MOBILE COMPUTING

Degree in Engineering and Development of Digital Games

Code: 10119

Main Scientific Area: Computer Architecture, Distributed Systems and Cybersecurity

Lecturer: Lourenço Miguel Araújo Gomes

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 60h Total Workload: 180h

ECTS: 9,0

Objectives

This curricular unit aims to provide to students theoretical and practical knowledge in programming mobile application.

Learning Outcomes

The students that complete with success this curricular unit should be able to:

Identify the various types of mobile platforms, such as their developer's interfaces, SDKs and emulators;

Understand and implement Kotlin applications; Understand the concept of multitask systems;

Develop mobile applications;

Course Contents

Object Oriented programming

Fundamentals concepts of mobile computing devices SDKs and Frameworks
Mobile apps development

Understanding the Application Lifecycle
Understanding the software arquitecture Model-view-controller(MVC);
Understanding the software arquitectureModel-view-view-model (MVVM);

Games with SurfaceViews

Game Engine, Tick, Render and EventHandler
Using Sprites and Layers

Collision detection

Data storage and database storage

Web communication

Operating Systems Schedulers

Recommended Bibliography

http://kotlinlang.org

https://developer.android.com

Pro Android With Kotlin, Peter Spath, ISBN: 9781484238202, 2018, Apress

Introdução ao Desenvolvimento de Jogos em Android, Ricardo Queirós e Alberto Simões, ISBN: 978-972-722-807-2, 2015, FCA.

Learning and Teaching Methods

One of the goals of this course is to take advantage of all the concepts acquired in object-oriented programming with C# from previous years and learn how to apply the same concepts in mobile computing. Another goal is to identify what types of mobile devices that currently exist in the market and characterize them in terms of operating system and programming platforms, so students can choose the best development tools for each OS.

Two other main goals of this course are to learn how to make applications for mobile devices for Android. One of the main focus is to learn how to rethink applications on mobile devices when implementing navigation, screen sizes, and understand the life cycle since the application is started until it is finalized and realize the structure of the games. Finally should learn how to save with data processing and memory since these devices are more limited in terms of processor, memory and energy resources compared to desktop computers.

Assessment Methods

The final assessment includes an evaluation component done in class and another component done extra-class.

The component done in class comprises practical tests. The extraordinary evaluation is composed of a practical examination and corresponds only to the component of assessment in the class.
The practical project evaluation includes a written report, an implementation of the solution, and an oral defense.

The final evaluation follows the following equation: FA = 50%*CT + 50%*CP

where
CT: results of practical tests CP: results of practical project having: CT>=9,5, CP>=9,5