

# Fruit Ninja Report

## Team:

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## Design:

There are 3 main components to the game that follow an **MVC** design pattern:

1. The game engine (Controller) It controls the data flow into model object and updates the view whenever data changes. It keeps view and model separate. The Controller acts on both model and view.
2. The GUI, View, which only uses the methods provided by the game engine to communicate with the game logic and models.
3. The Objects (Models) who communicate with the controller and change its data through strategies.

## Design patterns Used:

**Singleton:** ensures only one instance of the Controller class and provide a global access point to it. This makes the project creates only one Controller during the runtime.

**Command:** used to encapsulate information needed to use the saving and loading actions to issue requests to objects without knowing anything about the operation being requested or the receiver of the request.

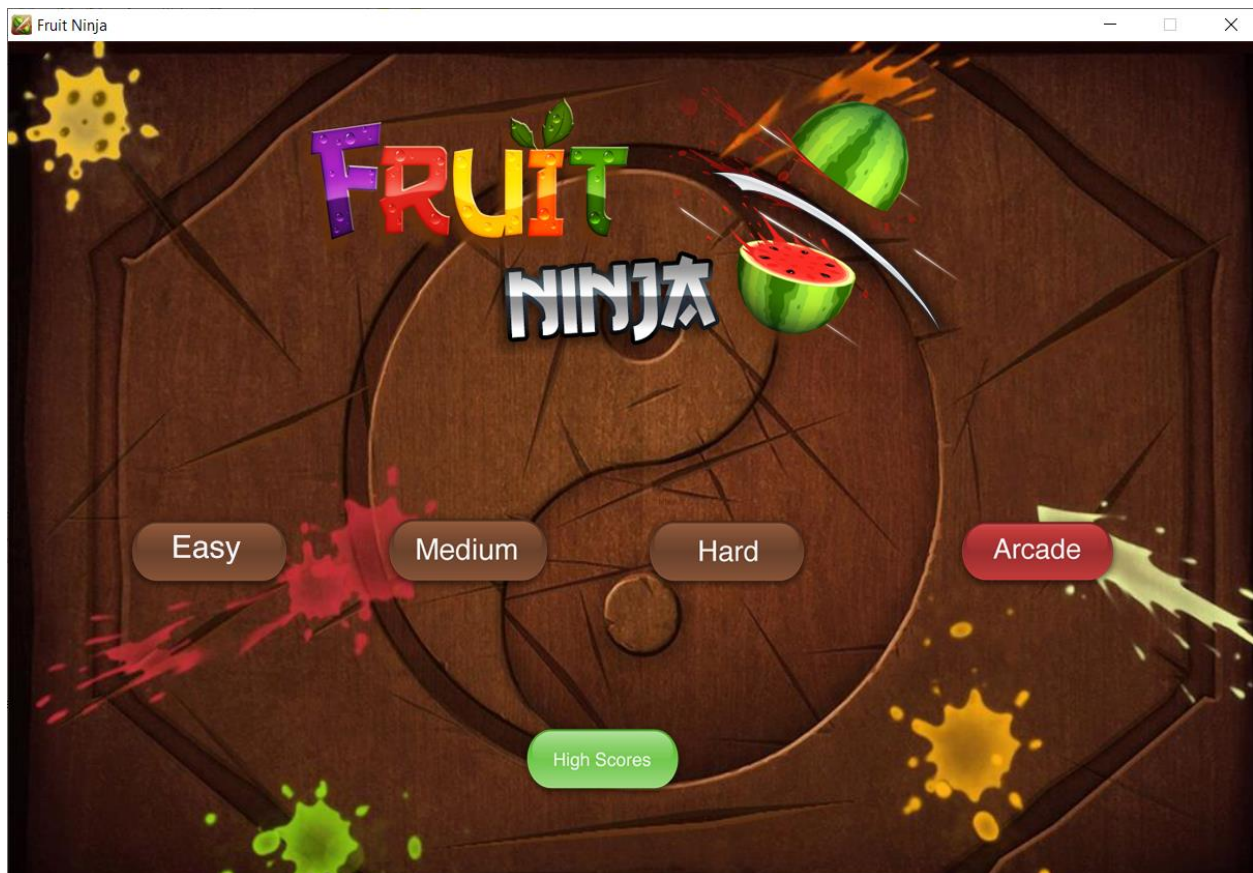
**Factory:** Provide an interface for creating families of related or dependent objects without specifying their concrete classes. It allows the creation of sliceable objects (fruits, bombs) subclasses when needed for each throw, it takes a random integer and returns a random object depending on that integer.

**Observer:** used to update the score label in real time. When one object changes state, all its dependents are notified and updated automatically (The labels which show the score).

