



Final mark awarded: _____

**Faculty of Computing, Engineering
and Science**

Assessment Cover Sheet and Feedback Form 2017-18

Module Code: CS4S765	Module Title: Game Engine Optimisation	Module Lecturer: Gaius Mulley
Assessment Title: Implement game engine optimisation: extending chisel.		Assessment No. 2
No. of pages submitted in total including this page: <i>Completed by student</i>		Word Count of submission (if applicable): <i>Completed by student</i>
Date Set: 19-Feb-2018 00:00:00	Submission Date: 23-Mar-2018 23:55:00	Return Date: 20-Apr-2018 23:55:00

Part A: Record of Submission (to be completed by Student)	
Extenuating Circumstances If there are any exceptional circumstances that may have affected your ability to undertake or submit this assignment, make sure you contact the Advice Centre on your campus prior to your submission deadline.	
Fit to sit policy: The University operates a fit to sit policy whereby you, in submitting or presenting yourself for an assessment, are declaring that you are fit to sit the assessment. You cannot subsequently claim that your performance in this assessment was affected by extenuating factors.	
Plagiarism and Unfair Practice Declaration: By submitting this assessment, you declare that it is your own work and that the sources of information and material you have used (including the internet) have been fully identified and properly acknowledged as required ¹ . Additionally, the work presented has not been submitted for any other assessment. You also understand that the Faculty reserves the right to investigate allegations of plagiarism or unfair practice which, if proven, could result in a fail in this assessment and may affect your progress.	
Intellectual Property and Retention of Student Work: You understand that the University will retain a copy of any assessments submitted electronically for evidence and quality assurance purposes; requests for the removal of assessments will only be considered if the work contains information that is either politically and/or commercially sensitive (as determined by the University) and where requests are made by the relevant module leader or dissertation supervisor.	
Details of Submission: Note that all work handed in after the submission date and within 5 working days will be capped at 40% ² . No marks will be awarded if the assessment is submitted after the late submission date unless extenuating circumstances are applied for and accepted (Advice Centre to be consulted).	
You are required to acknowledge that you have read the above statements by writing	Student Number(s):

¹University Academic Misconduct Regulations

²Information on exclusions to this rule is available from the Advice Centre at each Campus

your student number(s) in the box:	
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IT IS YOUR RESPONSIBILITY TO KEEP RECORDS OF ALL WORK SUBMITTED

<p style="text-align: center;">Part B: Marking and Assessment (to be completed by Module Lecturer)</p>

<p>This assignment will be marked out of 100%</p>

<p>This assignment contributes to 50% of the total module marks.</p>
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<p>This assignment is bonded</p>

<p>Learning Outcomes to be assessed (as specified in the validated module descriptor https://icis.southwales.ac.uk/):</p>

<p><i>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</i></p>
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Feedback/feed-forward (linked to assessment criteria):

- Areas where you have done well:

- Feedback from this assessment to help you to improve future assessments:

- Other comments

Mark:

Marker's Signature:

Date:

- **Work on this module has been marked, double marked/moderated in line with USW procedures.**

Provisional mark only: subject to change and/or confirmation by the Assessment Board

**Part C: Reflections on Assessment
(to be completed by student – optional)**

Use of previous feedback:

In this assessment, I have taken/took note of the following points in feedback on previous work:

Please indicate which of the following you feel/felt applies/applied to your submitted work

- A reasonable attempt. I could have developed some of the sections further.
- A good attempt, displaying my understanding and learning, with analysis in some parts.
- A very good attempt. The work demonstrates my clear understanding of the learning supported by relevant literature and scholarly work with good analysis and evaluation.
- An excellent attempt, with clear application of literature and scholarly work, demonstrating significant analysis and evaluation.

What I found most difficult about this assessment:

The areas where I would value/would have valued feedback:

	Fail
Chisel functionality changes (part 1) 40%	• Very poor Ch
Chisel optimisation changes (part 2) 30%	• Very poor Ch
Commentary on the usefulness and future improvements 30%	• Very poor Co

Assessment Task:

The aim of this coursework is twofold, firstly extend the chisel free software package which allows doom3 maps to be built from the command line and secondly enhance the python bot capability in the modified doom3 engine presented in lectures.

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 (iii) is mandatory)

- (i) provide automatic lighting to a pen map when converting a pen into a map file.
- (ii) converting a concave pen room into multiple convex map entities.
- (iii) implementing open doors between rooms (using visportals). Make this change switchable from the command line.
- (iv) You might also consider having rooms at different z heights and creating steps between them.

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).