Cairo University  
Faculty of Computers and Information



**CS251**

**Software Engineering I**

**Project Description**

**2016**

**Version 3.0**

**Project Team**

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**Introduction**

* In this project you will collect the requirements, design and implement a non-trivial software system. You will practice the concepts you learned during the course.
* Project 3 phases are: Requirements, Design, and implementation and testing.
* Your project customer (whom you can check requirements with) and coach is your TA.
* Computek Company will be interested also in this project, teams who will do a good work in this projects will be rewarded from this company.

**Project Logistics**

1. Students from the same lab will be divided into groups; each group is 3,4 members.
2. Your team will register their names with the TA and **you CANNOT change teams** after registration.
3. Academic honesty is assumed. All work submitted must be original and written by your team (Not copied from students, the net, outside sources). Plagiarism will be penalized.

* Soon, you will be our colleague and we will be proud of you.
* Professional conduct and practice is essential in your career.

**Project Phases:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Phase** | **Deliverables** | **Deadline** | **Mark** |
| Phase 1-a | Initial SRS Document | 5 Nov | 2 |
| Phase 1-b | Final SRS Document | 26 November | 5 |
| Phase 2 | Design phase | 11 December |  |
|  |  |  |  |
| Phase 3 | Implementation Phase | 20 December |  |
|  |  |  |  |
|  |  |  |  |

# Phase 1: SRS Document

* Project description is included at the end of this document.
  + TA will act as your product owner.
  + Your role is to understand the main features and requirements of the product.
  + Think about the missing details and discuss them with TA.
  + Ensure that you fully understand what the product owner needs.
  + Do not add any extra major features on your own. It is beyond the scope!

# Details

* Each team will read and understand the given project system description.
* Think with your team the functionalities in the project.
* Create a Use case diagram contain all use cases in the project.
* For each use case create a use case table that describe this use case and its flow of event.
* **REMEMBER THAT USE CASE REPRESENTS A USER GOAL. SO YOUR USE CASES SHOULD REPRESENT A MEANINGFUL GOALS FOR THE USERS.**
* List **all the functionality** in the project with a number from 1-5 that express the complexity of the functionality. 1 is easy and 5 is complex.
* Make sure to think in any **missing details**, further sub-features and discuss with the TA if needed.
* You should determine the related non functional requirements and explain them. We expect at least **2 x team size** non functional requirements.
* Use case diagram and any further points in the template should also be filled.
* Any documents should be uploaded to any online repository (like github, bitbucket or git lab) using GIT version control system.

# Phase 2

* In phase 2 each team will work on specific use cases to create a software design then implementation (later in phase 3).
* PLEASE CHECK THE PROJECT DOCUMENTS YOU WILL FIND SDS (SOFTWARE DESIGN SPECIFICATION) TEMPLATE, YOU SHOULD READ AND FILL THIS TEMPLATE AND SUBMIT IT IN ACADOX BEFORE THE DEADLINE.
* These use cases are
  + Registration (as a student or as a teacher)
  + Play game (as a student)
  + Add game (as a teacher)
* Think carefully in your design, for example if play game use case includes login use case so you should consider login use case in your design and implementation. Or if the precondition of play game is the user should be logged in, so you should also in this case include login function in your design
* We will assume that games types are MCQ game or true/false game. For MCQ game there’s a question and 4 possible answers and one correct answer. And in True/False game there’s a question and one correct answer(true or false)
* There’s no restrictions on the number of questions in any game.
* You should follow the guidelines in the lecture and sections to create your software design (class diagram and sequence diagram)
* If you have any questions in any function go back to the SRS document that you created in the last phase and you should find the answer. If you don’t find the answer of your question contact with your TA
* The deadline of this phase is SUNDAY 11/12/2016 23:59 PM AND THIS DEADLINE WILL NOT BE EXTENDED
* If your SRS design is excellent but your design or implementation is weak, you will lose the training opportunity at Computek company.
* You should commit your SDS document in your GIT repository and put the link of your Git repository in the SDS document.

# Phase 3

* In this phase, each team will implement their design. Your implementation should be exactly like your class and sequence diagrams. which means that you firstly need to convert your class diagram to java classes then implement each sequence in your sequence diagrams.
* You should deliver the SDS template again. You may find that you need some minor changes in your design. So you should submit the SDS template contains the final version of your class diagram and sequence diagrams.
* You should also update your git repository with your implementation. Also don’t forget to add the git repository to your SDS document which you will deliver in this phase.
* Some Hints:
  + 1- You don't need to worry about creating a good user interfaces. You can just use your java console to view anything you want. So you may firstly show 2 options, login or signup. Then after login you will show play game (and add game option if the logged user is a teacher) and so on for the rest of the functions.
  + 2- Also you don't need to worry about creating a SQL database and how you will connect your db to your code. You can store the data in just arraylists or files.

