

SWINBURNE UNIVERSITY OF TECHNOLOGY

COS20007 OBJECT ORIENTED PROGRAMMING

D Level Custom Program Initial Plan

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Design Overview for Snake Game

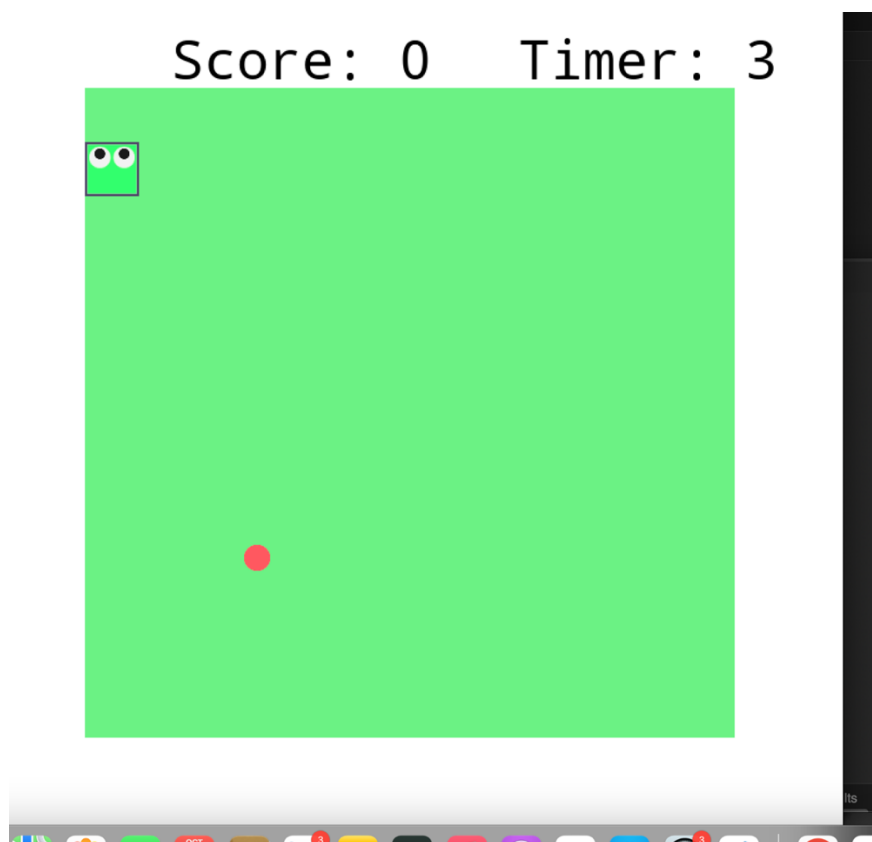
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Summary of Program

The program is a basic snake game but a little different from the classic snake game. Basically, it works with few classes like snake, food, which are the two basic yet essential classes for making the game function. When the bitmaps of these collide, the food is created at a new random position and with each collision, it basically increments the score and the timer is going in reverse. When the timer is back to 0, the game ends, and the final score of the player is presented on the screen. As of now I am thinking of adding certain levels to the game, for example a different color food at random times during the game which will increase the score by 20 and increase the timer by 5 sec.

In my game, I am using SplashKit library, to achieve the desired functionality of the game. Below is the screenshot of the program for what I made till this point. This is definitely not the final product, I will be working more on improving the UI and also add custom levels maybe some obstacles that will reduce the timer.



Required Roles

My game shall have certain classes like Snake, Food, Score, Timer, GameManager, Controls etc. By using all 4 principles, i.e., Polymorphism, Inheritance, Encapsulation and Abstraction, I will finally implement the game. I am thinking of adding Interfaces like IObjects or ICreate which shall make the code much easier and add compulsory attributes.

Table 1: Snake details

Responsibility	Type Details	Notes
To add implementation of Snake Object	Class	Knows Location, Knows Bitmap, Knows new locations on updations. Also knows a bitmap dead snake when game ends.

Table 2: Food details

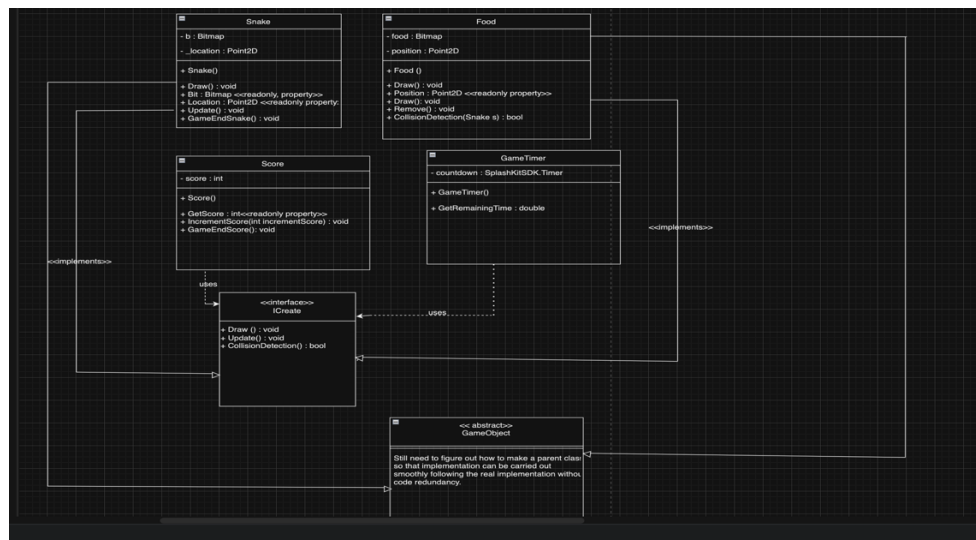
Responsibility	Type Details	Notes
To add implementation of Food Object	Class	Knows Location, Knows Bitmap, Knows to draw on random locations on collision. Also knows a bitmap blue food at random points of time.

Table 3: Poison Food details

Responsibility	Type Details	Notes
To add implementation of a poison Food Object	Class	Knows Location, Knows Bitmap, Knows to draw on random locations on collision. Reduces the score and timer and can move too. Player needs to get rid of collision with this food.

Class Diagram

So, the real implementation is still to be done as I also need to add levels and make the code less redundant. This is the implementation till date that I have thought. Yet, you can see certain attributes like location and methods like Draw redundantly being used in classes. So my further implementation will be focussed on adding complexity to the game and getting rid of same implementation in classes separately. I shall be creating a game manager that shall carry out all the implementation of the game and whose instance will be created in the program class so that the code is kept short and subtle.



Sequence Diagram

As of now, my sequence diagram is not ready.