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OPTIMIZATION OF THE COURSE “MOBILE APPLICATIONS ARCHITECTURE AND DEVELOPMENT” FOR REMOTE LEARNING

Introduction

In the modern world, there are a huge number of mobile applications that allow you to communicate with friends, go online, watch the weather, etc. Many technologies are used to create mobile applications, which are updated and sometimes new ones appear. But one of the main problems is that inexperienced developers at the initial stages of development do not know the main stages of creating a mobile application, which sometimes leads to a loss of time and money.

To solve this problem, the course “Mobile applications Architecture and Development” has been developed, when studying it, it is possible not only to study new technologies, but also to restore previously studied material in memory. The general structure of training is shown in Figure 1.

When taking the course, you must learn the distinctive features of the mobile platforms Android, iOS and Windows Phone. Understand the principles and methods of building a graphical interface for mobile

applications. It is necessary to study in detail the mechanisms of interaction of user windows and methods of transferring data, as well as storing data using a given operating system. Be able to create and manage local databases, and use adapters to display data. Particular attention should be paid to the principles of secure access and data exchange between applications, as well as to pay attention to debugging, testing and reviewing a mobile application. The course plan and its detailed study (see Schema 1) for distance learning were created and deployed on the university portal Moodle, which in its turn was created in bounds of the learning process modernization inspired by the international project of EU Program ERASMUS+ CBHE, Enhancement of Lifelong Learning in Belarus/BELL(586278 -EPP-1-2017-1-LV-EPPKA2-CBHE-JP).

Course methodology

The course of studying “Mobile applications Architecture and Development” can be divided into 3 stages. At the first stage, the basic knowledge acquired at the first stage of higher education is repeated and consolidated, and knowledge in the field of mobile application development is improved. The main form of knowledge is interactive lecture, which discuss the information provided between the lecturer and students in the form of a dialogue. At this stage of training, online lectures and webinars are also provided. At the second stage of training, an individual technical task is compiled and issued, the result of which will be a ready-made mobile application on the topic of the dissertation. In the process of project implementation, practical classes (individual and team work), group and individual consultations, meetings are held and intermediate control is performed as a code review in a distributed system by Git versions. At the final (third) stage, a full code review is conducted by the course supervisor and/or the supervisor of the dissertation. After a positive feedback on the work done (completed project), the student is allowed to credit, which takes place in the audience and includes: project protection and test in the Moodle system [1].

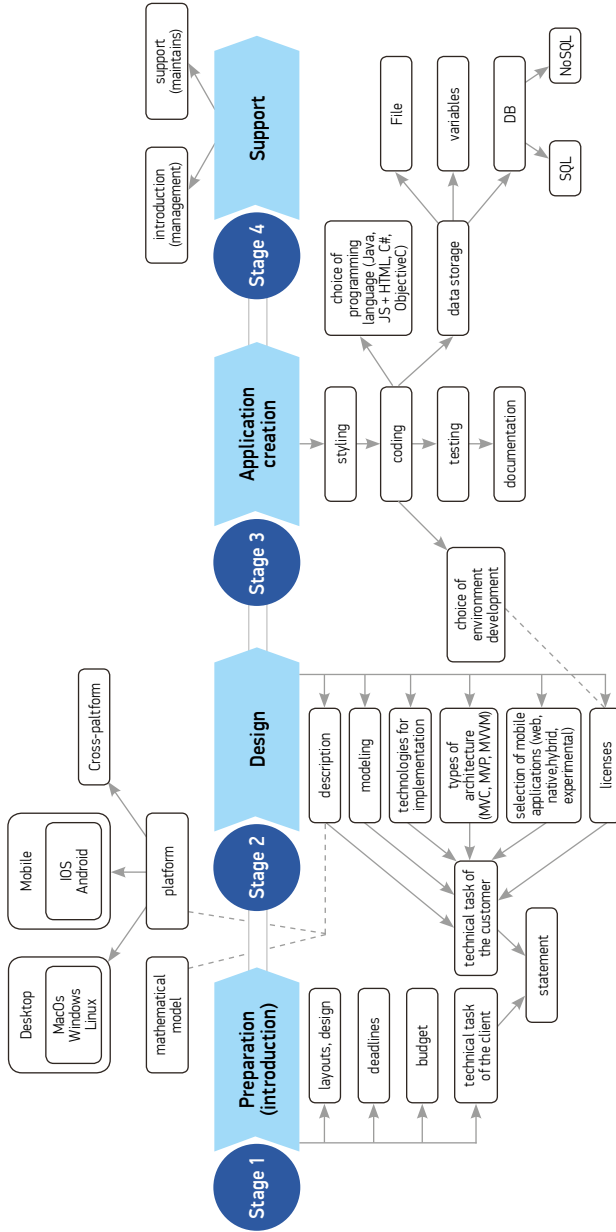

















Figure 1 — The structure of the course “Mobile applications Architecture and Development”

Schema 1 — *General structure of the course “Mobile applications Architecture and Development” in Moodle*

	Title
	Syllabus
	Structure course
	Lecture 1. Introduction. Software design
	Lecture 2. Mobile software development
	Lecture 3. Principles of organization of access
	Lecture 4. Methods of data storage in Android OS
	Lecture 5. Notification and signaling mechanisms
	Lecture 6. Additional features for creating applications
	Laboratory work № 1
	Laboratory work № 2
	Laboratory work № 3
	Laboratory work № 4
	Laboratory work № 5
	Project protection
	Course Final Test

Assessment Strategies

To assimilate the material and understand how much it has been studied, it is necessary to control knowledge, the formation strategy of which will be carried out using Bloom’s taxonomy and assessment criteria [2, 3]. To form the final assessment, the following scoring system has been developed and proposed for implementation to control knowledge:

- a survey at lectures — a demonstration of knowledge with the ability to explain them in several ways with illustrative examples (20%)

- Project implementation within the framework of laboratory work (65%):
 - 2.1 Development of application architecture (10%);
 - 2.2 Application implementation: coding (15%), debugging (5%), testing (5%) — this is an illustration of the knowledge gained in the process of studying a theoretical lecture course;
 - 2.3 Using a distributed version control system Git, for cross-reviewing (10%) — this is a check of the project on schedule;
- 3. Project protection (20%) and Credit: Test in system moodle.bstu.by (15%).

Conclusion

The training course “Mobile applications Architecture and Development” is designed to acquire skills in the development, testing and maintenance of mobile software. Knowledge of the course will allow:

- improve individual professional engineering level;
- to master the skills of using modern information technologies to solve research and innovative problems in the field of mobile technologies;
- create and solve tasks on Android or iOS platforms that can be applied and implemented in “real projects” on professional topics and business.

LIST OF REFERENCES

1. *Course of the “Mobile applications Architecture and Development”*. — Retrieved from: <https://moodle.bstu.by/course/view.php?id=97>.
2. *Bloom's Taxonomy*. — Retrieved from: <https://cft.vanderbilt.edu/guides-subpages/blooms-taxonomy>.
3. *Generic Criteria for Assessment for NQF Level*. — Retrieved from: https://as.exeter.ac.uk/media/levell/academicsserviceswebsite-/tqa/learningandteachingsupport/LTS_Generic_Criteria_for_Assessment_for_NQF_Level_7.pdf.