

Project Contract

Student Name - Ryan Hood.

P-number - P1617694X.

Programme - Computer Games Programming (G62041).

Email address - Hoodrn03@gmail.com or P1617694X@my365.dmu.ac.uk.

Project Title - Colony Sim/Management Game.

Project Proposer - Self.

Supervisor

The name, affiliation and contact details of the supervisor, if different from proposer.

Shengxiang Yang

syang@dmu.ac.uk

Introduction

In this projects **aim is to create a game** wherein a **random map** is generated for the player and using resources which have been placed on that map, they will need to keep their colonists alive. The game will include **base building** and **random events/encounters**. This project will also include a look into **suitable pathfinding algorithms**, comparing the **shortest path** and **shortest time**.

Project Background

As a gamer, I greatly enjoy playing colony sims and management games and I would for once like to try my hand at creating one of my own. I have a huge fascination with random generation and I would love to find a good method of implementing a method of map generation within a game scene.

Aim/Objectives/Deliverables

Aims: I aim to create a fully functioning game, within the colony sim/management sim category. It will include functionality including random map generation and AI pathfinding.

Objectives: a list of specific, measurable objectives, each of which is likely to result in a deliverable. They specify all the work tasks to be undertaken to meet the stated aim. They will vary from project to project, as every project is different.

The main objectives of this project will be:

- Creating a system for creating a **randomly generate a map** for the player, this will also include the **random placement of 'Resources'** within the map.
- Implement and **evaluate the suitability of pathfinding algorithms** within the context of a game.
- Create a **grid system within the map** allowing for the player to **create structures** within the game.

- Follow the **agile development plan** wherein during each sprint a plan is created, implemented and tested. **These sprints will be on a weekly basis.**
- Create models, such as **flowcharts** and **class diagrams** to describe algorithmic operations and implementation strategies.
- Create a **conclusive report** summarizing the development of the project with a **critical evaluation of the work performed**.

Deliverables: a list of your Project's deliverables with some general description.
Please list in your contract only those that apply and remove everything else.

Development Project	
Final Submission Week 27	<ul style="list-style-type: none"> • Project Contract. • Ethics Form. • Project Plan Including Gantt Chart. • Global Checklist. • Literature Review. • Class Diagrams and Case Diagrams. • Interface Design. • Design Documentation. • Test Plan. • Critical Evaluation. • Software. • Appendices.
Viva Examination Week 31 - 33	<ul style="list-style-type: none"> • Oral examination (demo of your work)

Students on a BCS accredited course should consult the BCS checklist before completing their project contract, as it includes eight conditions that the project contract should fulfil, such as

- The contract contains an elucidation of the problem, the objectives of the project, and a risk analysis
- The contract states that the final report will contain a clear description of the stages of the life cycle undertaken
- The contract states that the final report will contain a description of how verification and validation were applied

Resources and Constraints

The software requirements for this project include; **Visual Studio**, **SFML a C++ library** which allows for the control and creation of critical game objects, for example,

a game window. **TGUI** will also be used within the project; it is a library which links to **SFML** and allows for the creation of UI (user interface) elements into the game.

The game will be backed up using **GitHub**, an online repository which is most commonly used for **source control** with programming solutions. I will be using it for that exact reason, to prevent loss of work and make it possible to try out new solutions with the added benefit of being able to revert to a previous build.

Sources of Information

The main source of information I aim to use for this project will be the **internet**, it is the most common place to find solutions for programming problems, due to the numerous **forums** wherein someone will have had the same issue at some point and already found a solution.

The other source of information I will use will be **personal contacts**, for example, **other students** who may have experienced a similar issue. Another option would be to contact a member of staff be that one of my **tutors** or my **supervisor**.

Risk Analysis

The **random generation of the game is a large part** of the project but, if for whatever reason it begins to become a roadblock for the project and I'm unable to complete it I will have to **concede the random generation and create a static map**. One where the tiles are placed manually and the map is the same every game.

If the implementation of a single pathfinding algorithm for the project eats up too much time then I may have to **forgo the implementation/comparison of any additional algorithms**.

If I am **unable to polish the game** to an industry standard then I will **have to settle for a prototype for the game, a proof of concept with working features to outline the main gameplay mechanics**.

Schedule of Activities

Having defined the tasks to be undertaken in the list of objectives, you need to prepare a Project Plan to show how you intend to carry them out: You may find it helpful to draw up a critical path diagram before drawing a Gantt chart.

