

RESEARCH REVIEW, PROPOSAL & PROTOTYPE ARTEFACT

Version 1.0
BSc Computing for Games
COMP320

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Introduction

You are required to deliver a major **research project** as part of your degree; either in the form of **empirical research** relating to computing for games, or **practice-based research** related to game development. Individually, you explore a field that interests you, and for which there is a clearly identified need. This module forms the first part of this project and provides the opportunity to conduct a literature review, as well as to collect and analyse data using appropriate methods and statistics.

This module is formed of **two** assignments:

1. **Produce** a prototype research artefact that will:
 - (i) **facilitate** the collection of empirical data for your project
 - (ii) **demonstrate** the technical feasibility of your proposed artefact
 - (iii) **provide** a basis for further development and experimentation in the second study block
2. **Write** a research review and proposal that will:
 - (i) **identify** and **analyse** the scientific literature relevant to your project
 - (ii) **propose** the research question(s) for your project
 - (iii) **justify** your choice of research question(s)
 - (iv) **outline** and **justify** the methodology to be used in addressing the research question(s)

"Because of the nature of Moore's law, anything that an extremely clever graphics programmer can do at one point can be replicated by a merely competent programmer some number of years later."

— John Carmack

"Currently computer graphics are used a great deal, but it can be excessive."

— Hayao Miyazaki

Assignment Setup

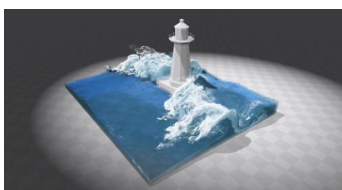
These assignments are a **research** task, consisting of **academic reading**, **academic writing**, **software development** and **scientific experimentation**.

For the **prototype research artefact**, there is no set GitHub repository. However you are strongly encouraged to create one. Ensure that you set up the `.gitignore` file for your chosen development environment, and maintain the `readme.md` file.

For the **research review and proposal**, fork the GitHub repository at the following URLs:

<https://github.com/Falmouth-Games-Academy/comp320-proposal>

Use the existing LaTeX template, which is based on the IEEE Transactions style, to write your literature review and proposal.



A demo of fluid simulation with NVIDIA's PhysX. Recent advances in GPU technology have enabled a wide range of high-fidelity real-time rendering and simulation effects.

Assignment 1: Prototype Research Artefact

Assignment 1 consists of a **single formative submission**. However your project supervisor may also set summative deadlines at their discretion. This work is **individual** and will be assessed on a **holistic** basis, according to the descriptors set out at the end of this document.

To complete Assignment 1, design and implement a piece of research software appropriate to your chosen project. Create a Trello board setting out the key requirements for the software, and identifying which requirements will be tackled this study block and which are stretch goals to be left until later. Check the source code into a version control repository regularly. Ensure your `readme.md` file contains any information required to build and run the artefact, if appropriate.

Upload a `.zip` file containing your source code, associated assets, and screenshots of your Trello board to the LearningSpace. Note that LearningSpace will only accept a single `.zip` file.

You will receive immediate and continuous **informal feedback** through meetings with your supervisor. You will also receive **formal feedback** three weeks after the formative deadline.

Assignment 2: Prototype Research Artefact

Assignment 2 consists of a **single formative submission**. However your project supervisor may also set summative deadlines at their discretion. This work is **individual** and will be assessed on a **holistic** basis, according to the descriptors set out at the end of this document.

To complete Assignment 2, use the provided LaTeX template to write a literature review and proposal. Do **not** modify the formatting of the provided template. Your document must not exceed **six pages** of text, excluding figures, tables, references and appendices.

Upload your final `.pdf` file to the LearningSpace. Note that LearningSpace will only accept a single `.pdf` file.

You will receive immediate and continuous **informal feedback** through meetings with your supervisor. You will also receive **formal feedback** three weeks after the formative deadline.

Additional Guidance

Todo additional guidance.

FAQ

- **What is the deadline for this assignment?**

Falmouth University policy states that deadlines must only be specified on the MyFalmouth system.

- **What should I do to seek help?**

You can email your tutor for informal clarifications. For informal feedback, make a pull request on GitHub.

- **Is this a mistake?**

If you have discovered an issue with the brief itself, the source files are available at:

<https://github.com/Falmouth-Games-Academy/bsc-assignment-briefs>.

Please make a pull request and comment accordingly.

