University of South Wales
Prifysgol De Cymru

Faculty of Computing, Engineering and Science

Assessment Cover Sheet and Feedback Form 2018-19

Module Code:	Module Title:	Module Team:
CS4S765	Game Engine Optimisation	Gaius Mulley
Assessment Title and Tasks: Implement game engine optimisation: extending chisel.		Assessment No. 2
Date Set **07/01/2019**	**Submission Date** **22/03/2019**	**Feedback Date** **19/04/2019**

IT IS YOUR RESPONSIBILITY TO KEEP RECORDS OF ALL WORK SUBMITTED

Marking and Assessment
This assignment will be marked out of 100% This assignment contributes to 50% of the total module marks.
Learning Outcomes to be assessed (as specified in the validated module descriptor https://icis.southwales.ac.uk/): 1) Demonstrate the ability to analyse and critically evaluate techniques used to optimise game engines 2) Demonstrate the ability to analyse, create and evaluate game engine code
Provisional mark only: subject to change and / or confirmation by the Assessment Board

The aim of this coursework is to extend the chisel free software package which allows doom3 maps to be built from the command line.

Part 1. Chisel changes

Your extensions to this package should primarily be directed towards the tool pen2map.py. This will transform a simple pen map into a doom3 map.
It can be extended in any way you feel appropriate.
You might choose to work on any of the following (but (i) is mandatory)

(i) implementing open doors between rooms (using visportals). Make this change switchable from the command line.

(ii) You might also consider how more effective beams might be created.

The chisel software can be obtained using git:

git clone https://github.com/gaiusm/chisel

Part 2: Chisel optimisations

Introduce a brushdef class to pen2map.py and record the extent of each brush in as simple brick with x,y,z dimensions. Now implement an optimisation procedure to combine adjacent bricks and emit the resulting set of brushes to a map file. Generate some statistics on how many brushes are optimized and also comment on the frame rate of doom3. Also generate statistics from turning on the generation of visportals for generated chisel map and compare the same map without visportals. How does the frame rate differ using these techniques?
Your report should include a git diff and also a commentary of the changes you made and justification. You should include relevant screenshots within your report.
Finally your report should comment on the success or otherwise of using this tool for the creation of maps for doom3 and future improvements you might make.
Your report should not exceed 3000 words (excluding code)

Marking Scheme:

	Fail	Narrow Fail	3rd Class / Pass	Lower 2nd Class / Pass	Upper 2nd Class / Merit	1st Class / Distinction
Chisel functionality changes (part 1) 40%	• Very poor Chisel functionality changes (part 1)	• Poor Chisel functionality changes (part 1)	• Satisfactory Chisel functionality changes (part 1)	• Good Chisel functionality changes (part 1). visportals implemented	• Very good Chisel functionality changes (part 1). visportals implemented and other features	• Excellent Chisel functionality changes (part 1). visportals implemented and features which have been independently created
Chisel optimisation changes (part 2) 30%	• Very poor Chisel optimisation changes (part 2)	• Poor Chisel optimisation changes (part 2)	• Satisfactory Chisel optimisation changes (part 2). A good start and the direction of travel is correct	• Good Chisel optimisation changes (part 2). Functionality complete	• Very good Chisel optimisation changes (part 2). Relavant optimisation statistics generated	• Excellent Chisel optimisation changes (part 2). Well crafted code produced which also generates useful optimisation statistics
commentary on the usefulness and future improvements 30%	• Very poor commentary on the usefulness and future improvements	• Poor commentary on the usefulness and future improvements	• Satisfactory commentary on the usefulness and future improvements. The commentary addresses some of the areas with errors and omissions	• Good commentary on the usefulness and future improvements. The commentary addresses the majority of areas with a few errors or omissions	• Very good commentary on the usefulness and future improvements. The commentary addresses the majority of areas with no major errors or omissions	• Excellent commentary on the usefulness and future improvements. The commentary contains a high amount of independent thought and also all the major areas are covered without errors