

COMP9003 - Assignment Report
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OOP Design Decisions

Inherit

(More Details on UML Diagram)



Object that will speed up player upon hit by player.



SlowDownPowerUp

Object that will slow down enemies upon hit by player.

Descriptions

My OOP decision is mostly based on the shared characteristics of objects in game.

For instance, every object in game is a drawn sprite on canvas, so they all inherit the sprite object. They should all be placed on grid logically, so they inherit the grid object. Some objects need to move smoothly on the grid, so they inherit the dynamic object which combine both precise grid movement in logic and smooth screen movement in visual.

Also, for power ups, they share the same characteristic that they can all do something upon player collision. So they inherit the power up that already has the collision detection written. In addition, all of the inheritance must implement onPlayerHit() which is an abstract method called upon player collision.

PowerUps

(Abstract)
Object that can do
something upon hit by
player.

GridMapTile

A tile object on the map that will store its type (Solid, Filled, Path...) and draw it on screen.

SpriteObject

(Abstract)
Object that can be drawn on the screen using canvas XY
Coordinates.

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GridObject

(Abstract)
Object that can be placed on a grid using grid XY coordinates.

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DynamicObject

(Abstract)
Object that can move smoothly on a grid using a given direction and speed.

Player

Object that can take input on keyboard to move in perpendicular direction and modify the grid map.

Enemy

Object that can move in diagonal directions inside specific area on grid map and modify the grid map.

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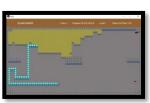
Game Elements & Extensions



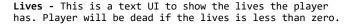
Path - In Progress



Solid (Concrete)



Level - Show the player what level they are at.



Power Up Timer - This is a timer to indicate the time left for the power up just taken. The timer will not show up is the power up time is over.

Progress - This indicates the percentage of the filled tiles in the whole map. Player will win or advance to next level if the progress is larger than the target goal.



Path - Hit by Enemy

Empty - To be Filled



Filled (Grass)



Player (Ball)



Faster Power Up - Player speed will increase x2 after taken this power up.



Slower Power Up - Enemy speed will decrease x3 after taken this power up.



Whale (Beetles)

- Whale will travel only in Empty (Sea) area.
- Whale can make red path and eat player's Filled (Grass) area.



Shark (Worm)

- · Shark will travel only in Empty (Sea) area.
- Shark can make red path and kill player.



Dino

- Will travel between Filled (Grass) and Empty (Sea) area.
- Can make red path and kill player.



Frog

- Will travel between Filled (Grass) and Empty (Sea) area.
- · Can not make red path and kill player, it will be bounced off upon collision.

Note: Player will die upon collision with the enemy.