CS 362 - Software Engineering II

Homework 1

Note:
Answers to assignments must be typed, submitted as a pdf.
Answers to programming questions must be submitted as a separate file(.py).
Deliverables - what you turn in for a specific question are mentioned under this section

Question 1 **10 points**

Consider the following situation:

You are provided with the opportunity to work on a project that has to be delivered to a customer (can be any project). You have to use or apply any 2 of the three methodologies - Waterfall, spiral, and agile to deliver the same project.

Select any two methodologies and explain why one methodology is preferable over the other. (Give examples of a project that you would do using one methodology and explain why it is better than the other methodology).

Deliverables

i) Describe your project in a few sentences
ii) Describe how you can do said project with methodology 1. Describe how you can do the project with methodology 2.
iii) Explain why one methodology is better than the other, for your project.

Question 2 **10 points**

Augmented reality (AR) table-tennis game - a game that allows players to play table tennis in an augmented environment. If you were to build a game that is something like this:

Write its -
i) Functional and non-functional requirements
ii) System and software requirements
iii) At Least 3 user stories (As a [*role*], I want [*functionality*], so that [*benefit*])

Deliverables

i)

Functional requirements	Non-functional requirements

ii)

System requirements	Software requirements

iii) User stories (minimum of 3)

Question 3 **10 points**

EECS ideal logic system - The EECS school uses a tool to assign GTAs to classes. Main functionality includes - receiving student's preferences (courses students like to be a TA for), receiving instructor preferences (instructors choose TAs for their courses), having students and instructors/professors sign into the system.

Use the following user stories below as the starting point:

Log in (Student, Teacher, Coordinator)
Enter preferences (Student)
Enter preferences (Teacher)
Assign TAs (Coordinator)
Update assignments (Coordinator)

Write down specific activities that you would perform as:

i)Scrum Master
ii)Product Owner
iii)Member of the development team

Deliverables

i) Scrum master - Start from the user stories,(you may extend beyond the given user stories), give examples of what would you do if you had the given user stories, describe specific tasks you would perform as a scrum master.

ii) Product owner - Start from the user stories,(you may extend beyond the given user stories), give examples of what would you do if you had the given user stories, describe specific tasks you would perform as a product owner.

iii) Describe you roles and activities as a member of the development team (can assume any tech stack).

Question 4 **10 points**

Requirements ⇨ Documentation/Design ⇨ Code

Consider the following requirement for an application that calculates whether the year is a leap year or not.

Conditions for leap years

“Years that are evenly divisible by 4 except
years that are evenly divisible by 100
unless the years are also evenly divisible by 400”.

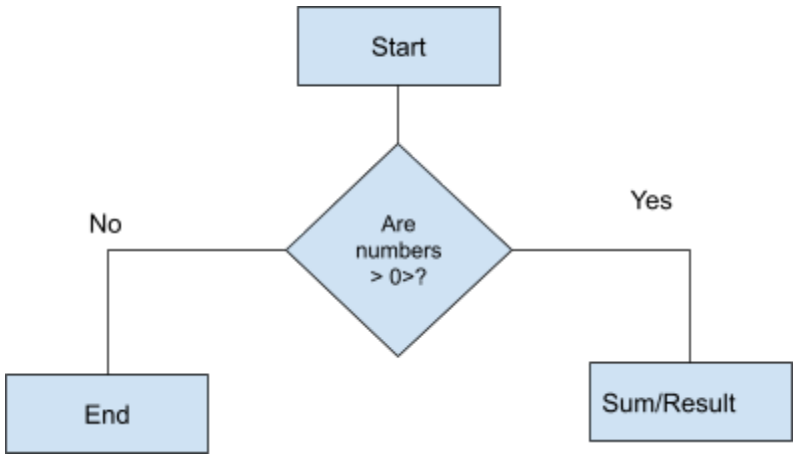
i) Convert this requirement to a **design** - (visualize the logic required to solve this problem as a flow chart).

ii) Write the program itself, which gives us the result (whether a year is a leap year or not). Submit a .py file with the following format - **firstname_lastname_hw1.py**. *If your TA cannot run the file, you get a 0.*

Example:

Requirement - Add two positive integers.

Design *a rough example -*



Example input/output
Input - 2000
Output - 2000 is a leap year

Deliverables

i) Convert the requirement and visualize it into a flowchart or a block diagram. (The flowchart should reflect the logic implemented in your program)

ii) Python code in a separate file, with instructions on how to run the file.