DSSMV Course

Desenvolvimento de Software e Sistemas Móveis (DSSMV)

Licenciatura em Engenharia de Telecomunicações e Informática

LETI/ISEP

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Disclaimer

Material and Slides

Some of the material/slides are adapted from various:

- Presentations found on the internet;
- Books;
- Web sites;
- ...

Outline

Overview

Course

- Developing Software and Mobile Systems (DSSMV)
- Year: 2^{nd}
- Semester: 1^{st}
- Weeks: 15
- Classes: hours per week
  - T: 1
  - PL: 2
- European Credit Transfer and Accumulation System (ECTS) [1]: 5
  - Contact hours: **45**
    - T: 15
    - PL: 30
  - Autonomous working hours : (125 - 45 =) **80** to (140 - 45 =) **95**
    - 80 / 15 = **5.33 hours per week**.
    - 95 / 15 = **6.33 hours per week**.

[1] 1 ECTS represents 25 to 28 working hours. 5 ECTS correspond to a range between 125 and 140 working hours.

Overview

- This course focuses on mobile system topics.
- Mobile systems, like smartphones, tablets, and others, are nowadays an essential part of our lives, executing a multitude of applications, connecting us to social networks, online games, or internet calls.
  - These systems have specific characteristics, such as battery powered, many communication interfaces, and small size.
- This course aims to provide students with **skills for developing applications for mobile devices**.
- It is expected that students have acquired a good knowledge of topics taught in the courses:
  - Algoritmia e Estrutura de Dados (ALGESTD);
  - Fundamentos de Desenvolvimento de Software (FSOFT).

Goals & Topic

- Goals
  - At the end of the course, the students should be able to:
    - To **explain** the generic structure of mobile operating systems
    - **Appraise** mobile operating systems.
    - **Evaluate** different approaches for developing applications for mobile systems
    - **Develop** mobile system applications
- Topics
  - The subject delivers the following main topics:
    - **Fundamental concepts** on mobile systems and underlying operating systems;
    - **Native developing** software for mobile devices;
    - **Cross-platform developing** software for mobile devices.

Teaching/learning methodology

- Lectures (T)
  - Expose students to various concepts in Mobile Computing.
- Labs (PL)
  - The learning is very **hands on** and classes are designed to allow students to practise and develop a wide range of discipline-based techniques and personal skills.
    - Students will solve a set of simple exercises.
    - Students will be encouraged to solve more complex exercises.

Public holidays

- T and PL classes are neither replaced nor recovered.

Teaching Material (I)

- Support material available at the subject's Moodle page.
  - T pdf files are used for lectures.
  - PL pdf files are used for lab classes.
  - **TP pdf files are for students' self study**.
  - **zip files are for students' self study**.
- Books:
  - "Big Java: Early Objects", 6th Edition by Cay S. Horstmann, 2015;
  - "Java ™:The Complete Reference", 10th Edition,Herbert Schildt, 2017;
  - "Mastering Android Application Development ", Antonio Pachón Ruiz, 2015
  - "React Native for Mobile Development: Harness the Power of React Native to Create Stunning iOS and Android Applications" 2^{nd} Edition", Akshat Paul, Abhishek Nalwaya, 2019

Teaching Material (II)

- Online resources:
  - `https://docs.oracle.com/javase/tutorial/java/nutsandbolts/index.html`;
  - `https://developer.android.com/index.html`;
  - `https://reactnative.dev/`
- Tools:
  - IntelliJ IDEA

Assessment

Moments

- Assessment will have two **Moments** plus **Exam**:
  - Moment 1 (M1): Android application developing (`ProjectDroid`);
  - Moment 2 (M2): React Native application developing (`ProjectReact`).
  - Exam (E).
- These Moments (M1 and M2) and E are:
  - **Mandatory for all students, regardless of their status**.
  - M1, M2, and E are graded in the interval [0.00,20.00];

Grade

- **The DSSMV final grade (CF) is determined as follows**:
  - CF = M1 x 0.30 + M2 x 0.30 + E x 0.40.
    - CF is graded in the interval [0,20]
- **To grant access to the E**:
  - (M1 * 0,30 + M2 * 0,30) / 0,60 >= 8.00 (8.00/20,00).
- **To get E grade**
  - The minimum E grade is 8.00/20.00 (8 out of 20).

