Project nº 2:
Design Implementation and test of an Interactive Application

Introduction

This project is aimed at the development of an interactive application prototype following a user-centred design methodology. The prototype shall be functional; however, simplifications may be done as the focus of the assignment is the User Interface (UI) and not having a fully functional application (leave out most of backend implementation).

Schedule and deliverables

Date	Deliverables (evaluation%)
04-08/03/2019	Limit for project proposal on shared link.
18-21/03/2019	slides on requirements analysis to discuss with teacher (20%)
25-29/03/2019	Paper prototype for testing during lab class. Usability test of the application prototype in lab class (15%)
20-24/05/2019	Usability test of the application prototype in lab class (20%)
May 27-01/06/2019 June 03-07/06/2019	Final presentations and demo (45%)
May 27/2019 23:55	Final submission via Moodle Includes: final presentation and application code

Project phases

Developing an interactive application involves a series of steps; a "user-centred design" approach shall be used. The final report shall cover all the phases of the project, namely:

1. Project selection/Task analysis

Each group (two groups of two students maximum) will choose a problem faced by some user population and will design, during the semester a user interface to address that problem. Two groups might select a similar topic (and conduct the Heuristic evaluation assignment on a system related to the selected project) but should create different interface or focus on different problems.

As much as possible, select a problem faced by a specific user population your group does not belong to since this will force you to learn about the users' needs and problems. Think about different people (singers, mothers, specific professionals, …), different capabilities (children, elders,…) and different contexts (swimmers, surfers, etc…)

Each group will have to interview at least 3 potential users to refine and analyse the problem at hands. You should identify at least three goals; if not possible, the problem may be too small for a good project and should be rethought.

The results of the project selection should be a small presentation with the following points:
- Problem - description of the problem to tackle.
- Interviews - Observations and Interviews performed (a small description of the people you observe (avoid names but describe them in detail) and the main findings. Each member should perform at least one interview.

- Goals: At least 3 users goals (that might be different between groups) with a small description for each

This presentation will be integrated and delivered with the Requirement Analysis presentation (see section 2).

It is possible to combine this project with other courses such as the Database project (Bases de Dados – **BD** course) or **PEI/PI** (Project in Informatics Engineering, Project in Informatics) by developing and evaluating the user interfaces in the HCI course.

Each group shall **submit** the proposal until **DATE** through the following shared link.

https://docs.google.com/spreadsheets/d/1Cd6OFBVFOSCtopUwfn7mVIpI4Uk6Nr8H90Q58anZEhQ/edit#gid=0

Selections will be regularly updated in the **final selection** webpage: http://sweet.ua.pt/paulo.dias/IHC/TP2_Project_Selection/Project2_UIDesign_Selected.htm.

Any problems should be reported by e-mail to paulo.dias@ua.pt

2. Requirements analysis (to be presented in 18-21/03/2019).

Based on the selected projects you might perform a requirement analysis to better define the problem. It is necessary to define the application **target users (personas)**, **tasks** that can be performed and realistic **scenarios**.

- Target users/persona - develop at least one persona representative of your user.
- Tasks - Identify at least 3 "typical tasks" with a small description of each that will be the main focus of attention when developing your prototype.
- Scenarios - write 3 short scenes illustrating the 3 tasks you identified. Scenarios are realistic stories involving a user goal and the necessary tasks he needs to perform to achieve the goal. They need to be detailed with imaginary users and details to represent a realistic interaction with the system.

Each group must prepare a small presentation including the project selection (step 1) and requirement analysis (step 2) to be discussed with the teacher during the Paper Prototype lab. The presentation will be submitted in model until DATE!

The presentation of requirement analysis will account for 20% of final grade

3. Paper prototype (to be used in the lectures 25-29/03/2019)

Based on the previous analysis one or several **paper prototypes** shall be developed to test at least the three most representative tasks. The paper prototype will be used on the Paper Prototype lab classes to **test with users** the conceptual model and the mentioned tasks (each student will alternate between observer in their own prototype test and user of other groups' prototypes).

This is the right time to test and validate **alternatives** and thus it might be interesting to test **several prototypes**. During the tests, changes might be **interactively** incorporated according to the users' comments and test results. Prototyping tools might be used in this phase, but that is not mandatory as paper prototypes present several advantages and do not involve learning new tools.

For this class you need:
- Build a **paper prototype**
- Prepare a small written introduction for the users
- define **clearly the scenario tasks** on separate cards. Tasks should not be to specific but **focus in the specific goal**. Each task should be **brief**, around 5 min.
- **Practice** the paper prototype before the test.

