

GROUP DESKTOP GAME

Version 1.0
BSc Computing for Games

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Introduction

In this assignment, you are required to design and implement a 2D game for Windows PC. Your game will be written in C++ using the Simple DirectMedia Layer (SDL) library. You will work in small groups (3–4 students) to design, plan and develop your game.

This assignment is formed of **three** parts. Begin by forking the GitHub project at the following URL:

<https://github.com/Falmouth-Games-Academy/comp150-desktop-game>

A. Prepare a game design pitch

On GitHub, create a Markdown file (or edit `readme.md`) defining the high concept of your controller. Include details of any background research you have done to assess commercial viability.

On Trello, create a task board that defines the key requirements (in terms of components and user stories) of the controller.

Formative submission: Arrange a meeting with your tutor to discuss your concept and task board.

B. Build and integrate a prototype of your game controller

You will build your prototype controller over **two sprints**. You should aim to have a 'potentially shippable' prototype at the end of each sprint; that is, a prototype which does not have any major flaws or half-finished features that prevent it from being tested, and that can be used (even if lacking some features) as a controller in the game.

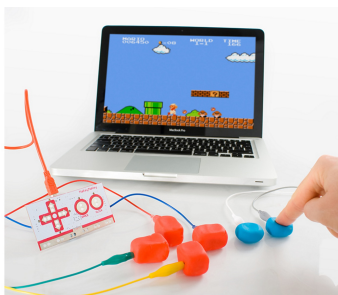
Use this forked repository to store any digital artefacts (including but not limited to design sketches, photographs, art assets, source code, electronic circuit designs).

Formative submission: Participate in the two sprint review sessions in class.

C. Demonstrate your controller

Bring your prototype controller to the demo session in class, and be prepared to discuss it with tutors and peers.

For submission, you must also prepare a short **video demonstration** of your controller. The maximum length of this video is **two minutes**; longer videos will be subject to penalties in line with the course word count policy available on LearningSpace. In your video, briefly demonstrate the functionality of the controller. You may narrate if you wish, but it is not required.



The MaKey MaKey allows a multitude of materials to be used to create videogame controllers.

Formative submission: Participate in the demo session.

Summative submission (electronic)

Create a zip file containing the following:

- A markdown file named `readme.md` giving a high-level overview of the project, including your concept and background research from part A.
- Screenshots of your Trello task board from part A. As a minimum, include one from the beginning of each sprint, one from the end of the project, and screenshots documenting any checklists or other information within your cards.
- All source code and other digital artefacts created for part B. You should include source code files or snippets demonstrating the integration of your controller into the game, but you do **not** need to provide the entire source code for the game.
- The video demonstration produced for part C, compressed in AVI or MP4 format.

*"Alive with new thinking,
buzzing with opportunity,
connected with the best in
the business, Falmouth
University is the perfect place
to start shaping your creative
career. Thousands of people
from around the globe come
to us every year, graduating
to become the brightest stars
in art, design, media,
performance and writing
industries.*

*"(...) Falmouth has forged its
position as one of the most
highly regarded creative arts
institutions across the globe."*

— Falmouth University website

The recommended way to produce this zip file is to check all of the above into your GitHub repository throughout the course of the project, and then use the "Download Zip" function on the GitHub website.

Material not included in the zip file will not be marked, even if it is available online, and even if tutors have seen it in class. Please ensure that all material you want the markers to consider is included in your submission.

Upload your zip file to the appropriate submission queue on LearningSpace.

Additional Guidance

Falmouth University is nationally and internationally renowned as an arts institution. Despite the fact that you are studying for a Bachelor of Science degree in a technical discipline, you are still expected to strive for the same level of **innovation and creative flair** as your fellow students in other departments. All assignments on this course involve a mix of technical and creative activities; this assignment is more heavily weighted towards the creative than the assignments you have completed thus far. On this assignment, a competent execution of an unimaginative idea is unlikely to achieve higher than a C grade overall, as opposed to an imperfect execution of a unique and ambitious concept — bear this in mind when working on your design. One approach to promoting creativity is **divergent thinking**: generation of ideas by exploring many possible solutions. Often the most interesting ideas are **subversive**: they deliberately go against the accepted or most obvious solution

The history of video games is littered with failed peripherals which consumers simply did not want, which were perceived as expensive gimmicks rather than legitimate enhancements to gameplay. Your creativity should be balanced by **commercial awareness**: your design should be informed by your research into products that have succeeded and failed in the past, and what underexploited niches exist in the present. An A* project would be a highly divergent idea, but one that has clear commercial viability. Do not be too discouraged if you fall short of this: this is a tall order even for the professionals!

