Student assignment

Introduction 2020

Advanced

Battleship

Create a battleship(https://en.wikipedia.org/wiki/Battleship_(game)) game for 2 players.

Game must include 5 ships (with set sizes of 2,3,3,4,5 cells respectively), and must be playable on a 15x15 grid.

Each player must have their own view, from which all control (including adding ships) must be possible. Adding ships to the grid can either be manually or randomly assigned.

The game should use a hot-seat approach(https://en.wikipedia.org/wiki/Hotseat_multiplayer_mode) , allowing both players to use the same computer, unless the client/server option is selected (see bonus below).

Development tools(C#, Jave, HTML5, etc), platform(Windows, Mac, Linux, Browser) as well as execution platform are "free to choose".

Use of code, data or graphics from other sources is allowed(to the extend allowed by the owner/creator) but must be referenced and credited both in code and in the documentation.

It is expected of you that you track your time spent on the project. You will be asked during the presentation, how much time you spent on the assignment as well as how you have spent it.

Questions

Should you have questions to any aspect of this assignment, you have the option of contacting Nordic Control Systems ApS with your questions by email (info@nordiccontrolsystems.com) with the subject "Student Assignment 2020 Questions". The option is available throughout the test.

Emails will be answered as soon as possible, but no guaranties can be made for a response time.

Deadline

All material(documentation & code) must be received by Nordic Control Systems ApS, by Monday the 8th of June 2020 at 10:00, sent to info@nordiccontrolsystems.com, with the subject "Student intro assignment 2020".

Confirmation emails will be returned, once material have been received.

Deadline extension

Are you, for any reason, not able to turn in your assignment by the deadline defined above(or if you feel that you need more time to finish the assignment) a time extension, of additional 3 days, can be granted.

To be granted the extension, a request must be sent to Nordic Control Systems(either by email or phone) no later than the 2nd of June 2020 at 10:00. The extension will be confirmed by email.

When granted, 40 points will be deducted from the total score.

Deliveries

The following are to be delivered to Nordic Control System ApS:

- All material must be provided as a single ZIP-compressed file.
- All provided material must be virus free.

  Make sure that you have an Antivirus application check your computer.
- Filename must be Student_Asignment_Intro_2020.zip
- Documentation (User, Install and program) in PDF format.

  See description of documentation below in the grading system.
- Source code in raw human readable format

By providing the above material you acknowledge and permit its use by Nordic Control Systems ApS for internal use.

Presentation

You will be invited to present your project and explain (if any) issues that you might have experienced during the project. The presentation will be done using Video conference, at which point you will also be able to share your screen and show your system/design.

Grading system

Points(max of 125) are awarded to different parts of the assignment, with specific focus on the following:

- Completion of assignment, 0/25/50 points

  With the completion of documentation and code, a fixed point(50) is awarded. If only one part is provided(documentation or code) only half(25) is awarded.
- User Documentation, 0-10 points

  The documentation, must instruct the user how to play/use the game.

  In-game help is accepted, but printed (PDF) documentation is preferred.
- Installation documentation, 0-10 points

  The installation guide must provide enough information for the user to properly install and execute the application.
- Programmer documentation, 0-30 points

  This should include enough information, in the form of text and/or diagrams, to allow another programmer to service or continue development of the application.
- Code comments, 0-10 points

  Commenting code elements(structures, variables, functions, classes, methods, etc.) that supplements the code are rated higher.
- Game layout and graphics, 0-5 points

  Intuitive layout & graphics are provided higher points.
- Error/Exception handling, 0-10 points

Higher points are awarded, with better handling of potential error scenarios.

- Language, 0-5 points

All code and documentation must be written in English.

Your current level of education(programming related) and/or experience will be used as a basis when reviewing the deliveries. As such, a higher education level or experience, will result in higher expectation to the delivery.

Bonus items

The following are bonus items that, if added, provide bonus points:

- Game AI, 25 points

Add code, that when single player is selected, the computer becomes the 2nd player.

- Leveling AI play, 10 points

Add different difficulty levels for the player with single(AI) mode games.

- Weapons, 50 points

Add possibility to add different kinds of weapons, like Torpedoes for Subs only, Missiles, MIRVs, Super cannons, Space Lasers or Single-use ship relocation device.

Each weapon must provide special abilities, and distributed fairly to players at start or during the game.

At least 4 weapons must be added to the game-play.

- Dynamic play game board, 5 points

Make the size of the game board dynamic so that users can choose, like 20x20, 30x30 or 50x50.

- Game server, 50 points

Add a game server, allowing multiple plays and players at the same time.

Student assignment

Introduction 2020

Basic

Tic-Tac-Toe

Tic-Tac-Toe is a game that is played in a team. One player have "x" mark while the other player's mark is a "0". The goal of the game is to make a line of 3 in a sequence while stopping the co-player to reach a line on its own. (For more details see the link : https://en.wikipedia.org/wiki/Tic-tac-toe).

As minimum the solution should support 1 team of 2 players. If player01 leaves the game, player02 will win the game automatically. This works both ways. If player02 leaves the game, player01 will win the game automatically.

As a suggestion, the application can be built using the client-server approach, but other approaches are welcomed. So feel free to be creative.

Each player should have their own view/ program/ browser that they will interact with. Following the server-client suggestion, each client could use a separate browser from their own PC.

Development tools(C#, Jave, HTML5, etc), platform(Windows, Mac, Linux, Browser) as well as execution platform are "free to choose".

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Bonus items

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- Multiple teams

  Solution should support more then 1 team of players.

- Player timeout

  There should be build-in AI, in such a way, that if a player leaves the game, the game continues so the other player is not aware that that the other player left the game.

- Single player

  The player should be able to start a game and play it without including a second player.