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	**IT6-A4-23 | Bachelor of Science (Honours) in Digital Games Development**		**Lecturer Name & Surname**		
Unit Number & Title	ITDGM-506-2304: Mobile Game Development				
Assignment Number, Title / Type	Assignment 1 – Home				
Date Set	3rd May 2024	**Deadline Date**	4th June 2024		
Student Name		**ID Number**		**Class / Group**	

Assessment Criteria	**Maximum Mark**
R&U1 Describe the development process of a simple game feature using a game engine and its functionality.	5
R&U2 Describe a scripting solution for a game mechanic and its implementation.	5
R&U3 Identify the thought process and logic behind implementing a specific game feature.	5
R&U4 Identify touch controls requirements for a specific game functionality.	5
R&U5 Identify essential elements of a mobile game design.	5
R&U6 Recognize different game mechanics commonly used in mobile games.	5
R&U7 Identify the main components of a game's code.	5
A&A1 Solve a complex programming problem in the game development process.	7
A&A2 Implement touch controls for a mobile game.	7
A&A3 Analyse the logic of the implemented touch controls input.	7
A&A4 Implement a simple mobile game concept with clear objectives and gameplay.	7
E&C2 Assemble a game that runs correctly on multiple mobile platforms.	10
E&C3 Develop a coherent game code structure that aligns with the game's objectives.	10
Total Marks	**83**

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.

ITDGM-506-2304: Mobile Game Development

MCAST - BSc Year 1 – Digital Games Development

Assignment 1 - Home Assignment

Deadline: 4th June 2024

General Guidelines:

- This is a Home-based Assignment, and it carries **83%** of the global mark.
- Read the scenario carefully and follow the instructions given.
- Any reference from class notes, books or the internet should be included in the appendix.
- **Plagiarism** is strictly prohibited and will be penalised in accordance with the college's disciplinary procedures.
- Your lecturer will provide you with details how to upload your work.
- Submit your work on VLE.
- Late assignments are not accepted.
- Read carefully the rubrics.
- You are allowed to make use of LLMs as long as you understand the given code.

Section 1: E-Learning Spelling Game

68 Marks

Scenario

You have been asked to design and develop an e-learning Android game using Godot and GDScript. This app has to be tailored for young children to enhance either their English or Maltese spelling skills. This application will consist of 3 micro-games, each designed to facilitate language learning through interactive and engaging activities. The primary goal is to make the learning process enjoyable and effective by using game mechanics that encourage participation and repetition. Make sure that your game makes use of custom signals and singleton. Take a look at the following link to understand better similar applications out there:
https://play.google.com/store/apps/details?id=com.iabuzz.spelling&hl=en_US

***Optional**: For this app, you are being given the opportunity to publish the game on an MCAST IICT account. The best app will be chosen by a team of judges and the choice is independent from the mark given. You can make use of ready-made assets but make sure that you have legal ownership on these assets (can be published) and that the app is fully functional and tested on multiple devices. You are encouraged to add extra functionalities/micro-games to make the app more engaging.*

Task 1 – Version Control

Create a private GitHub repository to manage the project's development. The repository must be shared with the lecturer. For this section, commit at least five times during the development process, with meaningful commit messages that clearly describe the changes and progress at each stage. Submit a link to the repository in a word document.

R&U1 Describe the development process of a simple game feature using a game engine and its functionality.	
Description	**Max Mark**
Uses GitHub effectively with at least five meaningful commits. Commit messages are descriptive, reflecting thoughtful development and progression. Repository is well-organized and shared appropriately.	2

Task 2 – Main Menu

The game should have a main menu where players can choose which micro-game to play.

R&U5 Identify essential elements of a mobile game design		
Functionality ID	**Description**	**Max Mark**
1	Display icons or thumbnails for each of the three micro-games. Screen is responsive.	1
2	Allow users to tap on an icon to select and start the desired game.	2
3	Provide brief animations or effects when a game is selected to make the interaction engaging.	2

Task 3 – Micro Game 1 – Match and Learn Game

The “Match and Learn” game is designed to help young learners recognize and spell the names of various objects correctly. In this game, children will see an image of an object, and below the image, the name of the object will appear with the letters grayed out. Scattered around the screen will be draggable letters in random order. The task for the players is to drag each letter to its correct place beneath the image. Success in this task leads to a new object appearing, maintaining engagement and reinforcing learning through repetition and progression.