We have given you some of the materials you need: a MaKey MaKey kit, crocodile clip leads and conductive paint. You will need to add your own materials to produce a **functional** physical prototype. A "Blue Peter" style



Rhythm games such as *Guitar Hero* and *Rock Band* are excellent examples of games which make use of unique input devices to enhance gameplay.

prototype made from household items is fine, as is something made out of modelling clay, construction toys etc. However you should still choose your materials carefully, as overly flimsy construction may lose you marks on the functionality criterion.

You may also wish to connect electronic components such as LEDs, buzzers, photoresistors etc to the MaKey MaKey, or even use a different, more flexible hardware platform such as Arduino. However you are discouraged from spending large sums of money on extra hardware, and doing so is **not required** to achieve a high mark. If you choose to go down this route, it is possible to purchase an Arduino and a selection of electronic components online for around the price of a textbook (£20 – £30).¹

You should aim to demonstrate a high level of **sophistication** in the technical execution of your prototype. An important part of sophistication is having the insight to choose the right tool for the job: if a simpler technique fulfils all the requirements, use it. The use of unnecessarily complicated techniques, serving only to showcase one's own cleverness, is a dangerous habit for a software developer.

The sole purpose of the **video demonstration** is to aid moderators and external examiners, who are not present for the demo session, in assessing your work. Your video does **not** need to be entertaining or highly polished: a smartphone or webcam video of you or someone else using the controller is sufficient.

"The first 90 percent of the code accounts for the first 90 percent of the development time."

"The remaining 10 percent of the code accounts for the other 90 percent of the development time."

— Tom Cargill

"Hofstadter's Law:

"It always takes longer than you expect, even when you take into account Hofstadter's Law."

— Douglas Hofstadter

Additional Resources

- Wilkinson, K. and Petrich, M. (2014) The Art of Tinkering: Meet 150 Makers Working at the Intersection of Art, Science & Technology. Weldon Owen: London.
- Alicia Gibb. Building Open Source Hardware: DIY Manufacturing for Hackers and Makers. Addison Wesley, 2014.
- Jeremy Blum. Exploring Arduino: Tools and Techniques for Engineering Wizardry. John Wiley, 2013.
- Kelly, K. (2014) Cool Tools: A Catalogue of Possibilities. Cool Tools.
- Hatch, M. (2013) The Maker Movement Manifesto: Rules for Innovation in the New World of Creators, Hackers, and Tinkerers. McGraw Hill: New York.
- <http://makeymakey.com/howto.php>



The Dreamcast Fishing Controller, released as a peripheral for the game *Sega Bass Fishing*. Even peripherals which appeal to only a small audience can enjoy moderate commercial success.

¹Note that the MaKey MaKey kits provided in class are version 1.2, which, unlike earlier versions, is not based on Arduino. Any tutorials you may find online for reprogramming the MaKey MaKey firmware using the Arduino IDE are unfortunately not applicable to this version.

Marking Rubric

Criterion	Weight	F (0 – 39)	D (40 – 49)	C (50 – 59)	B (60 – 69)	A (70 – 79)	A* (80 – 100)
Individual pitches	10%	F	D	C	B	A	A*
Individual contribution	Multiplier for criteria below	Bad					Good
Sprint reviews	Threshold 5% + 5%	Neither the first nor second sprint are delivered, or no 'reasonable' peer reviews are submitted.		A 'potentially shippable' prototype is produced at the end of the first and/or second sprint. A 'reasonable' review of at least one peer's work is provided in one of the review sessions.		A 'potentially shippable' prototype is produced at the end of both the first and second sprints. A 'reasonable' review of at least one peer's work is provided in each of the review sessions.	
Appropriateness of requirements	10%	F	D	C	B	A	A*
Functional coherence	10%	F	D	C	B	A	A*
Sophistication	10%	F	D	C	B	A	A*
Maintainability	10%	F	D	C	B	A	A*
Innovation and creative flair	10%	F	D	C	B	A	A*
Appropriateness of sprint planning	10%	F	D	C	B	A	A*
Professional practice	5%	GitHub has not been used.	Material has only been checked into GitHub a few times before the deadline.	Material has been checked into GitHub at least once per sprint.	Material has been checked into GitHub several times per sprint.	Material has been checked into GitHub several times per sprint. Commit messages are clear, concise and relevant.	Material has been checked into GitHub several times per sprint. Commit messages are clear, concise and relevant. There is evidence of engagement with peers (e.g. voluntary code review).