**Assignment 1**

**ISYS2102 - Software Engineering 2**

**DevFortress**

**Report Document**

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This document will show the design of game "DevFortress". In this document, the problems that the team had to face during the development and the solution will be discussed. The solution includes a design class diagram, a list of use cases and the design patterns. The team have used many tools to support the development.

In this project, we have applied many design patterns: Singleton, Factory, Mediator, Strategy, MVC.

The Singleton pattern is used to get the instance of the 'DevModel' class because we should have only one core logic while the game is running. The disadvantage of the Singleton pattern is that the pattern is not suitable for multiple thread modification. However, by using MVC, the controller is the only one can interact with model and it is put in one thread.

The Factory pattern is used to create Skill based on name of the skill. Each skill will have different implementations (cost for level upgrade, function point, effects to game,...). By implementing Factory, client will not need to know how to implement skills.

The Mediator pattern

The MVC pattern

The Strategy pattern is used for the difficulty levels of the game. For each level, the game will use different variables and behaviors. On the other hand, the game also need to easily change between