For this project, I aim to split the work down into five separate activities. The first will be spent **implementing a map** and generating a random terrain for the game. The next, a **colonist system** where they will **perform basic tasks** which the player will be able to assign them. Following that, I will allow for the **player to build structures** within the map. Next, I will add a system to create **random events** in the game with **different outcomes**. Finally, an evaluation stage, filled with testing and report writing, this is when I find out if the project has

been a success or a failure. In the end, I will conduct a WWW (What Went Well) report.

Link to current Gantt Chart:

<https://docs.google.com/spreadsheets/d/1IvRP2XnJYIO8LR09rxNJRsqJsWtvVfdTz-adm9MfdnA/edit#gid=0>

Student R Date 22/10/18

Proposer (if other from the student and/or the
supervisor) _____ Date _____

Supervisor Sherman Yang Date 22/10/18

Keep the signed copy somewhere safe: include it with your initial submission. Your supervisor will require a copy as well.

Project Plan

Development strategy

Using the **agile approach with the development of the game**, the game will be stripped down into **many different sprints** wherein **each week will be a single sprint** dedicated to the implementation of a game feature or function. At the beginning of each week, I will take a look at what is needed for the game, conduct **a phase of planning**. After **the bulk of the week will be for the implementation** of the component. Finally, the **final days of the week will be used for testing** and reviewing with **added time for any fixes/changes** that need to be made.

Milestones

This project will have **five main milestone tasks** which need to be completed; each one is important for me to achieve the objectives set for the project. **The first, a map which will be randomly generated** at the beginning of the game. **The second, implement a simple colonist** for the game, one with working AI pathfinding. **The third, implement a selection of resources** into the game and allow for the colonist to perform a basic set of tasks. **The fourth, A building system** for the game, which interacts with the multiple layers of the map. And **finally, a random events system** with a couple of different events with different outcomes.

Gantt Chart:

<https://docs.google.com/spreadsheets/d/1IvRP2XnJYIO8LR09rxNJRsqJsWtvVfdTz-adm9MfdnA/edit?usp=sharing>.

Project Timeline						
	Date	1/10/2018	8/10/2018	15/10/2018	22/10/2018	29/10/2018
	Week Number	Week 1	Week 2	Week 3	Week 4	Week 5
Task					Evaluate and turn over/hand in all design documents	Setup the game project
						Create a system that will randomly within the game engine.
Current Week						
	Date	4/3/2019	11/3/2019	18/3/2019	25/3/2019	1/4/2019
	Week Number	Week 23	Week 24	Week 25	Week 26	Week 27
Task					Implement random events into the game using a list of possible events each with their own functionality.	Test Events and hand in final year project.
Current Week						
Key						
Task			Current Week			
Break				Week Ended		
Testing					Testing	

Project Spreadsheets

Project Timeline

	19/11/2018	26/11/2018	3/12/2018	10/12/2018	17/12/2018	24/12/2018	31/12/2018	7/1/2019	14/1/2019
Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	
Conduct a test evaluating the map generation and make any changes to fix any bugs.	Implement some basic colonist functionality which allows for them to move around the map, using a path finding algorithm.	Test the viability of the colonists using the algorithm, perform some stress tests with a large number of colonists. Make any required changes to the colonists.							

End Of Project Implementation.

Project Spreadsheets

Project Timeline

IMAT3451 FINAL YEAR PROJECT - ETHICAL REVIEW FORM

The University requires all undergraduate final year projects to undergo an ethical review and, where human research ethical issues are identified, to ensure that these issues are addressed.

For the majority of Computing Final Year Projects, the outcome will be either 'No ethical issues' or 'Minor/Major ethical issues which have been addressed'; in these cases, approval can be given by the supervisor. In the unlikely event that the outcome is 'Ethical issues that have not been addressed', the completed form will need to be forwarded to the Faculty Research Ethics Committee.

Student Name

RYAN HOOD

Programme

COMPUTER GAMES PROGRAMMING

Project Title

Colony Sim / Management game.

A brief description of the proposed activity and its objectives:

Create a game or game Prototype within the Colony Sim genre. The game will include AI Pathfinding and random map generation.

Ethical Issues Identified:
(see overleaf)

How these will be addressed:

Checklist

Has the project proposal identified any of the following research procedures?

1. Gathering information about human beings through Interviewing, Surveying, Questionnaires, Observation of human behaviour Yes / No
2. Using archived data in which individuals are identifiable Yes / No
3. Researching into illegal activities, activities at the margins of the law or activities that have a risk of personal injury Yes / No
4. Supporting innovation that might impact on human behaviour e.g. Behavioural Studies Yes / No

If 'Yes' to any of 1-4 above: have you considered the following?

