PORTFOLIO OF GAME ENGINE COMPONENTS — GRAPHICS

Version 1.0
BSc Computing for Games

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Introduction

In this assignment, you are required to **design** and **implement** a C++ program using SDL and OpenGL which demonstrates the type of 3D computer graphics techniques that appear in a modern game engine.

Justification bla bla bla.

This assignment is formed of several parts:

(A) **Propose** a design for your game demo. Your proposal should:
  (i) **describe** the concept of your demo;
  (ii) **explain** how your concept meets the requirements;
  (iii) **do** another thing probably.
(B) **Formulate** the mathematical foundations for your demo;
(C) **Implement** the thing;
(D) **Demonstrate** the thing.

"Bad programming is easy. (People) can learn it in 21 days, even if they are dummies...(Good programming requires a) willingness to devote a large portion of one's life to deliberative practice...So go ahead, buy that book; you'll probably get some use out of it. But you won't change your life or your real expertise as a programmer in 21 days...How about working hard to continually improve over 24 months? Well, now you're starting to get somewhere..."

— Peter Norvig

Assignment Setup

This assignment is a **programming** task. Fork the GitHub repositories at the following URL:

`https://github.com/Falmouth-Games-Academy/comp220-portfolio`

Use the existing directory structure and, as required, extend this structure with sub-directories. Ensure that you maintain the `readme.md` file.

Modify the `.gitignore` to the defaults for **Visual Studio**. Please, also ensure that you add editor-specific files and folders to `.gitignore`.

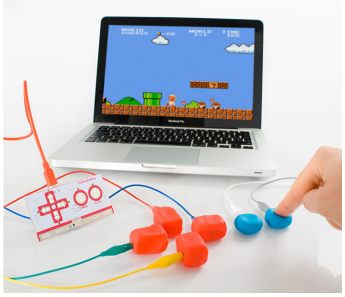
Part A

Part A consists of a **single formative submission**. This work is **individual** and will be assessed on a **threshold** basis. Your pitch should address the following questions:

- What is the title and high concept of the game?
- What is the intended aesthetic?
- What is the core mechanic?
- What makes the game fun?
- Is there a market for this type of game? Who is the target audience?
- What are the unique selling points?
- Is the scope appropriate for the product development time-frame?

To complete Part A, prepare the handout using any word processing tool. There is no submission.

Show the handout to your **tutor** for immediate **informal feedback**.



The *MaKey MaKey* allows a multitude of materials to be used to create videogame controllers.

Additional Guidance

Bla bla bla.

FAQ

- **What is the deadline for this assignment?**
  Falmouth University policy states that summative deadlines must only be specified on LearningSpace. Please examine the assignment area where you located this document.
- **What should I do to seek help?**
  You can email your tutor for informal clarifications. For informal feedback, make a pull request on GitHub.
- **Is this a mistake?**
  If you have discovered an issue with the brief itself, the source files are available at:
  `https://github.com/Falmouth-Games-Academy/bsc-assignment-briefs`.
  Please make a pull request and comment accordingly.

Additional Resources

- Keith, C. (2010) Agile Game Development with Scrum. Pearson Education.
- http://agilemanifesto.org/

Marking Rubric

Criterion	Weight	Refer for Resubmission	Basic Competency	Basic Proficiency	Novice Competency	Novice Proficiency	Professional Competency
Worksheets	20% × 5 worksheets	A reasonable attempt at the worksheet is not submitted by the deadline.	The submission is on time. The submission is a reasonable attempt, but is incomplete or incorrect.	The submission is on time. The submission is complete and correct. The submission has significant quality issues.	The submission is on time. The submission is complete and correct. The submission has some quality issues.	The submission is on time. The submission is complete and correct. The submission has very few quality issues.	The submission is on time. The submission is complete and correct. The submission has almost no quality issues.

Contract — to be given as a separate document, but in here for now

You must design and implement a game demo making use of 3D graphics techniques. The demo must allow the player to move around a simple 3D environment in first-person perspective, and must have a simple gameplay objective.

The demo must meet the following requirements:

- A scene containing at least one textured mesh and at least one light source.
- Standard first-person movement controls: move with the WASD keys, look around with the mouse. Extra controls (e.g. shoot, jump, interact) may be added if required.
- A **simple** gameplay objective such as collecting objects, killing enemies, or solving a puzzle.
- Any **three** of the following graphics and simulation techniques:
  - Procedural generation of complex meshes;
  - Rendering of semi-transparent materials;
  - Skeletal animation;
  - Collision detection;
  - Integration of a physics engine (e.g. Bullet, PhysX);
  - Particle effects (e.g. fire, smoke, dust, explosions, water, blood);
  - An advanced real-time lighting effect (e.g. shadow casting, real-time reflections, volumetric lighting, bloom);
  - A stylised full-screen filter (e.g. cel shading, halftone, CRT monitor effect, motion blur);
  - Other advanced rendering or simulation techniques of your choice, to be discussed with your tutor.