# Grading Criteria

### Final SRS Submission [5 Grades]

* **0.25** grade [Software Purpose, Scope, and Definitions].
* **1.5** grade functional
  + 1 grade for correctly converting problem statement requirements. Students shouldn’t miss any required operation
  + 0.2 grade for elaborating on the requirements, listing the **missing details** for them.
* **0.75** non-functional requirements
  + **At least 2 x team size** non functional requirements
* **0.75** use case diagram (model)
  + -0.25 for incorrect include / extend relationships
* **1.25** use case tables
  + **At least 2 x team size** tables
  + Tables should be very clear. -0.5 for bad flows.
* **0.5** using Gitlab/Bitbucket/Github or any other version control system to upload the document on it.

# Project overview

The project will be a game-based educational platform. This platform will help students to understand basic educational concepts while they will be playing simple games. These concepts will be related to subjects like science, technology and math.

One of the examples of this idea is “BrainRush” <http://www.brainrush.com/>

Students can play simple games in brain rush and these games will make students understand new educational concept. Also teachers can sign up in this website and create their own games. Brain rush contains 4 categories of games each category has specific rules and teacher can create any game belongs to one of these categories.

So there are 3 main components in this project

## 1- Students

Each student should have an account in the website. The student account will contain student’s basic information like name, age, gender, …., etc. Also it should contain students achievements (Scores he/she get in each game)

Students also can rate any game (interesting, normal, boring) and write comments for each game.

## 2- Teacher

Each teacher should have an account in the website. The teacher account will contain teacher’s basic information like name, age, gender, …, etc. Teacher can try any game in the website and also can create any new game. Teacher also should be able to edit or remove and game he/she created it before. And also teacher should be able to respond on students comments for games created by him/her.

## 3- Games

Games will be played by one student and will be created by teacher. Each game should belong to one category. Game’s category may be “Match pictures”, “Multiple Choices game”, “Run code game”

In BrainRush there are games like “Multi-digit addition”, “How many syllables”, “GreekGods” these games classified as multiple choices game.

We want also to add coding games to help students understand basic programming concepts. Please take a look to these websites

<https://codecombat.com/>

<https://www.codingame.com/>

<https://hourofcode.com/eg>

## Opportunities:

Computek company will be interested in this project. So teams who will be able to do a good work in this project will be rewarded from Computek. Project phases will be mainly 3 phases

## 1- Requirements gathering and analysis

The expected output from this phase is a detailed requirements list and use cases for the requirements. The best 3 teams in this phase will be rewarded from Computek. The first team will attend a one-month training in Computek.

## 2- Software design

The expected output from this phase is class diagram design, sequence diagram design. The best 3 teams in this phase will be rewarded from Computek. The first team will attend three months training in Computek.

## 3- Implementation

The expected output from this phase is a working web application according to the best requirements and the best design. The best 3 teams will in this phase will be rewarded from Computek. The company will study the best implementation and if this implementation is promising the company will market for this project and this team will have a share in this project.

# Policy Regarding Plagiarism:

**Students have collective ownership and responsibility of their project. Any violation of academic honesty will have severe consequences and punishment for ALL team members.**

1. تشجع الكلية على مناقشة الأفكار و تبادل المعلومات و مناقشات الطلاب حيث يعتبر هذا جوهريا لعملية تعليمية سليمة
2. ساعد زملاءك على قدر ما تستطيع و حل لهم مشاكلهم فى الكود و لكن تبادل الحلول غير مقبول و يعتبر غشا.
3. أى حل يتشابه مع أى حل آخر بدرجة تقطع بأنهما منقولان من نفس المصدر سيعتبر أن صاحبيهما قد قاما بالغش.
4. قد توجد على النت برامج مشابهة لما نكتبه هنا أى نسخ من على النت يعتبر غشا يحاسب عليه صاحبه.
5. إذا لم تكن متأكدا أن فعلا ما يعد غشا فلتسأل المعيد أو أستاذ المادة.
6. فى حالة ثبوت الغش سيأخذ الطالب سالب درجة المسألة ، و فى حالة تكرار الغش سيرسب الطالب فى المقرر.