- Providing participants with full details of the objectives of the research
- Providing information appropriate for those whose first language is not English
- Voluntary participation with informed consent
- A written description of involvement
- Freedom to withdraw
- Keeping appropriate records
- Signed acknowledgement and understanding by participants
- Consideration of relevant codes of conduct/guidelines

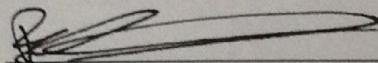
Ethical Review Outcome

- 1. No ethical issues
- 2. Minor ethical issues which have been addressed and concerns resolved
- 3. Major ethical issues which have been addressed and concerns resolved
- 4. Ethical issues that have not been resolved/addressed

Authorisation

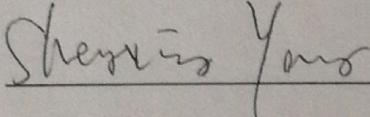
If the outcome is no. 3 or 4 above, this form should be forwarded to the Faculty Research Ethics Committee.

Signature of student



Date 22/10/18

Signature of supervisor



Date 22/10/18

IMAT3451 FINAL YEAR PROJECT - Global Checklist

The University requires all undergraduate final year projects students to undertake a global review of their project. Here is an International Impact Checklist for you to complete, which can be done in consultation with the project supervisor.

Student Name

RYAN HOOD

Programme

COMPUTER GAMES PROGRAMMING

Project Title

Colony Sim / Management game.

Please indicate which of these possible attributes is addressed by your undertaking of this project.

Possible Global Experience	Addressed by Project
Ability to work collaboratively: teams from a range of backgrounds and countries	
Excellent communication skills with a sensitivity to speaking with and listening to non-native English speakers	
An ability to embrace multiple perspectives and challenge thinking in a range of cultural context	
A capacity to develop new skills and behaviours according to role requirements	✓
An ability to negotiate and influence clients across the globe from different cultures	
An ability to form professional, global networks	
An openness to/respect of a range of perspectives from around the world	
Multicultural learning agility (i.e. able to learn in any culture or environment)	

Brief description of how the ticked attributes have been addressed:

This will be the first Project of this kind I have ever attempted. This will require me to manage my time and resources appropriately.

Having access to a supervisor is new for me, having someone who requires regular updates for the project progress; I will need to keep track of all work completed and be able to update the supervisor on progression.

Signature of student

Date 22/10/18

Signature of supervisor

Shengxiang Yang Date 22/10/18

IMAT3451 BCS Accreditation Checklist

Student Name - Ryan Hood.

P-number - P1617694X.

Programme - Computer Games Programming (G62041).

Email address - Hoodrn03@gmail.com or P1617694X@my365.dmu.ac.uk.

Project Title - Colony Sim/Management Game.

Project Proposer - Self.

Supervisor

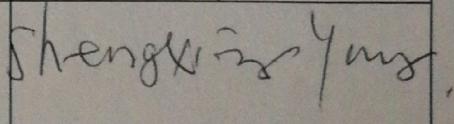
The name, affiliation and contact details of the supervisor, if different from proposer.

Shengxiang Yang

syang@dmu.ac.uk

BCS Accreditation

Your supervisor needs to check your contract against this list and sign if you are on a BCS accredited course. Take note of this and be sure that you mention all requirements.

This contract contains an elucidation of the problem, the objectives of the project and a risk analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The contract states that the project will include an in-depth investigation of the context and literature, and where appropriate, other similar products	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The contract states that the final report will contain a clear description of the stages of the life cycle undertaken	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The contract states that the final report will contain a description of how verification and validation were applied.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The contract states that the report will contain a description of the use of tools to support the development process	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The contract states that the final report will contain a critical appraisal of the project, indicating the rationale for any design/implementation decisions, lessons learnt during the course of the project, and evaluation (with hindsight) of the project outcome and the process of its production (including a review of the plan and any deviations from it)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The contract states that there will be a description of any research hypothesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The contract states that all research will be fully referenced	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contract is suitable for BCS Accredited Project	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
	Supervisor Signature	

Student RCS

Date 22/10/18

Proposer _____

Date _____

Supervisor Shayvinn Tans

Date 22/10/18

Then keep the signed copy somewhere safe: include it with your initial submission. Your supervisor will require a copy as well.