R&U3 Identify the thought process and logic behind implementing a specific game feature.
R&U4 Identify touch controls requirements for a specific game functionality.
R&U6 Recognize different game mechanics commonly used in mobile games.
A&A4 Implement a simple mobile game concept with clear objectives and gameplay.

Functionality ID	Description	Max Mark
1	Display an image at the center of the screen and show the corresponding object name below the image with letters grayed out. Randomly pick these objects from a pool of objects.	3
2	Display all the necessary letters of the word in a randomized layout (not hard coded) around the image.	2
3	Allow the player to drag and drop each letter onto the correct grayed-out space.	3
4	Provide visual feedback when a letter is placed correctly (letter changes color).	2
5	If a letter is placed incorrectly, provide subtle feedback (the letter returns to the original position).	2
6	After successfully completing a word, automatically progress to the next object (round).	2
7	Include a set of at least four objects to spell in each game (four rounds).	2
8	Display a timeline or achievement bar that shows how many objects are left in the round.	2
9	Include an option to restart the game or go back to the main menu.	2
10	Game can finish if user successfully completes all rounds. User is notified accordingly.	2

Figure 1: Example for Micro Game 1

You are also required to document the development process for this task specifically focusing on how you implemented the functionality where users drag and drop letters to spell the names of the objects correctly. This documentation should thoroughly describe the node setup, and script integration. Use screenshots to explain the process you've implemented.

R&U1 Describe the development process of a simple game feature using a game engine and its functionality.	
Description	**Max Mark**
Provides detailed documentation of the development process. Clearly explains the drag and drop feature with well-integrated screenshots.	3

Task 4 – Micro Game 2 – 3 Pics 1 Word

The goal is to help learners enhance their vocabulary and spelling skills by identifying the common word represented by three different pictures. This game encourages critical thinking and word recognition.

A&A1 Solve a complex programming problem in the game development process. *A&A2 Implement touch controls for a mobile game.*		
Functionality ID	**Description**	**Max Mark**
1	Show three distinct images at the top of the screen, each depicting different scenes or objects that share a common word. Design the game with three rounds, each featuring a new set of images and a new word.	3
2	Below the images, display a panel with empty slots corresponding to the letters of the word. Allow users to drag letters from the scrambled collection and drop them into the appropriate slots on the guessing panel.	3
3	Upon placing all letters, provide visual feedback on whether the word is correct or not.	3
4	Include a visual progress bar or indicator showing how many rounds the player has completed and how many are left.	2
5	Provide a "Hint" button that, when pressed, reveals one correct letter in the word.	3

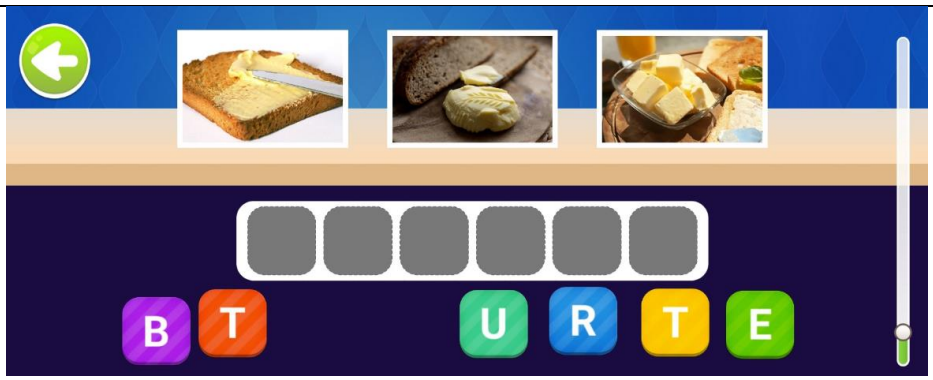

Figure 2: Example for Micro Game 2

Task 5 – Micro Game 3 – Find the Word

The focus is on auditory and visual recognition, as well as word search skills. Players will listen to an audio playback of a word and then search for it within a grid of letters. This game is effective in reinforcing spelling and listening skills.

