ASSESSMENT AND INTERNAL VERIFICATION FRONT SHEET (Individual Criteria)

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

Course Title	**B.Sc. (Hons.) Software Development, B.Sc. (Hons.) Computer Systems & Networking, B.Sc. (Hons.) Multimedia Software Development**		**Lecturer Name & Surname**	Clifford De Raffaele Frankie Inguanez Neville Magri Daren Scerri	
Unit Number & Title	ITRSH-506-2101 – Research Design 1				
Assignment Number, Title / Type	01, Research Project / Home				
Date Set	03/02/2024	**Deadline Date**	23/03/2024		
Student Name	Ali Hajjar	**ID Number**	**0368503L**	**Class / Group**	**MSD 6.2A**

Assessment Criteria	Maximum Mark
SE1.2 Formulate a research hypothesis, supported with research questions from which research methods will be derived.	10
Total Mark	10

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/Turnitin 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.

Milestone 01: Research Introduction

1. Create a GitHub private repository and call it **com.mcast.research_design_I_2023.<surname>_<name>**, replacing <surname> and <name> with your actual name. Share this repository with your respective lecturer. Clone the repository on your local computer and commit regularly. Create and maintain the following structure:
    - **doc:** Upload the assignment brief.
    - **lit:** Any academic papers that you refer to and cite in your final paper.
    - **src:** The source code and data of your prototype. Consult with your respective lecturer on whether this folder should be included on your Git repository or elsewhere especially in games development that require very large files. Also be mindful of large datasets.
    - **deliverables:** All deliverables that will be requested of you.
2. Propose a research topic that you want to research. For the chosen topic you need to provide:
    - Research aim.
    - Research hypothesis.
    - Three research questions.
    - Inspirational sources (previous projects, dissertations, blogs).

P.S. This task requires a certain amount of research, communication, and reflection. Consider reviewing past dissertations, speaking with your lecturer, reflect on the current context, what you want to pursue and what your strong points are. Consider making use of tools such as a Kanban board to organise your thoughts and address key aspects of your research such as what is shown below.

Topic	Existing Research	Resources	Solution	Evaluation
What interests and motivates you? What topic can aid you in your future ambitions? What is of current interest? Are there topics of a national or local priority?	Is the topic well researched? Do you have supporting content that you can refer to? Are there limitations in previous research that you can build on? What opportunity, research gap or context are you going to make on the existing knowledge?	What datasets/resources exist on the subject matter? Do you need to create a dataset/resource yourself? If you are going to create a dataset/resource, do you know what would make a good dataset? How large should the dataset be? What resources are needed to process the dataset?	What previous implementations exist by other researchers? What hardware, software, resource specifications are needed to run existing solutions?	What methodology do researchers adopt? Is a research pipeline used by other researchers? What pipeline would make sense for your research? How do other researchers evaluate and compare their research? Are qualitative or quantitative analysis needed?

Figure 1 - Sample Research Ideation Kanban Board

GitHub Link:
https://github.com/AliHajjar/com.mcast.research_design_I_2023.Ali_Hajjar.git

Research Aim: The research aims to predict game outcomes by analysing and quantifying the power of early game data in Multiplayer Online Battle Arena (MOBA) games (specifically focusing on League of Legends) This project using important machine learning techniques that are important in the early stages of game events that can be used to predict victory or defeat. It attempts to close the gap between strategic game decisions and their long-term effects on game outcomes by providing a basis for understanding how early game development influences overall success. Furthermore, the project aims to evaluate the implementation and prediction effectiveness of machine learning algorithms based on these indicators, with the aim of developing a predictive model.

Research Hypothesis: It is hypothesised that early game performance metrics (e.g., first blood, gold advantage, early objectives) in MOBA games can significantly predict the game's outcome, with certain models offering superior predictive accuracy.

Research Questions:

1. What early game metrics are most predictive of match outcomes in MOBA games?
2. What role do player-specific metrics (e.g., champion selection, early player movement, and engagement patterns) play in predicting the outcome of MOBA games?
3. What characteristics and size of datasets are required to accurately train machine learning models for predicting MOBA game outcomes based on early game data?

Inspirational Sources:

https://ieeexplore.ieee.org/abstract/document/9720122

Grading Criteria

Milestone 01 – Grading Criteria

Criteria / Task	Low Performance	Average Performance	Best Performance
SE1.2	1-3	4-6	7-10
Identified research	Proposed research is broad, lacking direction or context.	Proposed research identifies key technologies and context yet is lacking depth of thought.	Proposed research is detailed, relevant to specific context and based on good background research.
Research hypothesis	Hypothesis is generic and lacking rigor.	Hypothesis specifies research direction and correlates well with research questions.	Hypothesis is well defined and encapsulates the research direction well.
Research questions	One or two research questions provided that are loosely linked to research hypothesis or are too generic.	Three research questions provided but are lacking depth of thought.	Three research questions provided, contextualised to research, and showing depth of thought.