# ASSESSMENT AND INTERNAL VERIFICATION FRONT SHEET (Individual Criteria)

## (Note : This version is to be used for an assignment brief issued to students via Classter)

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|---|---|---|---|---|---|
| **Course Title** | **Bsc. Multimedia Software Development** | | **Lecturer Name & Surname** | **Gerard Said Pullicino** | |
| **Unit Number & Title** | ITMSD-606-1609 – Connected Gaming | | | | |
| **Assignment Number, Title / Type** | Assignment 2 | | | | |
| **Date Set** | 9/12/2020 | | **Deadline Date** | | |
| **Student Name** | | | **ID Number** | | **Class / Group** |

| **Assessment Criteria** | **Maximum Mark** |
|---|---|
| *KU 4 Choose the correct server infrastructure for different game scenarios* | 5 |
| *KU 5 Show how downloadable content can be split such that information can be added to a deployed game* | 5 |
| *KU 7 Illustrate how an implemented networked multiplayer game functions* | 5 |
| *AA 4 Establish a DLC infrastructure for a connected game* | 7 |
| *AA 3 Represent statistical game data in a meaningful way* | 7 |
| *AA 2 Demonstrate how downloadable content works in a real connected game* | 7 |
| *AA 1 Demonstrate how data can be mined from a connected game, and show how it may be implemented* | 7 |
| *SE 2 Evaluate different methods of collecting real world player data (10 marks)* | 10 |
| *SE 3 Evaluate the networked game by functional metrics* | 10 |
| **Total Mark:** | 63 |

## Notes to Students:

- This assignment brief has been approved and released by the Internal Verifier through Classter.
- Assessment marks and feedback by the lecturer will be available online via Classter (Http://mcast.classter.com) following release by the Internal Verifier
- Students submitting their assignment on Moodle/Unicheck will be requested to confirm online the following statements:

**Student's declaration prior to handing-in of assignment**

❖ I certify that the work submitted for this assignment is my own and that I have read and understood the respective Plagiarism Policy

**Student's declaration on assessment special arrangements**

❖ I certify that adequate support was given to me during the assignment through the Institute and/or the Inclusive Education Unit.

❖ I declare that I refused the special support offered by the Institute.

# Contents

# Connected Gaming Assignment 2

## Overall description

You have been tasked to create an implementation of the two player game of Chess. The link to the definition of the game may be found here. The game needs to be implemented as follows:

- Start page with nickname entry field.
- Lobby with all players not in a game listed.
- Selection of opposing player from players not in a game.
- Notification of opposing player asking for a game.
- Accept/deny start game and notification for opposing player.
- Turn based game.
- Win or loss notifications to the players.
- Win or loss statistics with total games won, lost or drawn.

### Submission Guidelines

- You are required to use Unity 2020.1.5f for your project.
- Your project should be an offline **git** repository with at least **15** commits with **meaningful** commit descriptions explaining the code changes carried out in that specific commit.
- Your submission should be posted as a compressed **.zip** file containing the contents of the **Assets** folder as a git repository including all the commits as described above.
- All the material, sprites and assets used in your application should be available in the assets folder.
- Before submitting, test your application by copying the assets folder into a new Unity project and ensuring that it loads all the required libraries.
- Your lecturer may ask you for a quick call if the content of your submission is corrupted. You are however **strongly** encouraged to ensure that your submission works.
- If there are issues with your submission, you will be asked to provide a satisfactory explanation of your testing prior to submission.
- A note will be taken of your explanation and you may lose marks if your explanation highlights the fact that you have not taken all the reasonable steps to ensure that a correctly formatted submission has reached your lecturer.
- The name of the compressed file you submit should be in the form of [Name/Surname/Group] – example [Gerard_Said_MSD_6.3A]
- Credit will be given for neatness and correctly organized work.

