DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
ASSESSMENT DESCRIPTION 2018/19
(EXAM TESTS WORTH ≤15% AND COURSEWORK)

MODULE DETAILS:

Module Number:	500079	Trimester:	2
Module Title:	3D Computer Graphics		
Lecturer:	Qingde Li & Xinhui Ma		

COURSEWORK DETAILS:

Assessment Number:	2		of		2	
Title of Assessment:	Pirate Treasure Cove Cave Graphics Effects in GLSL					
Format:	Program		Report			
Method of Working:	Individual					
Workload Guidance:	Typically, you should expect to spend between		50	and	60	hours on this assessment
Length of Submission:	This assessment should be **no** more than: *(over length submissions **will be** penalised as per University policy)*		1000 **words** *(excluding diagrams, appendices, references, code)*			

PUBLICATION:

Date of issue:	25 March 2019

SUBMISSION:

ONE copy of this assessment should be handed in via:	Canvas		If Other (state method)	
Time and date for submission:	**Time**	2pm	**Date**	3 May 2019
If **multiple hand–ins** please provide details*:*				
Will submission be scanned via TurnitinUK?	No	If submission is via TurnitinUK, these should be one of the allowed types e.g. Word, RT, PDF, PPT, XLS etc. Specify any particular requirements in the subumission details Students MUST NOT submit ZIP or other archive formats. Students are reminded they can **ONLY** submit **ONE** file and must ensure they upload the correct file.		

The assessment must be submitted **no later** than the time and date shown above, unless an extension has been authorised on a *Request for an Extension for an Assessment* form: search 'student forms' on https://share.hull.ac.uk.
Canvas allows multiple submissions: only the **last** assessment submitted will be marked and if submitted after the coursework deadline late penalties will be applied.

MARKING:

Marking will be by:	Student Name

ASSESSMENT:

The assessment is marked out of:	100	and is worth	50		% of the module marks
	N.B If multiple hand-ins please indicate the marks and % apportioned to each stage above (i.e. Stage 1 – 50, Stage 2 – 50). It is these marks that will be presented to the exam board.				

ASSESSMENT STRATEGY AND LEARNING OUTCOMES:

The overall assessment strategy is designed to evaluate the student's achievement of the module learning outcomes, and is subdivided as follows:

LO	Learning Outcome	Method of Assessment {e.g. report, demo}
1	*Demonstrate a practical understanding of graphics hardware*	Program
2	*Implement an efficient real-time graphics application*	Program
3	*Provide evidence of knowledge and understanding of 3D graphics and rendering techniques*	Program, report
4	*Apply appropriate mathematical techniques to solve graphical problems*	Program, report

Assessment Criteria	Contributes to Learning Outcome	Mark
quality of graphics rendering	1, 2, 3, 4	40
quality of transformation and animation	2, 4	40
novelty features and overall visual quality	2, 3, 4	15
quality of report	3, 4	5

FEEDBACK

Feedback will be given via:	Feedback Sheet	Feedback will be given via:	
Exemption (staff to explain why)			
Feedback will be provided no later than 4 'teaching weeks' after the submission date.			

This assessment is set in the context of the learning outcomes for the module and does not by itself constitute a definitive specification of the assessment. If you are in any doubt as to the relationship between what you have been asked to do and the module content you should take this matter up with the member of staff who set the assessment as soon as possible.

You are advised to read the **NOTES** regarding late penalties, over-length assignments, unfair

means and quality assurance in your student handbook, which is available on Canvas.

In particular, please be aware that:
- Up to and including 24 hours after the deadline, a penalty of 10%
- More than 24 hours and up to and including 7 days after the deadline; either a penalty of 10% or the mark awarded is reduced to the pass mark, **whichever results in the lower mark**
- More than 7 days after the deadline, a mark of zero is awarded.

