Assignment #2

June 1, 2018

1 Software Effort Estimation and Planning

Deliverable #1
For this portion of the assignment, your deliverable will consist of two things:

1. An estimation of effort using the Poker method
2. An estimation of effort using the Silent Grouping method

Requirement chosen: data processing

(1-1): Poker Effort Estimation
Perform a planning poker session with your teammates. Break down one of your functional requirements into a set of tasks, and provide a set of cards to each team member. Have each team member pick a card for each task, then reveal your cards and compare estimates. Repeat this process with each task. In several paragraphs, discuss your planning session. For three of your tasks, describe in detail which cards were picked for the task and the overall consensus that was reached.

Requirement chosen: data processing

(1-2): Silent Grouping Effort Estimation
Perform a silent group effort estimation session with your teammates. Create a set of features from the functional requirement defined in *Deliverable (1-1)*, and label a wall with EASY on one side and HARD on the other side. Have your team members form a line and silently place the features on the section of wall where they think the feature fits. The session is finished when the features stop moving around. In several paragraphs, discuss your silent grouping session. To accompany your discussion, provide at least three screenshots of the wall at different points in the session.

Requirements chosen: data processing, connecting USB, displaying info on UI

Deliverable #2
For this portion of the assignment, your deliverable will consist of three things:

1. A break down of the tasks related to each functional requirement of the system that you are developing as well as the estimated effort for each task
2. Effort estimation of the same system using intermediate COCOMO model (an algorithmic model)
3. Comparison between two effort estimation approaches

(2-1): Task Breakdown
Create a table where you first list the functional requirements for your project and provide a short name for each functional requirement. Next, create another table where you list each task in a single row. For each task (each row), provide three information: the name of the task, the short name of the functional requirement the task is associated with and the estimated effort (in person-hours). Write this three information in three separate columns for better readability. In the last row of the table, show the total estimate for the entire project.

(2-2): Effort Estimation using Intermediate COCOMO Model
Estimate the size (in KDLOC (Thousands of Delivered Lines of Source Code)) of the same project. For this case, you need to estimate the lines of code for the entire project. You can do that by estimating the lines of code for each task and then adding those lines of code. Please note that your lines of code estimation must be in KDLOC and for some tasks, you might not require to write any lines of code. If a task requires 500 lines of code, your estimation should be 0.5 KDLOC, while for a task with 5000 lines of code, your estimation should be 5 KDLOC. Add a new column in the second table of assignment part 2-1. Report the KDLOC for each task as well.

Please indicate the type of your project according to intermediate COCOMO model and explain why the project belongs to this particular category. Next, estimate the cost of the project in person-hours using intermediate COCOMO model. In intermediate COCOMO model, an equation computes the estimated effort in person-hours using the estimated project size (KDLOC). Then 15 cost drivers are used to adjust the estimated effort by multiplying the estimated effort with the rating of each cost driver. For this part of the assignment, you also need to identify the ratings of the 15 cost drivers and if any cost driver has rating other than nominal (value not 1), explain why you think that the cost driver should have that rating considering its impact in your project. Please report your adjusted effort estimate in person-hours. Now compute the duration of your project in calendar weeks considering the time to be spent by each member of your project.

(2-3): Comparison Between Two Approaches

If you notice any huge gap between the efforts estimated with the two approaches, try to identify and explain the factors that caused that difference. List also the difficulties that you faced while performing estimation with the two approaches.

Requirement chosen: data processing

2 Software Testing

Deliverable #3
For this deliverable, you are to implement one of your functional requirements using a test-driven development (TDD) approach and two of your functional requirements using traditional software development. The requirement which will be implemented using the TDD approach should be the same as the requirement you selected for *Deliverable#1* and it should be relatively complex and substantial. Your deliverable will contain:

1. Initial Tests
2. Tests with Partial Implementation
3. Demo of the Full Implementation
4. A short video to demo the three functional requirements that you implemented.

(3-1): Initial Tests
Before you start to work on your implementation, write at least five test cases that will be used to test your functional requirement. These tests should all fail initially. Submit screenshots showing your tests and the results obtained when running your tests. These screenshots should be accompanied by a brief explanation.

(3-2): Tests with Partial Implementation
Begin to implement your functional requirement. Write enough code so that the test cases you created now pass. Stub out methods when necessary. Submit screenshots showing the state of your implementation and the results obtained when running your tests. These screenshots should be accompanied by a brief explanation.

(3-3): Tests with Full Implementation
Complete your functional requirement. Submit screenshots showing the state of your implementation and a short video to demo the implemented requirement. These screenshots should be accompanied by a brief explanation. Please upload the video to Youtube and put its link in your document.

(3-4): Two Extra Functional Requirements
For this deliverable, you will implement two **more** functional requirements for your app. Create a short video (at least 30 seconds long) to demo all of the functional requirements that you implemented. Please upload the video to Youtube and put its link in your document.

USBManager, Display UI

3 Structural and Behavioural Modelling

Deliverable #4
For this portion of the assignment, your deliverable will consist of:

1. A class diagram
2. A detailed explanation of your diagram

Create one class diagram using standard tools (e.g. Microsoft Visio, StarUML) following the Unified Modeling Language (UML) notations. Please note that no handwritten diagrams will be accepted. Try to model only the essential features of your system, and abstract away unnecessary details without oversimplifying. In addition to clarifying your diagram, your explanations should highlight any assumptions that you are making.

Deliverable #5
For this portion of the assignment, your deliverable will consist of:

1. Two sequence diagrams that describe success scenario of two important use cases of your system
2. Detailed explanations of these sequence diagrams

A successful submission will include sequence diagrams that have been created using standard tools (e.g. Microsoft Visio, StarUML) following the Unified Modeling Language (UML) notations. Please note that no handwritten diagrams will be accepted. Your detailed explanation should include a discussion of why you chose the two use cases that you described with the sequence diagrams.

schedule meeting sometime in the week of June 18, 2018

4 Collaboration

Deliverable #6: Details of your collaboration (e.g. meeting, email, stand-up meetings, etc) with your customer. How it helped you to do this assignment! What do you see as the greatest challenge in terms of communicating with your customers?

5 How to submit?

Please submit your assignments via D2L as a *.zip* file which contains all the needed deliverables by 11:59 PM on June 15^{th}. Make sure to put the names of all group members on the first page of your assignment. Only submit one copy per group!