

## Monsters Love Ice Cream – Executive Summary

Monsters Love Ice Cream is a tower defense game in which the player defends their ice cream shop from waves of ice cream loving monsters. The player can build a variety of unique and interesting turrets along the path their ice cream shop to deter and defeat the hungry monsters. The basic object purchase towers and place them along the path in such a way as to defeat all of the monsters before they reach the ice cream shop. Towers are purchased using a limited in-game currency, but the player can earn more of this currency by defeating monsters. If a monster makes it to the shop, they steal some of the player's ice cream and the player loses some number of lives from their total lives. If a player loses all of their lives, they lose that round of the game. A long term goal for this app is to implement boss monsters that can be befriended once they are defeated, but this has not been implemented yet.

This game does not solve a specific problem for the user, but like any game, it provides a fun and stimulating challenge and will most often be used recreationally. For the more competitive user, high scores and leaderboards will eventually be implemented, allowing players to compare their successes to those of their friends and other players.

All views other than the game view itself are custom view controllers. There is a main menu, an instructions page displayed using a table view, a settings page, and a level-select page displayed using a collection view. The game view itself is implemented using GameplayKit and SpriteKit, relying primarily on a class called GameScene.

The game logic is handled by several custom classes and subclasses. A custom class called Level contains a 2x2 array of integers that acts as a rubric for the positioning of everything on the game background art. This rubric is used by the class GameScene to initialize the appearance of the board and all of the entities and their components. The rubric is also used by GameScene to create two GKGridGraphs that only contain nodes that may be used for tower placement and enemy pathfinding respectively.

There are two GKEntity subclasses called Tower and Enemy. The Tower class contains info about various types of towers, and the enemy class contains info about the various types of enemies. There are GKComponent subclasses to handle movement, hit points, and currency values for enemies, a firing component to handle towers shooting at enemies, and a visual component used for all entities on the GameScene.

Within the game, a player can tap on the areas around the enemy path to purchase and build turrets at the tap location. Hitting the play button in the upper left will start the game and send a new wave of enemies along the path towards the ice cream shop. Purchasing a turret will decrease the player's cash by the turret's cost, and defeating enemies will increase the cash by the enemy's value. If an enemy makes contact with the base, the player loses lives equal to the enemy's damage value. In the future, there will be many more small animations surrounding enemy movement, cash and life values being changed, as well as visual feedback for any touch events across the map. There will also be more maps, more enemy types, more waves, and boss monsters that can be befriended in the future.