure and temperature, *Modern Physics Letters B*, 35(17), Article No 2150293 (2021)
 23. U.I. Erkaboev, R.G. Rakhimov, N.Y. Azimova, Determination of oscillations of the density of energy states in nanoscale semiconductor materials at different temperatures and quantizing magnetic fields, *Global Scientific Review*, 12, pp.33-49 (2023)
 24. U.I. Erkaboev, R.G. Rakhimov, J.I. Mirzaev, N.A. Sayidov, The Influence of External Factors on Quantum Magnetic Effects in Electronic Semiconductor Structures,

- International Journal of Innovative Technology and Exploring Engineering, 9(5), pp.1557-1563 (2021)
25. U.I. Erkaboev, R.G. Rakhimov, Determination of the dependence of the oscillation of transverse electrical conductivity and magnetoresistance on temperature in heterostructures based on quantum wells, East European Journal of Physics, 3, pp.133-145 (2023)
 26. U.I. Erkaboev, R.G. Rakhimov, Simulation of temperature dependence of oscillations of longitudinal magnetoresistance in nanoelectronic semiconductor materials, e-Prime - Advances in Electrical Engineering, Electronics and Energy, 3, Article No 100236 (2023)
 27. U.I. Erkaboev, G. Gulyamov, R.G. Rakhimov, A new method for determining the bandgap in semiconductors in presence of external action taking into account lattice vibrations, Indian Journal of Physics, 96(8), pp.2359-2368 (2022)
 28. U.I. Erkaboev, R.G. Rakhimov, N.A. Sayidov, J.I. Mirzaev, Modeling the temperature dependence of the density oscillation of energy states in two-dimensional electronic gases under the impact of a longitudinal and transversal quantum magnetic fields, Indian Journal of Physics, 97(4), pp.1061–1070 (2023)
 29. U.I. Erkaboev, R.G. Rakhimov, J.I. Mirzaev, U.M. Negmatov, N.A. Sayidov, Influence of a magnetic field and temperature on the oscillations of the combined density of states in two-dimensional semiconductor materials, Indian Journal of Physics, 98(1), pp.189-197 (2024)
 30. U.I. Erkaboev, N.A. Sayidov, U.M. Negmatov, J.I. Mirzaev, R.G. Rakhimov, Influence temperature and strong magnetic field on oscillations of density of energy states in heterostructures with quantum wells HgCdTe/CdHgTe, E3S Web of Conferences, 401, Article No 01090 (2023)
 31. U.I. Erkaboev, N.A. Sayidov, U.M. Negmatov, R.G. Rakhimov, J.I. Mirzaev, Temperature dependence of width band gap in $\text{In}_x\text{Ga}_{1-x}\text{As}$ quantum well in presence of transverse strong magnetic field, E3S Web of Conferences, 401, Article No 04042 (2023)
 32. U.I. Erkaboev, R.G. Rakhimov, U.M. Negmatov, N.A. Sayidov, J.I. Mirzaev, Influence of a strong magnetic field on the temperature dependence of the two-dimensional combined density of states in InGaN/GaN quantum well heterostructures, Romanian Journal of Physics, 68, Article No 614 (2023)
 33. R.G. Rakhimov, Determination magnetic quantum effects in semiconductors at different temperatures, VII International Scientific and Practical Conference “Science and Education: problems and innovations”, February 12, pp.12-15 (2021)
 34. G. Gulyamov, U.I. Erkaboev, R.G. Rakhimov, N.S. Sayidov, J.I. Mirzaev, Influence of a strong magnetic field on Fermi energy oscillations in two-dimensional semiconductor materials, Scientific Bull., Phys. and Mathematical Res. 3(1), Article No 2 (2021)



35. U.I. Erkaboev, R.G. Rakhimov, N.A. Sayidov, Influence of pressure on Landau levels of electrons in the conductivity zone with the parabolic dispersion law, *Euroasian Journal of Semiconductors Science and Engineering*, 2(1), pp.27-33 (2020)
36. R. Rakhimov, U. Erkaboev, Modeling the influence of temperature on electron Landau levels in semiconductors, *Scientific and Technical Journal of Namangan Institute of Engineering and Technology*, 2(12), pp. 36-42 (2020)
37. R.G. Rakhimov, Clean the cotton from small impurities and establish optimal parameters, *The Peerian Journal*, 17, pp.57–63 (2023)
38. U.I. Erkaboev, R.G. Rakhimov, Zh.I. Mirzaev, N.A. Sayidov, U.M. Negmatov. Calculation of oscillations of the density of energy states in heteronanostructured materials in the presence of a longitudinal and transverse strong magnetic field. *International conferences “Scientific foundations of the use of new level information technologies and modern problems of automation”*, pp. 341-344 (2022)
39. U.I. Erkaboev, R.G. Rakhimov, Zh.I. Mirzaev, N.A. Sayidov, U.M. Negmatov. Calculations of the temperature dependence of the energy spectrum of electrons and holes in the allowed zone of a quantum well under the influence of a transverse quantizing magnetic field. *International conferences “Scientific foundations of the use of new level information technologies and modern problems of automation”*, pp. 344-347 (2022)
40. U.I. Erkaboev, N.A. Sayidov, J.I. Mirzaev, R.G. Rakhimov, Determination of the temperature dependence of the Fermi energy oscillations in nanostructured semiconductor materials in the presence of a quantizing magnetic field, *Euroasian Journal of Semiconductors Science and Engineering*, 3(2), pp.47-52 (2021)
41. U.I. Erkaboev, U.M. Negmatov, J.I. Mirzaev, N.A. Sayidov, R.G. Rakhimov, Modeling the Temperature Dependence of the Density Oscillation of Energy States in Two-dimensional Electronic Gases Under the Impact of a Longitudinal and Transversal Quantum Magnetic Field, *Acta Scientific Applied Physics*, 2(3), pp.12-21 (2022)
42. R.G. Rakhimov, U.I. Erkaboev. Modeling of Shubnikov-de Haas oscillations in narrow-gap semiconductors under the influence of temperature and microwave field. *Scientific bulletin of Namangan State University*. Volume 4, Number 4, pp.242-246.
43. U.I. Erkaboev, R.G. Rakhimov. Oscillations of transverse magnetoresistance in the conduction band of quantum wells at different temperatures and magnetic fields. *Journal of Computational Electronics*. 2024. pp. 1-12.