Marking Descriptors: Prototype Research Artefact

Criterion	Weight	Refer for Resubmission	Novice Competency	Novice Proficiency	Professional Competency	Professional Proficiency	Expert Competency
Ethics Approval	—	An ethics approval form has not been submitted. This is an automatic fail, regardless of other criteria.	Ethics approval has been sought and obtained.				
Appropriateness of Requirements	—	Few requirements are distinguishable and easily measured. Requirements bear little correspondence to the proposed research.	Some requirements are distinguishable and easily measured. Requirements somewhat correspond to the proposed research.	Most requirements are distinguishable and easily measured. Requirements correspond to the proposed research.	Nearly all requirements are distinguishable and easily measured. Requirements clearly correspond to the proposed research.	All requirements are distinguishable and easily measured. Requirements clearly and comprehensively correspond to the proposed research.	All requirements are distinguishable and easily measured. Requirements clearly and comprehensively correspond to the proposed research.
Functional Coherence	—	Few features have been implemented, or the code fails to compile and run. Many obvious and serious bugs are detected.	Some features have been implemented. Some obvious bugs are detected.	Many features have been implemented. There is some evidence of feature creep. Few obvious bugs are detected.	Almost all features have been implemented. There is little evidence of feature creep. Some minor bugs are detected.	All features have been implemented. There is almost no evidence of feature creep. Some bugs, purely cosmetic and/or superficial in nature, are detected.	All features have been implemented. There is no evidence of feature creep. Few to no bugs are detected.
Sophistication	—	Little insight into the appropriate use of programming constructs is evident from the source code. The program structure is poor or non-existent.	Some insight into the appropriate use of programming constructs is evident from the source code. The program structure is adequate.	Much insight into the appropriate use of programming constructs is evident from the source code. The program structure is appropriate.	Considerable insight into the appropriate use of programming constructs is evident from the source code. The program structure is effective. There is high cohesion and low coupling.	Significant insight into the appropriate use of programming constructs is evident from the source code. The program structure is very effective. There is high cohesion and low coupling.	Extensive insight into the appropriate use of programming constructs is evident from the source code. The program structure is extremely effective. There is very high cohesion and very low coupling.
Maintainability	—	The code is only sporadically commented, if at all, or comments are unclear. Few identifier names are clear or inappropriate. Code formatting hinders readability.	The code is somewhat well commented. Some identifier names are descriptive and appropriate. An attempt has been made to adhere to a consistent formatting style. There is little obvious duplication of code or of literal values.	The code is reasonably well commented. Most identifier names are descriptive and appropriate. Most code adheres to a sensible formatting style. There is almost no obvious duplication of code or of literal values.	The code is reasonably well commented. Almost all identifier names are descriptive and appropriate. Almost all code adheres to a sensible formatting style. There is no obvious duplication of code or of literal values.	The code is very well commented. All identifier names are descriptive and appropriate. All code adheres to a sensible formatting style. There is no obvious duplication of code or of literal values.	The code is extremely well commented. All identifier names are descriptive and appropriate. All code adheres to a sensible formatting style. There is no duplication of code or of literal values.

Appendix: British Computer Society Requirements

An individual project is an expectation within undergraduate, integrated masters, and postgraduate masters programmes in computing. Students must be provided with written guidance on all aspects of the project, including selection, conduct, supervision, milestones, format of the report and the criteria for assessment. All projects should reflect the aims and learning outcomes which characterise the programme to which they contribute as set out in the programme specification.

It is expected that within an undergraduate programme, students will undertake a major computing project, normally in their final year and normally as an individual activity, giving them the opportunity to demonstrate:

- their ability to apply practical and analytical skills present in the programme as a whole
- innovation and/or creativity
- synthesis of information, ideas and practices to provide a quality solution together with an evaluation of that solution
- that their project meets a real need in a wider context
- the ability to self-manage a significant piece of work
- critical self-evaluation of the process

Projects must involve the production of a report which should include:

- Elucidation of the problem and the objectives of the project
- an in-depth investigation of the context and literature, and where appropriate, other similar products (this section is likely to be emphasised less for an IEng project)
- where appropriate, a clear description of the stages of the life cycle undertaken
- where appropriate, a description of how verification and validation were applied at these stages
- where appropriate, a description of the use of tools to support the development process
- 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)
- a description of any research hypothesis
- in the event that the individual work is part of a group enterprise, a clear indication of the part played by the author in achieving the goals of the project and its effectiveness
- references

In the event of this major activity being undertaken as part of a group enterprise, there is a requirement that the assessment is such that the individual contribution of each student is measured against all the above learning outcomes.

For accreditation for CITP, CEng or CSci, the individual project should be worth at least 30 credit points at level 6 or above. The project must be passed without compensation. For accreditation for IEng the individual project should be worth at least 20 credit points at level 5 or above. The project must be passed without compensation.