F21GP: Programming Assignment

1 Overview

This is a **group coursework (max two students).** The main objective of this programming coursework is to implement a technical prototype using four core components often used in Video Games. For this coursework, you will need to demonstrate and explain your running code. This coursework counts for 20 marks of your overall mark for this course.

2 Tools, Libraries and Environment

The following tools are **recommended** but not required for the development of your programming demo:

- Visual Studio IDE (https://www.visualstudio.com/)
- Heriot-Watt Windows PCs.

The following are **required** for your coursework:

- Code template (https://github.com/StfnoPad/GPGameTemplate).

Note: there will be no support or labs for using different tools.

3 Task

To complete this coursework, you will need to create a level that includes the following required components:

- a particle explosion effect,
- an object with rigid body physics (no rotations),
- crowd or flocking interaction between objects,
- and an A* path-planning search.

You will be asked to demo and explain your work in the lab sessions in Weeks 7 and Week 8. An online poll will be run in week 5, so you can decide your slot to demo your coursework.

Marking scheme: The components for your technical demo will be each marked out of 5 marks (total 4x5 = 20 marks). The components will be marked using the marking scheme below:

0 mark	1 mark	2 marks	3 marks	4 marks	5 marks
Below Threshold (F-E)		**Threshold (D-B)**		**Above Threshold (A)**	
Component was not implemented at all.	Component does not work, or algorithm was not implemented correctly.	Component works correctly, but incorrect or incomplete explanation of code or algorithms.	Component runs correctly, code and algorithms were explained accurately.	Component runs correctly, code/algorithms explained, and evidence of enhancement in components.	Component runs correctly, code/algorithms explained, enhancement, and interaction between components.

4 Hand-in code

One student from the group is **required** to submit the code as a zip file to Vision so that it can be checked for plagiarism. This is a requirement for you to pass this coursework. Please just follow the link in Vision.

5 Technical Demo Session

The deadline for this coursework will be Week 7 and Week 8 – demo slots to be chosen by you in Week 5. Please note, you need to submit your code in Vision before you demo slot.

Important requirement: Please print, fill out and bring the self-assessment sheet (last page) for your technical demo session.

If you have any questions or queries about the assessment, please do not hesitate to contact S.Padilla@hw.ac.uk (Edinburgh) or M.Hamdan@hw.ac.uk (Dubai).

6 Late Submissions

The University recognises that, on occasion, students may be unable to submit coursework on the submission date or be unable to present their work on the submission date. In these cases, the University's Submission of Coursework Policy outlines are:

- No individual extensions are permitted under any circumstances.
- Standard 30% deduction from the mark awarded (maximum of five working days).
- In the case where a student submits coursework up to five working days late, and the student has valid mitigating circumstances, the mitigating circumstances policy will apply, and appropriate mitigation will be applied.
- Any coursework submitted after five calendar days of the set submission date shall be automatically awarded a no grade with no formative feedback provided.

Please contact your Personal Tutor or Councelor if you are unable to meet the deadlines or need information for Mitigating Circumstances or Temporal Suspensions of Studies.

7 Notes

- Any borrowed / external code or libraries for the functionality of the components will receive no credits towards your overall mark.
- You must never give hard or soft copies of your coursework code to another student.
- You must always refuse any request from another student for a copy of your code.
- Sharing a coursework code with another student is collusion, and if detected, this will be reported to the School's Discipline Committee. If found guilty of collusion, the penalty could involve voiding the course.
- Feedback and your marks: you will receive feedback on the demonstration session and extended feedback if requested.

F21GP: Self-assessment Programming Coursework Sheet

Please complete your names, mark you think you deserve in the first column for each component, and final question.

Student A name:

Student B name:

	1 mark	2 mark	3 mark	4 mark	5 mark
	Below Threshold (F-E)	**Threshold (D-B)**		**Above Threshold (A)**	
Marking Scheme Guidelines	Component does not work, or algorithm was not implemented correctly.	Component works correctly, but incorrect or incomplete explanation of code or algorithms.	Component runs correctly, code and algorithms were explained accurately.	Component runs correctly, code/algorithms explained, and evidence of enhancement in components.	Component runs correctly, code/algorithms explained, enhancement, and interaction between components.
Particle Explosion Component Self-assess mark: **____/5**	• Only one particle • Particles do not reappear • Particles do not use vectors.	• The component runs multiple particles with vectors. • Can't explain or point at implementation code. • Code structure confusing.	• Code and Algorithms explained quite well. • Fully functional code. • The code structure is clear and understandable.	• Added: billboards, colour effects, multiple different vector effects, context, or other.	• Added: Interaction with Physics, Crowds, or Search.
Rigid Body Physics Component Self-assess mark: **____/5**	• Object physics does not look correct. (no force). • The motion of the object does not settle down. • The object falls through the floor.	• Component running physics correctly – using forces and velocity vectors. • Can't explain or point at implementation code. • Code structure confusing.	• Code and Algorithms explained quite well. • Fully functional code. • The code structure is clear and understandable.	• Added: extra walls, multiple bouncing objects, different floors, rotational motion, or other.	• Added: Interactions with Particles, Crowds, or Search.
Crowd or flocking Component Self-assess mark: **____/5**	• the crowd does not look correct. • Crowd missing behaviours.	• Component running crowd simulation implementing 3D behaviours. • Can't explain or point at implementation code. • Code structure confusing.	• Code and Algorithms explained quite well. • Fully functional code. • The code structure is clear and understandable.	• Added: 3D flocking or crowd, extra behaviours, wanders, followers, or other.	• Added: Interactions with Particles, Physics, or Search.
A* Search Component Self-assess mark: **____/5**	• Character does not reach the goal.	• Pathfinding algorithms using correct search space and heuristics. • Can't explain or point at implementation code. • Code structure confusing.	• Code and Algorithms explained quite well. • Fully functional code. • The code structure is clear and understandable.	• Added: boundaries, maze, obstacles, random places to start, extra heuristics improving A*, or other.	• Added: Interactions with Particles, or Physics.

Have you submitted your demo code in Vision: Yes / No

Lecturer notes and feedback: