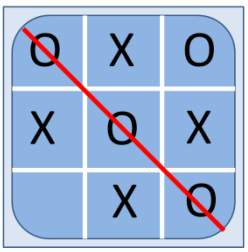
Interfacing and Distributed Computing Systems

Assignment: Online Mobile Game System

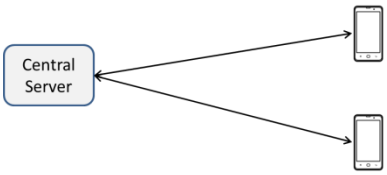
Introduction

In this assignment, you are required to implement an online mobile Tic-Tac-Toe game system. Users play the game with mobile devices on either Android or iOS platforms through a central server.



The game itself is as simple as needless to say. Therefore, you need to focus on the following system features:

1. Players need to log in to enter the system. The server will then check whether the player name and password entered from the player are correct.
2. Upon successful authentication, the system displays a new game board. The player who logs in first will play first with the mark "O" and the second login player with the mark "X".
3. The subsequent login users will be as viewers to watch the current game playing.
4. While the opponent is playing, the local user cannot click any button of his game window. Such an action must be ignored until the local user gets a turn to play.
5. Every time each player clicks a button, the system needs to check if the player has won the current game, in which case a winning message saying who wins should display.



Your jobs

You are required to implement the online mobile Tic-Tac-Toe game system with the mobile app and the central server. You may choose one of the following programming languages (Java, C#, PHP and Node.js) for the implementation of the central server on either Windows or Linus OS. For the mobile app, you may choose to implement it on one of the two platforms namely iOS and Android. You may need to make your own reasonable assumptions and decisions for unspecified design and implementation details.

Continual Assessment

This assignment involves substantial programming work. In order to ensure that you make a good progress on your work, you are required to demonstrate your partially-implemented system at the **fourth** tutorial session and your final system at the **fifth** tutorial session.

You are also required to submit an assignment report documenting the system design and implementation details and a CD having the system source code. The report may include the following sections:

- Introduction

- System Architecture
- Discussion on System Design Issues and trade-off made
- Program Design and Implementation and Testing Results
- Evaluation (on implementation challenges and difficulties and achievement of objectives and room for improvement)
- Conclusions.
- Individual Member's reflection (on learning experiences)
- References

Marking Scheme

Your work will be evaluated and given marks based on the following criteria:

Milestone A (Fourth tutorial) (10 marks)

1. The server is able to authenticate multiple users with the mobile app. (5 marks)
2. The mobile app is able to display the game board. (5 marks)

Milestone B (Fifth tutorial) (35 marks)

Server Functions: (15 marks)

1. The server is able to handle requests from the two players. (5 marks)
2. The server is able to continuously update the status of the current game. (5 marks)
3. The server is able to handle requests the viewers for the current status of the game. (5 marks)

Mobile App Functions (20 marks)

1. The mobile app is able to run the rules of the game. (10 marks)
2. Overall user interface design. (10 marks)

Presentation on system design: (5 marks)

1. Present how to tackle some system design issues (5 marks)

Report (50 marks) (about 2000 words)

The content of the report

1. System Architecture (5 marks)
2. Identification of System Design Issues (10 marks)
3. Discussion pros and cons and trade-off made (10 marks)
4. Program Design, Implementation and Testing Results (5 marks)
5. Evaluation (5 marks)
6. Overall report organization and presentations using diagrams and tables (5 marks)
7. Individual Member's Reflection (10 marks)

   The following are some suggestions:

   - Which parts of the assignment you have contributed?
   - What difficulties you have encountered?
   - What you have learned?
   - If time allows you to do it again, what improvements you would do about the system?