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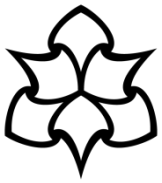

6G5Z0023

Thematic Project

Project Options

Computer Games Development

Department of
Computing and Mathematics

List of Projects

A Game for Streamers

Project Description	The evolution of virtual participation in video games, linked to increases in the availability of fast and cheap Internet, is fascinating. What used to be relatively private experiences are now shared across the Internet; Firstly, in the form of "Let's Play" videos on video hosting services like YouTube, then to watched games via live streams, and then to participatory games. Developing a game which is enjoyable to watch as well as play is a distinct challenge but developing a game which enables remote players to participate is one way of alleviating that challenge. The objective of this project is to develop a game intended to be played through live stream, for example via Twitch, which incorporates elements of audience participation. For example, audience members may be able to make meaningful choices in the game by posting specific messages in chat or use a separate interface (e.g. a web-driven interface) to participate in the game. Successful completion of this project will require gaining an understanding of either networking techniques, linking remote participation through a separate app/website to an original source, or the use of an API of a connected service (e.g. Twitch).
Existing Examples	• **StreamRaiders**: https://www.streamraiders.com/ • **Stream Racer:** https://streamracer.com/ • **Marbles on Stream**: [Steam] • **Choice Chamber**: https://www.choicechamber.com/ • **Jackbox Party Packs**: https://www.jackboxgames.com/party-pack/
Expected Deliverables	A game, for a platform of your choosing (recommended PC), which is designed to be played through a live stream, including some element(s) of audience participation.

Barcode Scanning Game

Project Description	In the early 90s, Epoch released the Barcode Battler (https://en.wikipedia.org/wiki/Barcode_Battler) - a piece of hardware which scanned barcodes which represented players. This idea was later reinvented by the Monster Rancher series (https://en.wikipedia.org/wiki/Monster_Rancher), which used the serial number of an inserted CD to generate unique monsters for raising, breeding and battling, in a series of Pokémon-esque game. Your task for this project is to use a barcode scanner in an interesting way to design and develop an interesting game. There is a barcode scanner available for you to use*, which you can configure, but ultimately it reads in a barcode, and passes the number of the barcode as a series of digits as keycode input, as if they had been typed into the keyboard. How you choose to interpret these numbers is the interesting part of this project - and how you can ensure that by scanning barcodes, an interesting range of balanced yet diverse things happen, whether that's generation of creatures, mechanics, items, or something completely different. * A team allocated to this project can contact **Matthew Crossley** by email on m.crossley@mmu.ac.uk to borrow the barcode scanner for the semester.
Existing Examples	• **Barcode Battler:** https://en.wikipedia.org/wiki/Barcode_Battler • **Monster Rancher:** https://www.koeitecmoamerica.com/mrdx/
Expected Deliverables	A game, for a platform of your choosing (recommended PC), which incorporates the use of a barcode scanner into a core mechanic. A hardware barcode scanner will be provided to a team assigned this project, although a software solution (e.g. a phone camera) could also be explored.

Skill Teaching Game

Project Description	Games can be used to teach essential skills, providing a fun and engaging way to encourage participation in something which may be challenging. Games have been developed to facilitate the learning of a great range of skills; Learning languages, mathematical techniques, and programming are all examples of skills which have a wealth of dedicated games for skill acquisition. The objective of this project is to design and develop a game which teaches a skill. As a team, you will need to identify which skill you would like to focus on – whether that's aspects of an educational curriculum, learning something recreational such as playing a musical instrument, or the rules of another game/sport. Successful completion of this project will require you to gain an understanding of the way that people learn, and how games can facilitate this without being distracting. You may wish to research gamification techniques and consider embedding these into your game to encourage regular play/skill development.
Existing Examples	• **Lightbot:** https://lightbot.com/ • **Influent**: [Steam] • **The Counting Kingdom**: [Steam]
Expected Deliverables	A game, for a platform of your choosing (recommended PC or mobile), which is designed to teach a particular skill.

Tabletop Game Companion

Project Description	Tabletop games have seen a recent resurgence in popularity, and many families and friendship groups have been discovering tabletop games (or 'board games') beyond the usual games of Monopoly. As these games continue to innovate, many incorporate the use of a digital companion, which offers many advantages such as: • Introduction the game and demonstrating how to play. • Facilitating a game that requires a moderator. • Offering variants where the player(s) play 'against' the companion. • Augmenting the game with digital elements. • Adding opportunities for augmented/mixed reality. The objective of this project is to identify an existing tabletop game which could be augmented with the introduction of a digital companion. You will need to research existing companion apps to identify their common usages, and the strategies for incorporating them within the game, and develop a suitable website or app which either simplifies the process of playing the game or facilitates some additional gameplay functionality. An ambitious team may choose to use this opportunity to develop a tabletop game of their own design, which interacts dynamically with the supplied digital companion.
Existing Examples	• One Night Ultimate Werewolf moderator: [iOS, Android] • Gloomhaven Campaign Tracker: [iOS, Android] • XCOM: The Board Game: https://boardgamegeek.com/boardgame/163602/xcom-board-game • Beasts of Balance: https://boardgamegeek.com/boardgame/185709/beasts-balance
Expected Deliverables	A desktop executable, website or mobile app which acts as a digital companion for either an existing, or a newly designed, tabletop game.

