Принцип роботи клієнт-серверної архітектури зображено на рис. 1.

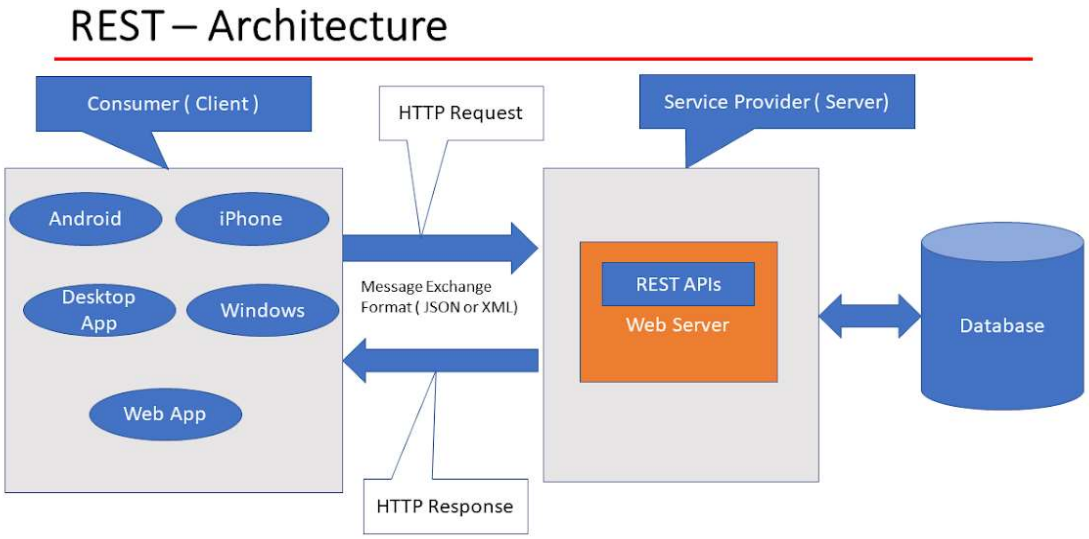

Рис. 1 - Принцип роботи клієнт-серверної архітектури

Висновок. Розроблена CRM система для управління бізнесом у соціальній мережі Instagram є потужним інструментом для автоматизації бізнес-процесів. Її нативний Android додаток та серверна частина, побудована на Spring Framework, забезпечують надійність, зручність використання та безпеку даних.

Список використаних літературних джерел

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[3] Instagram - https://instagram.com

[4] Stackoverflow - https://stackoverflow.com

[5] Java - https://www.oracle.com/java/technologies/downloads/

[6] Kotlin - https://kotlinlang.org/

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Development of a mobile application for learning foreign languages using unity

Abstract - This article describes the development of a multiplayer application for learning foreign languages using Unity and Asp.Net. The design includes the server, the user application and the communication between them, using RestAPI requests and web-sockets. The program also provides for the introduction of the collection of training statistics to improve its quality and a rating system for competition between players.

Keywords – learning, games, multiplayer, server, databases, C#, .Net Framework, Unity, Asp.Net, Entity Framework, Unity Ui Toolkit.

Introduction. Nowadays, mobile applications for learning foreign languages are widespread in the world. They are useful for people who run their own business, travel or simply engage in self-development. Modern applications are aimed at teaching people who have an urgent need for this, because they can provide a large amount of information in a short time. But this approach also has its drawbacks, as it is not tuned to interest users who are learning for the future and don’t have an urgent need or motivation. For such users, you can dilute the presentation of the material with games and competitions with friends, which will allow you to get their attention for a longer period of time. In this project, the most modern capabilities of the Unity game engine and Asp.Net framework were used.

Application for learning foreign languages main theses.

The main idea of the project is to keep users' attention on learning foreign languages with the help of online games.

The principle of building the program is Client-Server. This method is much more reliable for data than Host-Client and reduces the demands on user devices.

The user communicates with the server through the API in the process of reading data and through TCP connection during the game.

The System.Net.WebSockets library is used to create a TCP connection. Collecting statistics from games allows you to use the data to improve learning.

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Authorization through Firebase ensures the protection of the user's personal information.

Entity Framework provides convenient access to databases. Unity makes it easy to port a project to any platform. Ui Toolkit made it possible to create a dynamic interface using a cascading style sheet.

Conclusion. A multiplayer application for learning foreign languages has been created, which will fit in any smartphone and will allow you to spend your free time on useful and interesting games. This project has the potential to completely change the approach to creating applications for learning foreign languages, as it is aimed at the long-term perspective of learning. When creating the project, the latest tools of the C# language were used, such as the Asp.Net framework for creating the server and Unity for the user part. Data transfer is carried out using json files. Entity Framework was used to work with databases.

References

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Програмно-алгоритмічне забезпечення аналізатора спектра частот для радіо розвідки

Анотація – робота присвячена створенню програмного аналізатора спектра для дослідження сигналів у смузі радіочастот. Мета створення такого аналі-

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