The preparation the test and the paper prototype shall be **presented in the final Presentation** (photos or scans) as well as the results of this preliminary test (number of users, modifications, conclusions, statistics, etc…). You should present:

- Photos or printscreen of the prototypes
- Scenario tasks
- Some statistics (number of user and other relevant information you collected)
- Observations: problems user might have, incidents that happened, change you performed to the prototype
- Analysis: Explain how you will incorporate the feedback from the users in the final prototype.

Not preparing the requirements analysis or the paper prototype will imply a penalization in the final project grade.

The quality of the paper prototype test will be evaluated in class and will accounting for 15% of final grade

4. Computer Prototype

A **computer prototype** shall be implemented following **usability principles** based on the previous study and results of the paper prototype tests. As the focus of this assignment is on the UI and not on the functionality, some **simplification** is **acceptable** (e.g., for an application implying a data base some hard-coded data is acceptable as input). As mentioned, students may use other languages besides android, if clearly justified and accepted by the lab classes' teacher.

The computer prototype should be:

- High fidelity in look: Use this prototype to explore the graphic design of your final implementation. Lay out screens as you want them to appear in your final implementation. Make choices about colours, fonts, alignment, icons, and white space.
- Low fidelity in breadth: the prototype should include the feature specified in the requirement analysis but does not need any features beyond that.
- Low fidelity in depth: You can leave out most of your backend by using static images or random views. Use realistic data in your simulated views especially regarding scale. If you were building a MP3 player and your prototype displays only three songs in the user's library, that's unrealistic, and won't adequately test your UI design choices.

You should not worry with the following issues in the prototype

- Window resizing: Determine a good default size for your windows and design a good layout for that size
- Platform independence: Focus on one platform for now.

In order to ensure that your prototype fulfil most of the requirements, it is recommended to perform a **heuristic evaluation** of the prototype (either yourself or asking other students). The results of the heuristic evaluation, and the modifications introduced to the prototype should appear in the final presentation.

Your implementation should have a **fully functional frontend**, with all the user interactions necessary to perform the main tasks. However, your implementation **does not need to have a back-end component**. As alternatives you might use hardcoded /random responses since the objective is to gain a frontend UI implementation experience.

5. Usability test (20-24/05/2019)

This class will be used to perform a **usability test of the application prototype**; each group shall act as observer for the usability test of their own application and as user in the test of another group application. The goal is to **detect implementation and usability problems**.

The test **preparation** (tasks, usability measures, questionnaire, etc.) and the obtained **results** (including some statistics such as means, medians, standard deviation, etc…) shall be presented in the **final presentation**.

For this class you need:

- **Prepare the briefing** and the tasks (adapting the ones from the paper prototype test). This also involve preparing some pré/post questionnaire (you might adapt the templates available at the course page)
- Run a pilot test previous

The analyse of this test might be included in the final presentation, namely:

- Scenario tasks
- Some statistics (number of user and information from questionnaire or logging you might have used)
- Observations: problems user might have, incidents that happened, change you performed to the prototype…
- Analysis: Explain how you will incorporate the feedback from the users in the final prototype.

Not having a minimally working prototype and not preparing the usability test to be performed in this class will imply a penalization in the final project grade.

The main results of the Usability tests must be presented in the final presentation

The quality of the usability test will be evaluated in class and will accounting for 20% of final grade

6. Final presentation, demo and submission (May 27-01/06/2019 and June 03-07/06/2019)

Each group shall perform a 20 minutes presentation of their work (15 + 5 for questions) in one of the last two lab classes. The **final presentation,** as well as the **code** shall be submitted via **Moodle until May 27/2019 23:55**.

The final presentation should include the following:

- Presentation of problem;
- Paper prototype test results;
- Main issues during the project (e.g., justification of choices, main difficulties, compromises, simplifications, etc…);
- Usability test results – Influence in the final prototype;
- Final application description/demo;
- Conclusions;

- Annexes of interest: questionnaire used in the evaluation, documentation, references…

Final Presentation and code delivery accounting for 45% of final grade

7. Evaluation

Evaluation will use the following scale:

- 20% Requirement analysis
- 15%: Paper prototype + reporting (on final presentation)
- 20%: Usability test + reporting (on final presentation)
- 45%: Final presentation and project evaluation.

Some material in this document is adapted from MIT's 6.813/6.831 reading material, used under CC BY-SA 4.0.