Destructible Environments

Project Description	A popular mechanic that helps games to feel immersive is a destructible environment. For example, in Minecraft, harvesting materials from a block destroys that block, thus allowing the player to manipulate the environment. Another example is the classic game Worms, where players control a team of Worms to annihilate an opposing team. The weapons in Worms all deform or destroy the environment, and much of the fun – and hilarity – of Worms comes from a player accidentally destroying a platform they're standing on and falling to their death. The objective of this project is to investigate techniques for implementing destructible environments in a game engine of your choice. You should work together to explore different techniques for achieving destructible environments through prototyping, before deciding on a best technique and implementing this in a 'vertical slice' of a game, or a tech demo demonstrating your implementation.
Existing Examples	• Minecraft • Noita • Worms
Expected Deliverables	A vertical slice or tech demo, for a platform of your choosing (recommended PC or mobile), which illustrates the destructible environment concept.

Player-Generated Content

Project Description	A popular mechanic that helps players feel more attached to the game they're playing is player-generated content. For example, Nintendo released two Mario Maker games which allow players to create their own Mario games utilizing the various tools from a range of Mario games. Another example is Little Big Planet, which allowed players to create and share their own level designs and character customisations. The objective of this project is to investigate techniques for implementing player-generated content. You will need to explore aspects of implementing player-generated content such as how an interface might work for players to 'edit' a world they can see, how you can both permanently store the data that creates their creation and how you can load it (e.g., to a file or database). Once you have identified the right techniques for implementing player-generated content, you should work as a team to develop either a vertical slice or a tech demo demonstrating all the functionality of your player-generated content approach.
Existing Examples	• Little Big Planet • Super Mario Maker • Roblox
Expected Deliverables	A vertical slice or tech demo, for a platform of your choosing (recommended PC or mobile), which illustrates the player-generated content concept.

Comparative Study of Game Engines

Project Description	One of the big decisions that a company need to make before starting a new project is which game engine would be the most appropriate for their particular project. It is common for exploratory, prototypical work to take place which helps the technical team understand the challenges of working with a particular engine to produce specific aspects of the game. The objective of this project is to carry out a comparative study of a few game engines, producing prototypes of a single game idea in different engines, and comparing the relative strengths and weaknesses of the implementation in different game engines. As a team, you will need to conceptualise a game idea, identify a few core mechanics, and prototype them in different game engines. To ensure the viability of the comparative study, you will need to make sure that every member of the team can compare the implementations and review the work of others. This is not several different projects for one team, this is a collaborative exercise to produce a feasibility report. At the end of the project, you should have the same core game mechanics implemented in two or three different game engines (scaled based on the team size), and a written report on the feasibility of continued development in each game engine with a recommendation as to the final decision on which game engine to use.
Recommended Game Engines	• Unity • Unreal Engine • Godot
Expected Deliverables	Near-identical implementations of a small number of game mechanics in several different game engines, and a written report outlining the technical feasibility of continued development in each engine with a decisive recommendation.

Playdate Game

Project Description	The Playdate is a small, handheld console designed to push the creative boundaries of both developers and designers. The console is quite limited in its offering; It is black and white, has limited inputs, and limited hardware specifications. On the flipside, it includes an accelerometer, and a crank, encouraging creativity in terms of user experience. The objective of this project is to undertake research into how a Playdate game is made, what tools you would need to learn and familiarise yourselves with, and then produce a Playdate game. Typically, Playdate games are made in either Lua or C++ so you would need to build confidence in one or both of these programming languages. The design of the game is up to the project team, but should aim to consider what existing Playdate games do well, and how you can incorporate the novelty of the hardware, such as the crank, to create innovative and interesting gameplay. Note that the Playdate dev tools do come with a fully functioning Playdate simulator for development and testing, but two Playdate devices are available for a team allocated to this project to use on loan for the duration of the semester. Please contact **Matthew Crossley** by email on m.crossley@mmu.ac.uk to borrow the Playdate(s) for the semester.
Existing Examples	• Echo: The Oracle's Scroll • Mars After Midnight • A Balanced Brew
Expected Deliverables	A feature complete Playdate game, including source, which works on the provided hardware. It isn't required to submit your game to the Playdate store as part of this project, but that may be an avenue an ambitious team would want to consider.