A&A3 Analyse the logic of the implemented touch controls input.
E&C2 Assemble a game that runs correctly on multiple mobile platforms.

Functionality ID	Description	Max Mark
1	Display a grid (6x6) filled with letters. Within this grid, one word is hidden. Design the game with at least two rounds, each featuring a new grid and a different word to find. The grid is responsive.	3
2	Integrate an audio feature that plays the pronunciation of the target word. Provide a button to replay the audio as many times as needed to help children associate the spoken word with its written form.	3
3	Allow users to select the word by touching the first letter and dragging across the grid to the last letter of the word (continuous touch). The letters should change their colour (highlighted) accordingly.	4
4	The game should be able to recognize the correct sequence even if it is in reverse order (e.g., selecting from the last letter to the first letter).	4
5	If the selected letters do not form the target word, provide feedback accordingly.	3

Figure 3: Example for Micro Game 3

Task 6 - Custom Events and Singleton

You are required to document how you made use of custom events and singleton in this project. Use screenshots to explain the process you've implemented.

R&U2 Describe a scripting solution for a game mechanic and its implementation.	
Description	**Max Mark**
Provides a description of custom event implementation, including why and how events are used in your project. Screenshots clearly illustrate the event-handling process and integration into the game's workflow. Explains benefits and impacts on the game.	2.5
Demonstrates an in-depth understanding of the Singleton pattern with detailed descriptions of its implementation and role in your game architecture. Screenshots show Singleton setup and usage, explaining how it enhances the game design.	2.5

Section 2: 'Hey That's My Fish' Game

15 Marks

You have been asked to design and develop an Android 'Hey That's My Fish' game using Godot. Your application must assume two players playing on the same device and should contain the functionalities listed below. Level design should follow the principles shown in Figure 4.

Gameplay

Link: https://www.youtube.com/watch?v=6MThCzWfGvU or
https://www.youtube.com/watch?v=0XDYttu4WYs

Figure 4: Example of 'Hey That's My Fish'

E&C3 Develop a coherent game code structure that aligns with the game's objectives.		
Functionality ID	**Description**	**Max Mark**
1	At the beginning of the game, the board randomly shuffles the number of fish for every tile.	2
2	At the beginning of the game, penguins are placed on their starting locations (selected by players). Players can only select tiles with one fish. 4 penguins per player.	1
3	Game is turn-based. Player 2 has to wait for the turn of Player 1 and vice versa.	1
4	Players can move a penguin to any adjacent (connected and unoccupied) hexagonal tile within the grid. The player selects a penguin and then selects an eligible tile to move it to.	2
5	Upon moving from a tile, that tile is removed from the game board, affecting future movement options for all penguins.	1
6	The player cannot jump over other penguins and cannot jump over empty	1

	tiles.	
7	Penguins collect fish (points) when they move from a tile. The number of fish collected can vary from tile to tile.	1
8	The game ends when no more moves are possible for any penguins. The player with the most fish wins. Winner's name is visible on the screen.	1

In addition to developing the game, you are also required to prepare a PowerPoint presentation and record a video of yourself defending your design and development choices. The presentation should be no longer than 5 minutes and must include explanations on how you have implemented **object-oriented programming** principles, utilized the **Singleton pattern**, created **custom signals**, and applied **composition** within your game code. Each of these aspects should be illustrated with specific code snippets from your project. This will help demonstrate your understanding and application of these concepts in building a functional and coherent game structure.

R&U7 Identify the main components of a game's code			
	EXCELLENT [4-5 Marks]	**SATISFACTORY [2-3 Marks]**	**POOR [0 MARKS]**
Use of Classes/ Singleton/ Signals/ Composition	Demonstrates excellent integration of these programming concepts to implement game functionality. Skilfully using classes, Singleton pattern for global access, custom signals for decoupling, and composition to effectively build complex behaviours.	Basic application of these concepts with functional code but lacks depth in integration.	Minimal or incorrect use of these programming concepts.
Video Presentation	Provides a comprehensive, clear, and well-explained presentation, effectively demonstrating the use of classes/singletons/ signals/composition.	Good presentation with clear examples from the code but may lack depth in explaining.	Poor or no video presentation or fails to adequately explain or demonstrate the concepts.

--END OF ASSIGNMENT--