**Practical Work 2**

**The purpose of the work** is to compile a list of literature on the research (project) topic in accordance with the requirements, to describe the literature review, referring to the sources.

**Development of mobile application for university process automation**

There are more than two billion smartphone and tablet users worldwide. According to latest trends, it is being expected that anything and everything will be available as a mobile application. [1, 2] This means that all processes should be automated and digitized, the interactions and processes between students and the dean's office is no exception.

The major platforms on which mobile apps run today are Android, iOS and Windows Phone [2, 2] Mobile applications can be broadly classified into three categories namely native, mobile-web and Hybrid applications [3, 3]. There many SDK's and frameworks available to developers for the development of mobile applications that can work on several mobile operating systems [3, 8]. But we have found native mobile development more reliable and the application should be developed for each platform separately to ensure stability and high performance. Actually, both applications will have the same functions, such as: data filters for the schedule, chat with the dean's office and advisers, viewing and downloading the transcript.

There are many reasons why filtering data – especially in large databases – is a common practice. The actual of filtering data can be done on almost an attribute or any attribute value found in the database [4, 231] and University schedule is one of the example, where user needs to be provided with features like: finding group schedule, view all lesson of appropriate teacher or check availability of room.

Also, in order to improve the interaction between the student and the dean's office, we have decided to develop our own custom chat. Chat is going to need a presence system that is a user-centric rather than connection-centric. Any user, whether a customer-service representative or an end user, will become unavailable once all WebSocket connections initiated by them are closed or become inactivate for more than 10 seconds. [5, 289] WebSocket gives you the ability to use an upgraded HTTP request, and send data in a message-based way, similar to UDP and with all the reliability of TCP. This means a single connection, and the ability to send data back and forth between client and server with negligible penalty in resource utilization. [6, 7]

Another important feature we are going to made up is generation of transcript for students. Over time there have been many different file formats for representing graphics, such as: PNG, PDF, JPEG, etc. If any electronic document format were to herald the onset of the paperless world, PDF would be it. PDF (Portable Document Format) is a file format for creating multi-page documents with graphics, images, and text that are intended to be viewed on wide variety of platforms. [7, 299] It captures the elements of a document as an image, but can be parsed as text, that is why it a best practices to send data as pdf. [8, 466]

As for architecture of backend side, we have decided to follow Test Driven Development using Microservices. Service is designed to be long lived to serve clients 24/7 for business requests. [9, 862] A microservice is an independently deployable component of bounded scope that sup‐ ports interoperability through message-based communication. Microservice architec‐ ture is a style of engineering highly automated, evolvable software systems made up of capability-aligned microservices. [10, 6]

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