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| Project Design Document | |  | | --- | | 09/26/2022  Neil Alexander | |

**Project Concept "Horde Defense"**

**1. Player Control**

Cursor targeting with mouse, left-click to fire, right-click to switch between 3 weapon types (fire, ice, electricity). All weapons do area-of-effect damage around point of impact, causing damage over time to enemies who come in contact.

**2. Basic Gameplay**

Enemies appear at top of screen, move down towards player (bottom of screen). Enemies have sub-types with varying multipliers for the different damage types (extra susceptible to some, resistant to others).

**3. User Interface**

-indicator of current weapon type (color of target indicator)

-indicator of time until can fire again (also target indicator? different shape or size?)

-game over screen if an enemy passes the bottom of the screen

-menu screen, game over screen, restart

**4. OOP Pillars: Inheritance**

objects that derive behaviours from a more generic object:

Enemies share common behaviours (movement towards player, taking damage)

**5. OOP Pillars: Polymorphism**

behaviours that might morph depending on object subtype:

Enemy types have specific damage multipliers for each damage type

**6. OOP Pillars: Encapsulation**

data protected in a class to prevent corruption from other classes:

stats for each weapon and enemy type

**7. OOP Pillars: Abstraction**

functions that can be used to abstract complex code:

targeting function, weapon management, enemy behaviour, spawning function, random position generator