Spike: Task 32
Title: Research Plan
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Instructions

From Doubtfire: "This credit-level document is required before you undertake a HD research report. This enables staff to give you feedback on the plan and help you succeed in your research activities. The plan counts towards your credit-level outcomes, even if you do not undertake the research work. Additional artefacts created for a HD Research outcome must be submitted or linked in Task 34."

From AI for Games lecture notes (assuming the advice will be applicable this semester too): "look for an interesting A vs B question to address in a research report. Your plan for this report should be several simple sentences that outline the context or domain of the research, the gap or problem, an outline of how you intend to investigate the question, any data that will be produced or results that you expect, and any implications the expected result may have."

Research Plan

During the semester, in one of the lectures on software patterns, the component pattern and entity-component systems were discussed as powerful tools for getting maximum performance out of games by structuring data in ways that computers can process in large quantities very efficiently. However, a full-on entity-component system is very structurally different from inheritance-based, game object-oriented programming that students have been familiarising themselves with. Furthermore, from my own experience with Unity's entity-component system in my capstone project, such systems can be tricky to use, of varying suitability for a given game or part of a game, or require being accounted for from the start of development.

In my research report, I shall investigate what game engines offer entity-component systems, and their features, requirements, constraints and stages of development. If I find that Unity is not alone in offering an entity-component system, I shall compare my findings for each and discuss which might be the best generally or which might be most appropriate for particular situations.

I do not know which game engines besides Unity offer entity-component systems, or the current stage of development of any (when I last attempted to use Unity's entity-component system, I found that it would only process basic data types and structs; it wouldn't accept custom classes, which were an integral part of our capstone project), so I do not know what I will find there. However, as Unity is the only game engine that I know for certain does have a publicly available entity-component, the possibility that it might be the only one publicly available to developers and therefore the best by default, does occur to me.

Technologies, Tools, and Resources to be Used

- Mozilla Firefox (for conducting the research for the report, using Google Scholar, the Swinburne Library and other online resources as appropriate to gather information required for this report).
- Microsoft Word (for writing the report).
- Learning materials on Canvas (for informing the research where appropriate).

Deliverables / Artefacts to be Produced

- A PDF report document outlining which game engines offer entity-component systems, their features, requirements, constraints and stages of development, and discussing which seems better on paper generally or in particular scenarios.