### Task 1

### KU 4 Choose the correct server infrastructure for different game scenarios (5 marks)

Prepare a game design document outlining the requirements for your chess game. The design document should include the following elements:

- Resources required (files / images) (1 mark)
- Assets required (bulleted list) (1 mark)
- Libraries required (bulleted list) (1 mark)
- Description of the network infrastructure required for the game to function. (1 mark)
- Justification why this network infrastructure should be enough to handle the requirements of multiplayer chess for up to 10 concurrent players. Please ensure you mention latency and how it is affected in your explanation. (1 mark)

### Task 2

### KU 5 Show how downloadable content can be split such that information can be added to a deployed game (5 marks)

Please write between 200 and 300 words on the following points.

- Explain how Firebase Cloud storage works, with reference to the Firebase Cloud storage documentation. Your explanation should also include insight into what limits exist on the resources being used. (3 marks)
- Explain how files can be downloaded and progress monitored using Async Tasks. (2 marks).

### Task 3

### KU 7 Illustrate how an implemented networked multiplayer game functions (5 marks)

Please write (in point form) the exact sequence of events that need to take place for matchmaking to take place and a two player turn based game to begin. This will be part of your high level pseudocode for the game you are implementing. Your sequence should include at least **10** elements. (5 marks)

### Task 4

### AA4 Establish a DLC infrastructure for a connected game (7 marks)

Implement multiplayer chess. Your game should follow the template as outlined above. Matchmaking should take place at the beginning of the game followed by the chess game, which will be timed. Players should also have the option to surrender to their opponent as a button on screen. (5 marks)

### Task 5

### AA4 (Contd.)

Your firebase storage will contain a set of images which can be used as a background to the chess game. Implement a feature that downloads a random background image programmatically at the beginning of each chess game. That background will only be used for one game at a time, so if another match takes place at the same time in game, a different background image is used. (2 marks)

### Task 6

### AA3 Represent statistical game data in a meaningful way (7 marks)

After each match, a file with a unique name for each match should be saved on firebase storage with the following information:

- Player 1 vs Player 2 number of moves.
- Player 1 vs Player 2 number of enemy units taken.
- Winner
- Time taken for match

### Task 7

### AA2 Demonstrate how downloadable content works in a real connected game (7 marks)

Players will have the option of choosing between 2 different chess set types, Robot Chess and Traditional Chess. The images for both black and white will be stored on Firebase Storage. At the beginning of the game, the player will be asked to choose whether he / she wants Robot or Traditional pieces. Depending on their choice, the appropriate assets (images) will be downloaded for their chess pieces at that point.

- Implement downloading of chess images at start of the game (3 marks)

- Implement a progress bar at the beginning of the game reflecting download progress. If the download is too quick, the progress bar should take at least 5 seconds (4 marks).

### Task 8

### AA1 Demonstrate how data can be mined from a connected game, and show how it may be implemented (7 marks)

Create a separate Unity project which accesses the match files for all the matches played and displays the following statistics after Get Data is clicked:

- Total number of matches played. (2 marks)
- Total number of moves across all matches played. (2 marks)
- Percentage times Player 1 won of the total matches. (1 mark)
- Percentage times Player 2 won of the total matches. (1 mark)
- Total amount of time everyone played chess in your game. (1 mark)

### Task 9

### SE2 Evaluate different methods of collecting real world player data (10 marks)

Do some research into multiplayer games that you play in the real world and determine what data is being stored about the players. Write a short report regarding what data is being stored and why such data is being collected. Is it acceptable for such data to be collected in your opinion? Should data be collected from people playing a game? Illustrate your answer with specific examples from games that you have played.

### Task 10

### SE3 Evaluate the networked game by functional metrics (10 marks)

Run your chess game through a **qualitative** analysis. Ask a **maximum** of three people their experience of the chess game and perform an in depth interview with them asking them regarding how the felt while they played the game. You will need to keep a transcript of your interview which you will then code based on the themes brought up by common issues (ex: The sound during the game was quite annoying would be coded as SOUND ISSUES).

Present your qualitative results and discussion and explain what insights were generated from your analysis of the game's performance.