Planning

Week mapping [2]

Week	Dates	Week	Dates
1	15/09 – 21/09/2025	9	10/11 – 16/11/2025
2	22/09 – 28/09/2025	10	17/11 – 23/11/2025
3	29/09 – 05/10/2025	11	24/11 – 30/11/2025
4	06/10 – 12/10/2025	12	01/12 – 07/12/2025
5	13/10 – 19/10/2025	13	08/12 – 14/12/2025
6	20/10 – 26/10/2025	14	15/12 – 21/12/2025
7	27/10 – 02/11/2025	15	05/01 – 11/01/2026
8	03/11 – 09/11/2025	16	12/01 – 18/01/2026

- Public holidays:
  - 01/12/2025 (Restauração da Independência), Monday;
  - 08/12/2025 (Dia da Imaculada Conceição), Monday;
- Christmas holiday: 21/12/2025 – 04/01/2026

[2] We consider the first week day is on Monday and the last week day is on Sunday.

Planning [3]

Week nr	Milestone
1	
2	
3	Start `ProjectDroid` and Teamwork composition for `ProjectDroid`
4	
5	
6	
7	`ProjectDroid` checkpoint
8	`ProjectDroid` checkpoint
9	End `ProjectDroid`
10	`ProjectDroid` presentation
11	Start `ProjectReact` and Teamwork composition for `ProjectReact`
12	
13	`ProjectReact` checkpoint
14	`ProjectReact` checkpoint
15	End `ProjectReact`
16	`ProjectReact` presentation

[3] Here, we consider the first week day is on **Monday** and the last week day is on **Sunday**. In this schedule, all deadlines are at **23:59** of the **Sunday** of the respective week. Therefore, whenever we mention **Week *x***, the deadline is on **Sunday** at **23:59**.

Deadline Fails

Pay Attention

For each day of delay there is a 5% penalty.

- **Repeating, hoping you will memorise**

Pay Attention

For each day of delay there is a 5% penalty.

- **Once again.**

Pay Attention

For each day of delay there is a 5% penalty.

Instructors

Identification

- Paulo Baltarejo Sousa.
  - E-Mail: pbs@isep.ipp.pt.
  - Office: B114
- Carlos Filipe Freitas.
  - E-Mail: caf@isep.ipp.pt.
  - Office: B117

Support (I)

- There is no specific schedule for students support.
  - Whenever students need support, must send an email to any instructor (preferably to PL instructor).

Email rule

- **Subject/Assunto**: **DSSMV**
  - If you do not follow, the email is ignored (i.e., it is not ”received”)

Support (II)

- For installing software
  - Help is provided until week 2.
  - Recall, **until week 2.**

  - Do you not understand?
  - Recall, **no help is provided after week 2.**

Assignments

`ProjectDroid` purpose

- The students are required:
  - To develop an Android Application project (APP) using Java programming language.
  - To write a Technical Report (TR).
  - Rules:
    - The PRJ source code must be in a repository (bitbucket).
    - The TR must be submitted electronically at `moodle.isep.ipp.pt`.
    - The TR must follow the Lecture Notes in Computer Science (LNCS) format (MS Word and Latex templates, `SurveyFormat.doc` and `SurveyFormatTex.zip`, are available at `moodle.isep.ipp.pt`).
- Teams of up to **two students**, of same PL class;

Teamwork composition

Each teamwork composition must be communicated until end of week 3 by email(`pbs@isep.ipp.pt`).

ProjectDroid Assessment (I)

ProjectDroid grade

ProjectDroid = 0.20 x TR + 0.80 x APP

- TR
  - Requirements engineering
  - Analysis & Design
  - Implementation & Tests
- APP assessment is split into three components:
  - **Checkpoint**, which refers to project development progress.
    - Graded in the interval [0.00,20.00];
  - **Implementation** (IMPL), which refers to the code quality as well as the features of the application.
    - Graded in the interval [0.00,20.00];
  - The **Factor**, that refers to the discussion with each team member (**individually**)
    - **Graded in the interval [0,100%]**;
- APP = (Checkpoint * 0.20 + IMPL * 0.80) * Factor

ProjectDroid Assessment (II)

- **Checkpoint**
  - Refers to the status of the application project (the amount of features already implemented and so on).
  - It is **mandatory an executing application project**.
- **IMPL**
  - Implementation must follow the Mobile Systems programming principles.
  - It is **mandatory a functional application** (it must run, otherwise it is not considered)
- **Factor**
  - **Factor has a great impact**
    - 0 = 20 x **0%**
    - 10 = 20 x **50%**
    - 20 = 20 x **100%**
  - Some questions were:
    - Could you explain this functionality?
    - Why are you using this approach?
    - Where is the class 'x'?

ProjectReact

- The purpose, goals and so on are similar to those defined to the `ProjectDroid` project.
- The main difference is: **To develop a Mobile Application using React Native framework**.

Teamwork composition

Each teamwork composition must be communicated until the end of week 11 by email(`pbs@isep.ipp.pt`).