Workshop - 4

Workshop Value: 10 marks (4.375% of your final grade)

Learning Outcomes

Upon successful completion of this workshop, you will have demonstrated the abilities:

- to decipher and identify a problem
- to analyze and decompose a problem
- to identify the required detailed steps to solve a problem
- to communicate the solution to fellow peers and non-technical businesspersons

Please review the following documents:

1. Workshop **Grading Policies**
2. Workshop **Submission Procedures**
3. Workshop **Group Breakdown**

Workshop Overview

Short games are often played among friends to quickly determine who should "go first" or for a winner to resolve some other dispute. It is ideal to have a game that can be played quickly and available for mobile cell phone devices. This is where a game like "Rock-Paper-Scissors" comes in!

Workshop Details

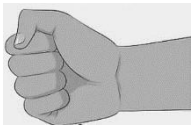
A complete description of the human-to-human set of rules for the "Rock-Paper-Scissors" game are available here: https:// m.wikihow.com/Play-Rock,-Paper,-Scissors. However, the main concepts will be provided in this document as well.

A software developer wants to create a version of this game for **SMART mobile phones**, however before considering the software approach, a thorough understanding of the game in its physical format is required. The rules for this game are very simple:

Game Rules and Requirements

- Two players are needed (**Human** vs. **Computer**)
- A start routine is required to help build suspense and time for the human player to choose their desired object (usually a countdown of three). The animation will involve moving two fists up and down synchronously.
- There are only three (3) possible plays (objects):

1. Rock: Represented by a hand making a "fist" shape



2. Paper: Represented by a straight open flat hand

3. Scissors: Represented by spreading the index and 2nd finger apart (mocking scissors)

- Each object type can be defeated but can also be a winner depending on the opponents chosen object.

Rock	beats	**Scissors**	(but Rock loses to Paper)
Paper	beats	**Rock**	(but Paper loses to Scissors)
Scissors	beats	**Paper**	(but Scissors loses to Rock)

- Two matching objects will "tie" and the game must be repeated

Work Breakdown

[Logic 1] Describe the revealing of the human and computer player's selected objects including the determination of the results (tie, winner/loser). If there is a tie, the game should be played again until a winner and loser can be declared at which time the game ends.

[Logic 2] Describe the animated countdown start sequence including the **human player object selection (input)** which should be completed before the countdown ends. Logic should handle what happens if an input is not entered within the countdown time.

[Logic 3] Describe the animated countdown start sequence that includes **the computer player object selection that randomly selects an object**. Hint: Most computer languages have a random function which you can call to yield a number from 1-3 which you can then map onto one of the three objects in the game. **Note**: Do not "reveal" to the human player the computer selected object!

Your Task

Individual Logic Assignment

1. Determine your individual assigned logic part based on your member# (see **Group Breakdown** link at the beginning of this document)
2. Where applicable, apply the core components of the **computational thinking** approach to problem solving to help you synthesize a solution
3. Submit your individual assigned part to your professor (see **Submission Procedures** link at the beginning of this document)

Group Solution

1. In the week the workshop is scheduled, you will be working in your assigned sub-group. See **Group Breakdown** link at the beginning of this document for details on how the sub-groups are determined.
2. Please review what is expected as described in the **Grading Policies** link at the beginning of this document.
3. Submit your group solution to your professor (if you are handing in physical paper answers, follow the directions as set by your professor, otherwise, refer to the **Submission Procedures** link at the beginning of this document)

Presentation

Decide among yourselves which member among you in the **sub- group** will be doing a presentation. Priority should be given to those who have not yet done one. Refer to the **Grading Policies**, and **Submission Procedures** links for details on deadlines, expectations and how to submit your work.