Game design 1 class diagram

Game Dev Group 15

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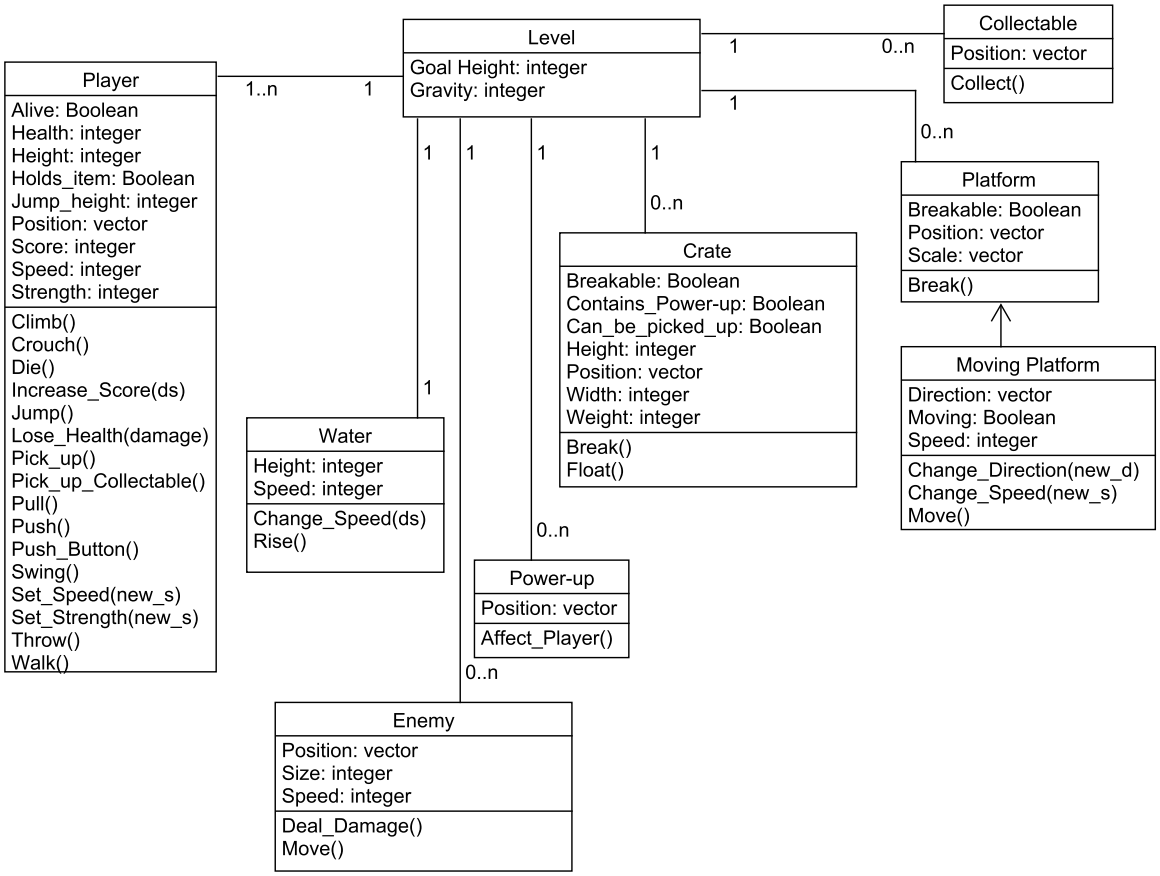

This class diagram belong to the game under working title "Skyscraper Waves". The goal of the game is to climb to the top of a skyscraper on the inside, while water pours into the skyscraper. The player loses if he touches the water.

Every level has at least one player and exactly one water element in it, along with any number of other objects. A level has a certain goal height that the player must reach and a certain amount of gravity.

The water has a certain height, indication how high the water has come already, and a speed at which the water rises. The water can change its upward speed, which also allows for negative upward speed, and the water can increase its height based on its current speed.

A player can either be deemed alive or dead. A player who is alive can die, but this does not work the other way around. A player also has a certain height, which can increase or decrease by (un)crouching. The player has a certain amount of health, which can be lost or regained based on the amount of damage the player gains. Negative damage will heal the player. The player can be holding an item, such as a crate, or not holding an item. The player also has a certain jump height and speed, which can be increased or decreased depending on whether the player is holding something or is experiencing the side effects of a power-up. Every player has their own score. Furthermore, the player has a certain amount of strength, allowing the player to push certain obstacles. Strength can also be influenced by power-ups. Naturally the player also has a certain position in the level.

A player can crouch, jump and walk around the level in order to proceed. The player can also climb up ladders and crates and swing on ropes. Due to the ten classes limitation for this deliverable, some of these objects were not included. A player can push and pull crates, as well as push buttons in the level to influence certain objects. A player can also pick up certain items and throw them. Picking up collectables works differently, since these cannot be thrown and instead increase the score. The player's score can also be increased. Lastly, by means of enemies, power-ups and the current state of the player, the speed, strength and health of the player can be changed.

A level may contain enemies. Every enemy has a position in the level, a certain size (which also dictates how much damage it does) and a certain amount of movement speed. An enemy can deal damage to the player and move around the level. Every enemy is specialized into a different class with some other enemy-specific functions, but due to the limit on classes in this deliverable these were left out for now. Enemies can be defeated in certain ways and one hit suffices. Therefore an enemy does not need to have a value for its health.

A level may contain power-ups. These can be found in creates. Every power-up has a position and can be picked up by the player. A power-up can affect the player. Which effect a power-up has is determined by its specialization. The specializations are left out of this diagram for this deliverable.

A crate is an obstacle that the player can push, pull, break or climb. A crate can be breakable or not, may or may not contain a power-up and may or may not be picked up. The crate also has a certain height, width and position. The weight of the crate determines how much the crate can be pushed or pulled by the player. A crate can break, revealing a power-up if it contains one. A crate can also float on the water, but will break if it hits a ceiling. A level can have any number of crates in it.

A collectable can be picked up by the player and has a position. The effect of picking up the collectable depends on its subclass, which was left out of this diagram for now. A level can have any number of collectables.

A level may contain a platform, which may or may not be breakable. A platform also has a position and a scale. Breakable platforms can break.

A moving platform is a specialization of a platform. It also keeps track of the direction it travels in, whether it is moving or not and its speed. A moving platform can change direction and speed, as well as move.