

Game-based Learning: ADS games

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**Abstract**

<Abstract goes here…>

Education Use Consent

I hereby give my permission for this project to be shown to other University of Glasgow students and to be distributed in an electronic form.

<**Please note that you are under no obligation to sign this declaration, but doing so would help future students.>**

Name: Signature:

Acknowledgements

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Contents

<Update the table of contents by right-clicking on it and selecting Update Field… and then select page numbers only.>

Chapter 1 Introduction 1

1.1 A section <This is style Heading 2> 1

1.1.1 A subsection <This is style Heading 3> 1

Chapter 2 Background Survey 2

Chapter 3 Requirements 3

Chapter 4 Design and Implementation 4

Chapter 5 Evaluation 5

Chapter 6 Conclusion 6

Chapter 7 References 7

Appendix A <Name of appendix> 1

Appendix B <Another appendix> 2

# Introduction

~One page.

briefly explain the context of the project problem. • Specify overall aim and objectives and report structure

Game-based learning is concerned with the use of games to enhance the learning experience. Learning comes from playing the game. It promotes critical thinking and problem-solving. Meanwhile, Data structures and algorithms are the most fundamental concepts in Computing Science. Computing science aims at building an effective foundation for the development of programming skills by teaching algorithms and data structures to students.

This project requires you to create a **local multiplayer educational game platform** in which multiple users challenge themselves and peers to solve small problems involving writing their algorithms and implementing them in different programming languages. The purpose of the game will be to enhance student learning in ADS which provide them with the foundation in programming and enhance their engagement. The project will start with a review of similar technologies. It will then use appropriate tools to develop the application and finally test and evaluate the final product.

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## A section <This is style Heading 2>

Please note your dissertation need not follow the included section headings – this is only a suggested structure. Also add subsections etc. as required.

### A subsection <This is style Heading 3>

Try to avoid this too much, but it’s here if you need it.

# Background Survey

Discuss the background (1 page)

Explain how the requirements are gathered (the tools and techniques used – ½ page to 1 page)

Analysis ~1-2 pages

Specify the aims and Objectives - Ordered list of Features and justification (~2 pages)

(Romero, 2017) M. Romero, Game-Based Learning Across the Lifespan, Basel: Springer International Publishing, 2017.

Key point for educational game: **Competition, number of players, rules, predeterminded goal, learning content**.

**Competition**: to maintain a degree of uncertain---- add a random event.

**Number of players**.

**Predeterminded** **goal**: how will the game end, reward and victory.

**Learning content**: a balance of learning and playing in the game.

(the author recommend repeating questions/ informations units within a game, reusing them several times)

“We suggest gradually reducing repetition as the degree of difficulty increases in order to maintain competition and young people’s interest”

(Goodrich, 2014)M. T. Goodrich, Data Structures and Algorithms in Java, Hoboken: John Wiley & Sons, Inc. , 2014.

**Data structures**: Array, Singly Linked List, Doubly Linked List, Circulary Linked list.

**Abstract Data Type**: Stacks, Queues, List, Trees, Maps, Hash tables, Search Trees.

**Sorting and Selection:**

<https://doc.photonengine.com/en-us/pun/v2/demos-and-tutorials/pun-basics-tutorial/intro> photon API

## Similar games:

Homework is crazy(steam)

# Requirements

<Figure below is in style “figure” which continues to style “figure caption” when you press Enter and then back to “Normal” when you press Enter again.>

Figure 1: Some important shapes.

<If you wanted to show any code fragments, you could use the following style called code, which could then be followed by figure caption..>

*# This is a little bit of Python*

**for** i in range( 10 ):

**for** j in range( 10 ):

**print** i\*j,

**print**

Figure 2: A crucial algorithm for the project.

# Design and Implementation 4~5

System architecture major design decisions and rationale (~2-3 pages)

Implementation details ~1 page

Screenshots or other similar things ~1 page

Show how you plan to organise your work, identifying intermediate deliverables and dates.

# Testing and Evaluation 4~5

Software Testing – strategy & statistics 1-2 pages

Explanation of Evaluation Strategy (1/2 page).

Evaluation Results – 1-2 pages

(4/5 pages covering each aspect of evaluation and discussion of results.)

# Conclusion 2~3

Conclusions should state the achievements, and a reflection on achievements (what wasn't achieved/ why and what more could have been done or done differently in hindsight - pick one or two issues to discuss in \*depth\* rather than trying to be comprehensive. should include future work as well.

# Bibliography

Goodrich, M. T., 2014. *Data Structures and Algorithms in Java.* Hoboken: John Wiley & Sons, Inc. .

Romero, M., 2017. *Game-Based Learning Across the Lifespan.* Basel: Springer International Publishing.

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