cab403 assignment

Process Management and Distributed Computing

Due Date: 28th October 2018  
(APPROVED ASSIGNMENT EXTENSION)

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# Statement of Completeness

**Task 1: Client-Server Computing**

Completed

**Task 2: Multithreaded Programming & Process Synchronisation**

Completed

**Task 3: Thread Pool**

Incomplete

# Team Information

Davina Tan – N9741127  
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# Team Contribution

Davina Tan – 45%  
Quintus Cardozo – 55%

# Data Structures

## Representing the Playfield

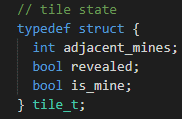
  
*Figure 1 – Tile state data structure*

Figure one displays a data structure used to store a tile’s state. The integer variable adjacent\_mines stores the number of adjacent mines there is of the tile. The two boolean variables revealed and is\_mine store the states of the tile. If the tile is revealed, revealed will be true, and if the tile is a mine, is\_mine will be true.

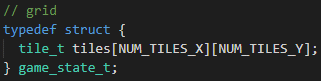
  
*Figure 2 – Game state data structure*

Figure two displays a data structure which stores the game state. The data structure holds the playfield of the game (a 9x9 grid of tiles), indicating there are tiles in a 2D array of [NUM\_TILES\_X] and [NUM\_TILES\_Y]. The number of tiles for x and y are both defined (see Figure 3) as 9, as stated in the specification.

  
*Figure 3 – Number of tiles defined*

## Leaderboard Implementation

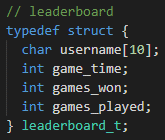
  
*Figure 4 – Leaderboard data structure*

Figure four displays the data structure which contains the main variables which compromise the leaderboard. username is a char array which holds the player’s username. The integer variables: game\_time, games\_won, games\_played, store the time of the completed game, the amount of games the user won and the amount of games the user played.

# Task 2

## Critical-Section Problem Management

# Task 3

## Thread Pool Creation and Management

# Compile and Run Instructions

1. To compile, open a terminal and type ‘make’ in the directory, this will build the server and client
2. Type ‘./server (portnumber)’ to run the server, specifying a portnumber
3. Open a separate terminal
4. Type ‘./client localhost (portnumber)’to run the client, using the same portnumber as the server
5. The game will begin immediately on the client terminal.