 **Weight: 9%**

Data Structures

Project 3 – Turn-Based Strategy Game

Contents

[Objective 1](#_Toc286820659)

[Gameplay 1](#_Toc286820660)

[Requirements 2](#_Toc286820661)

[Grading Breakdown 3](#_Toc286820662)

[Standard Deductions 3](#_Toc286820663)

[Submission 3](#_Toc286820664)

# Objective

You will be responsible for creating a two-player turn-based strategy game. Each player will control a three-character team on a 6x6 playfield. Each team will consist of an Archer, Sorcerer, and Warrior. The game will be played until one team has no fighters left alive.

# Gameplay

One round of the game involves all of the characters that are still alive (initially 6) to be allowed a turn. The order of the turns during a round should be random.

A turn always consists of 2 stages, the move phase and the attack phase. The move phase occurs first. During the move phase, the user is asked if the character would like to move. If the user says yes, the user will then be asked to pick a space to move to. A character can only move 1 space during a turn. They can only move left, right, up, or down (no diagonals). They can only move to an empty space. If a player is unable to move (is trapped), tell the user so and do not allow them to move.

The attack phase allows the user to pick a character on the screen to attack. The characters which can be attacked are those within the range of attack. This is determined by comparing the location of the attacking character with the locations of the other characters in the game. The distance between two characters can be determined by the following formula:

distance = abs (x2 – x1) + abs (y2 – y1)

2

2

1

2

sample distances from current position ‘x’ :

2

1

X

1

2

2

1

2

2

If a player is at the X, then the distances of the surrounding cells would be as shown. A diagonal is considered a distance of 2.

Finally, attack is based on the following numbers:

A Warrior (W or w) has an attack range of 1. Their attack randomly does 7 to 14.

A Sorcerer (S or s) has an attack range of 2. Their attack randomly does 1 to 10.

An Archer (A or a) has an attack range of 4. Their attack randomly does 2 to 7.

A character which has 0 hit points left is considered dead and should also be represented as a ‘D’ or ‘d’ on the battlefield (depending on which team they are on). The game ends when a team has no players left alive to continue fighting.

# Requirements

* You are required to display the playfield, all characters, the turn order and each character’s remaining/max hit points at all times during the game
  + The character whose turn it is currently should be highlighted in the turn-order

Sample screen:

AW\*\*\*\* Turn Order

S\*\*\*\*\* a <-

\*\*\*\*\*\* W

\*\*\*\*\*\* s

\*\*\*\*\*s w

\*\*\*\*wa A

S

P1: A: 20/20, W 20/20, S 20/20

P2: a: 20/20, w 20/20, s 20/20

\* represents an empty space on the play field. A, W, and S are for Player 1’s Archer, Warrior, and Sorcerer. a, w, and s are for Player 2’s team.

* Moving and Attacking are optional. If the player does not wish to move or attack, they should be allowed an option to not move and continue the round
* When a character dies, display a ‘D’ or ‘d’ to represent their corpse on the battlefield
  + The corpse stays on the field until the game is over
  + Dead characters do not get a turn
  + You cannot attack a dead player (this is pointless and more than a little psycho)

# Grading Breakdown

Requirement Point value

|  |  |
| --- | --- |
| Character movement | 10 |
| Random turn order per round | 10 |
| Display | 10 |
| Attack (proper range & damage; character death) | 30 |
| Gameplay | 40 |

# Standard Deductions

|  |  |
| --- | --- |
| Compiler errors | 100 |
| Crash | 100 |
| Memory Leak | 50 each |
| Header protection | 20 each |
| Compiler warnings | 10 each |

# Submission

Due Date : 23:59:59 PM on Day 11

To submit the Project 3 assignment:

1. Clean and build the project in Visual Studio. ensure there are no errors or warnings.

2. Run the project in debug mode with leak detection turned on to ensure that all behavior is correct and there are no memory leaks.

3. Close visual studio.

4. Navigate to the Project 3 folder (The folder that contains your Project 3 Visual Studio solution and project).

5. Delete any of the following files or folders you find (you may not have all of these, some of them are generated only in special cases and some of them are only generated by previous versions of the compiler)

**\*\*Make sure you have your Windows environment set to show you hidden files, or you may miss some of these\*\***

     a) Delete the .ncb (intellisense database) file (if you have one or more, delete them all)

     b) Delete the .suo (solution user options) file (if you have one or more, delete them all)

     c) Delete the .user (user settings options) file (if you have one or more, delete them all)

     d) Delete the Debug folder (you SHOULD have one of these)

     e) Delete the Release folder (you will only have one of these if you built in release mode)

     f) Delete the ipch folder (if you have one)

     g) Delete the .sdf (sql server database) file (if you have one)

     h) Delete the .filters file (if you have one or more, delete them all)

6. On your desktop, create a new folder with your name in the following format: "Last Name, First Name" - nothing else.

     Your Last Name - a comma - a single space - your First Name. Appropriate capitalization for proper names should be used.

     Examples : "Pollack, Joey"; "De La Paz, Christhian"; "Tjarks, Matthew".

7. Copy your Project 3 folder into the folder that you just created.

8. Compress the folder by right clicking on the folder with your mouse and selecting 'Send To->Compressed (Zipped) Folder'.

9. Submit the Compressed Folder.