- The overlength penalty applies to your written report (which includes bullet points, and lists of text. It does not include contents page, graphs, data tables and appendices). 10-20% over the word count incurs a penalty of 10%. Your mark will be awarded zero if you exceed the word count by more than 20%.

Please be reminded that you are responsible for reading the University Code of Practice on Academic Misconduct through the Assessment section of the Quality Handbook (via the SharePoint site). This govern all forms of illegitimate academic conduct which may be described as cheating, including plagiarism. The term 'academic misconduct' is used in the regulations to indicate that a very wide range of behaviour is punishable.

In case of any subsequent dispute, query, or appeal regarding your coursework, you are reminded that it is your responsibility to produce the assignment in question.

Assessment Description

Please turn to next page for the detailed coursework descriptions.

PIRATE TREASURE COVE CAVE GRAPHICS EFFECTS IN GLSL

The aim of the assignment is to provide you the opportunity to gain the practical experience of implementing some advanced graphics effects by writing a set of shaders using the OpenGL shading language. In this assignment, you are required to design and implement in GLSL a set of graphics effects which can be used in a pirate treasure cove cave-based game similar to the visual effects shown at https://www.artstation.com/artwork/6DEE5. All the effects should be integrated as one single graphic scene involving multiple drawing passes and displayed using RenderMonkey™ Toolsuite.

Here is a list of effects that need to be implemented:

1. BASIC EFFECTS: (50%)
   1) Textured cove cave environment. (5%)
   2) The bumpy stony cave walls and ceiling rendered using a certain bump mapping technique. The mark to be awarded for this effect depends on the bump-mapping technique you choose to implement the effect, which may range from normal mapping(6%) and height mapping (8%) to basic parallax mapping (9%) and advanced parallax mapping (10%). (6%-10%)
   3) A textured treasure chest box in the middle of treasure cave rendered using perfragment lighting technique. (5%)
   4) An animated wood fire in the middle of the cave floor. (7%)
   5) A rusty metal teapot sitting on the top of the wood fire. The teapot should be illuminated using the normal mapping technique to give a rusty and bumpy look of the teapot. (8%)
   6) A shallow animated pond water on the cave floor. (5%)
   7) One or two flying avatars generated by deforming some simple tringle meshes, like sphere and teapot. (10%)

2. OWN EFFECTS AND NOVELTY FEATURES: (10%)
   Create some of your own novel graphics objects to enhance the visual realism of the treasure cave scene, for example, a set of golden coins on the floor, spider webs, an animated ghost treasure hunter, translucent crystal ball, et al.

3. ADVANCED EFFECTS (25%)

   To achieve first class marks, the following effects may need to be considered:
   1) A set of animated torch fires hanging on the treasure cave walls. These fires should locally illuminate the surrounding areas of the treasure room. (10%)
   2) A glowing ghost object using the Dino model provided in RenderMonkey software package. (8%)
   3) Drifting ghost fog in the cave environment. (7%)

4. OVERALL VISUAL EFFECT (10%)

   All effects implemented individually in different passes should be carefully coordinated and integrated to create an appealing cove cave atmosphere.

REMARKS

   The geometric models and textures provided in RenderMonkey Toolsuite are sufficient for the completion of the coursework. You are allowed to use geometric models and textures either downloaded from the internet or made by yourself, but your work will be assessed mainly against the quantity and quality of **different effects** written in GLSL, **NOT** the number of passes and objects rendered.

WHAT TO SUBMIT

1. A short report (worth the remaining 5% of this assessment) to describe what you have achieved and how each effect is implemented. **Illustrate** each of your effects with some screenshots.
2. Export your Rendermonkey program using the Rendermonkey's Package Exporter (File->Export->Package Exporter), which will generate a zipped file containing all your effect resources.
3. Further compress your report and your Rendermonkey program into a zipped file and submit it on to **Canvas.** Please **name your final zipped file in the following form: Your Surname_Initials**. For instance, the filename of the final submission from a student named 'John Smith' should be named as 'Smith_J.zip'.