Project Acronym: MEDIS

Project Title: A Methodology for the Formation of Highly Qualified Engineers at Masters Level in the Design and Development of Advanced Industrial Informatics Systems

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Context

WP 2	Design of the AIISM-PBL methodology
WPLeader	Universitat Politècnica deValència (UPV)
Task 2.3	Development of the AIISM teaching resources - Mobile and Cloud Computing Platforms
Task Leader	MDU
Dependencies	UPV, MDU, TUSofia, USTUTT, UP

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History

Version	Date	Author	Comments
0.1	01/03/2014	Radu Dobrin and Sasikumar Punnekkat	Initial draft
1.0	19/09/2014		Final version

Table of Contents

1 Executive summary

WP 2.3 details the learning materials of the Advanced Industrial Informatics Specialization Modules (AIISM) related to the Mobile and Cloud Computing Platforms.

The contents of this package follows the guidelines presented in the MDU's documentation of the WP 1 (Mobile and Cloud Computing Platforms)

- The PBL methodology was presented in WP 1.1
- The list of the module's chapters and the temporal scheduling in WP 1.2
- The required human and material resources in WP 1.3
- The evaluation in WP 1.4

The rest of the document is organized as follows: Section 2 introduces the course and the outlines. Section 3 details the lectures, divided in subsections for each chapter. Section 4 describes the labs. There is a special subsection for each chapter. Section 5 gives an overview to the seminars. Each seminar has its own subsection. Finally section 7 lists the bibliography and the references.

2 Introduction

Chapter 3 covers inter-device communication for Android and iOS platforms within 2 lectures. The main focus of the lectures is on Bluetooth and Wi-Fi connectivities. The chapter is organized into two lectures as described in the following section.

3 Lectures

This chapter includes Lecture 5 and Lecture 6 covering inter-device communication in Android and iOS platforms. Lecture 5 (*lecture5_InterDeviceComm1.pptx*) gives an overview of Android connectivity using Bluetooth, Near Field Communication (NFC) and Wi-Fi Peer-to-Peer (Wi-Fi P2P). Moreover, it presents Bluetooth communication major tasks and the steps towards developing a Wi-Fi P2P application.

Lecture 6 (*lecture6_InterDeviceComm2.pptx*) starts with the networking overview in iOS followed by multipeer connectivity. Multipeer connectivity for iOS platform includes features, use cases and essentials phases for communication between devices.

At the end of the lectures, students will be able
- To understand inter-device communication functionality for iOS and Android platforms,
- To develop simple apps in Android with inter-device communication functionality using the dedicated IDE or a cross platform development framework.

4 Lab

This chapter also includes 2 labs. In Lab 5, students are supposed to create a broadcast receiver for Wi-Fi P2P intents in Android platform.

Further in Lab 6, their task is to create a Wi-Fi P2P application in Android. The useful material will be provided within each lab.

5 Seminar

This chapter has two seminars. In Seminar 5, students will discuss the steps of creating P2P connections with Wi-Fi, e.g., setting up permissions and broadcast receiver, peer discovery, etc.

In Seminar 6, they should compare network service discovery vs. Service discovery using Wi-Fi P2P connection and discuss how they work and in what sense they differ from each other.

6 Miniproject

Chapter 3 includes 2 miniprojects. In Miniproject 5, students should compare wireless connectivity in Android and iOS based on Lecture "5" and Lecture "6".

In Miniproject 6, they should make a short report of Session Initiation Protocol (SIP) connectivity in Android and discuss how it works, the procedure to make and receive calls, the approach requirements and limitations.

7 References

[1] Android: http://developer.android.com/

[2] Android connectivity: http://developer.android.com/guide/topics/connectivity/index.html

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https://www.eecs.berkeley.edu/~daw/papers/intents-mobisys11.pdf

[4] Android Connectivity Training:

http://developer.android.com/training/building-connectivity.html

[5] iOS Connectivity:

https://developer.apple.com/library/ios/documentation/MultipeerConnectivity/Reference/MultipeerConnectivityFramework/

[6] iOS Connectivity:

http://www.appcoda.com/intro-multipeer-connectivity-framework-ios-programming/

[7] Apple developer forums:

https://idmsa.apple.com/IDMSWebAuth/login?appIdKey=4a75046cda87eab6386a9eae8caabb9824e328b9abc988119b39296495ec184c&path=/login.jspa