CS251: Software Engineering I 2014-2015

Cairo University, Faculty of Computers and Information

Project Title : <Multiplayer distributed game>

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Problem Statement

Design and implement a multi-player distributed [snake] game (or any other game from your choice, after TA approval). The game will be played in a server-client fashion, where one device starts the game as a server. Other players send join requests to the server. The server can accept up to only 4 requests per game, that's number of players can't exceed 4.

Game Logic

Here is the minimum requirement for the snake game, in case you choose to implement.

Each player starts the game with a snake of a small size. As the game proceeds, fruits appear periodically in random positions of the game canvas. Snakes eat fruit to gain score, and grow more. Snake is not allowed to hit any other snake nor it self. The winner is the player who achieves the highest score at the end of the game. Student can create more innovative scenarios for the game (he can for example add other play modes), but he should at least fulfill the above description.

Game Server

- Multiple players will participate from different machines; players need to connect to game server at the beginning of the game.
- Game server is responsible of initiating new game, preserving and controlling the current status of the game, notifying all players with game status periodically, deciding the win situation, and making any other needed jobs.

Graphics

- Graphics handler class is implemented to visualize current game status through the game.
- Graphics handler also updates the screen with local player move received from input device, and other opponents' moves received from game server.

Platform

Student may choose one of the two following platforms:

1. Android device, in which case the server-client connection is carried over bluetooth
2. Standalone devices, in which case the server-client connection is carried over sockets.

Communication protocol

- Clients (players) need to establish a connection with the game server. Student shall use ready off the shelf library that implements this part.
- Game server sends new game status periodically to all clients. An example of a game status is (Players positions, fruits positions). The new game status should be expressed in a compact format defined by the communication protocol. In other words, the protocol decides the format in which the server streams the game status, and the way game clients interpret this stream for visualization.
- In a very similar way, game client sends their moves periodically to update the game status on server.