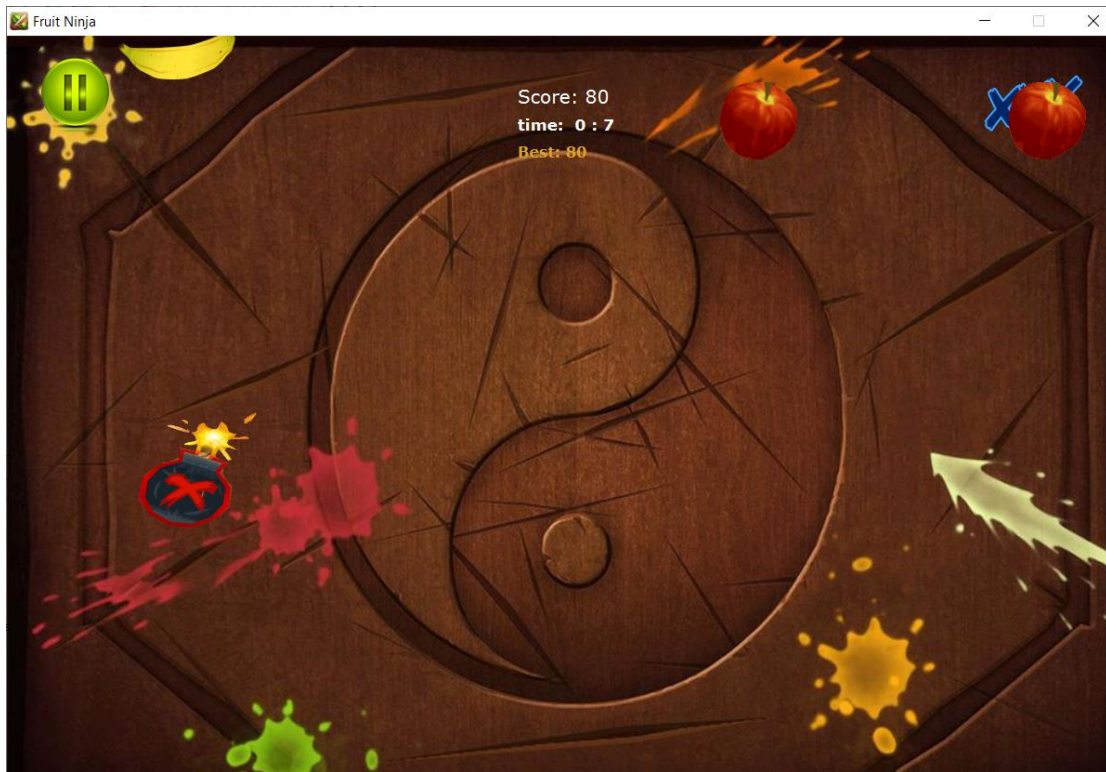
**Strategy:** Used to create multiple game modes with each strategy represent a game mode with its own rules, flow of sliceable objects, reaction to objects being sliced or falling off screen, and win/loss conditions. Each family is a game mode, and the game controller uses them independently. Strategy lets the algorithm vary independently from the clients that use it.

**Decorator:** Attaches additional responsibilities to an object dynamically. Used to change difficulty of a strategy by modifying the amount of objects thrown.

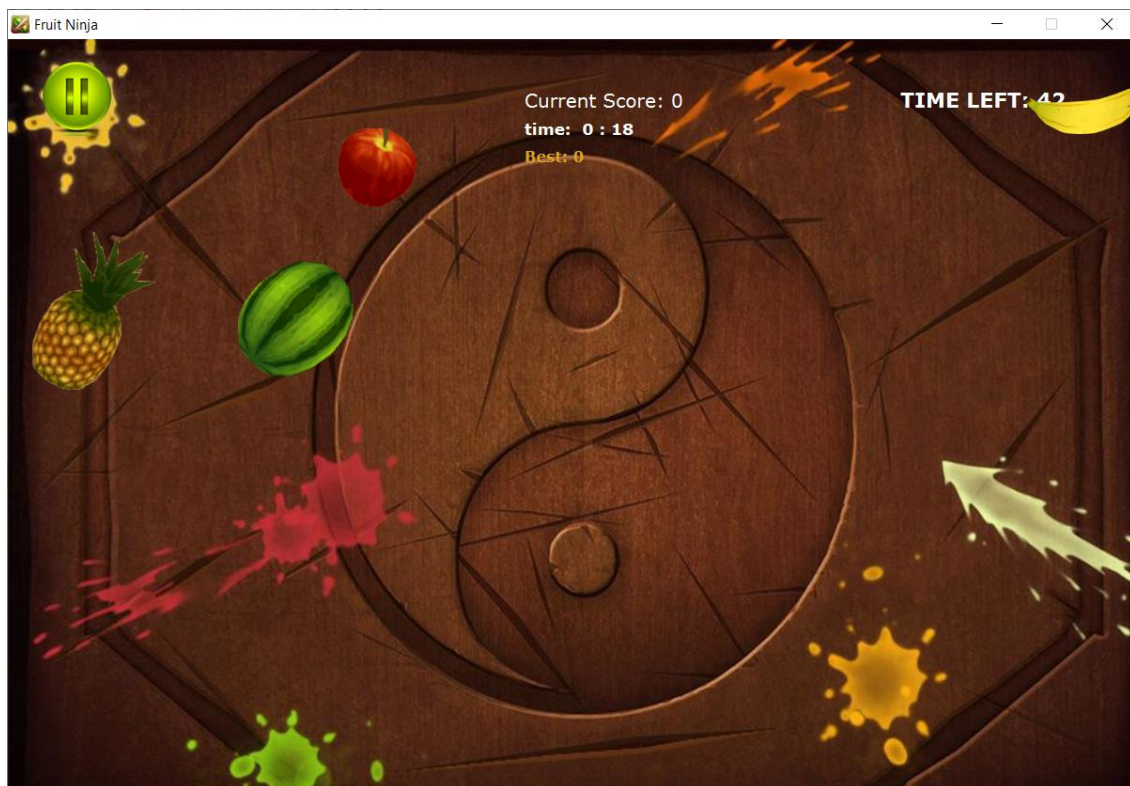
## Snapshots of GUI:



Start Menu

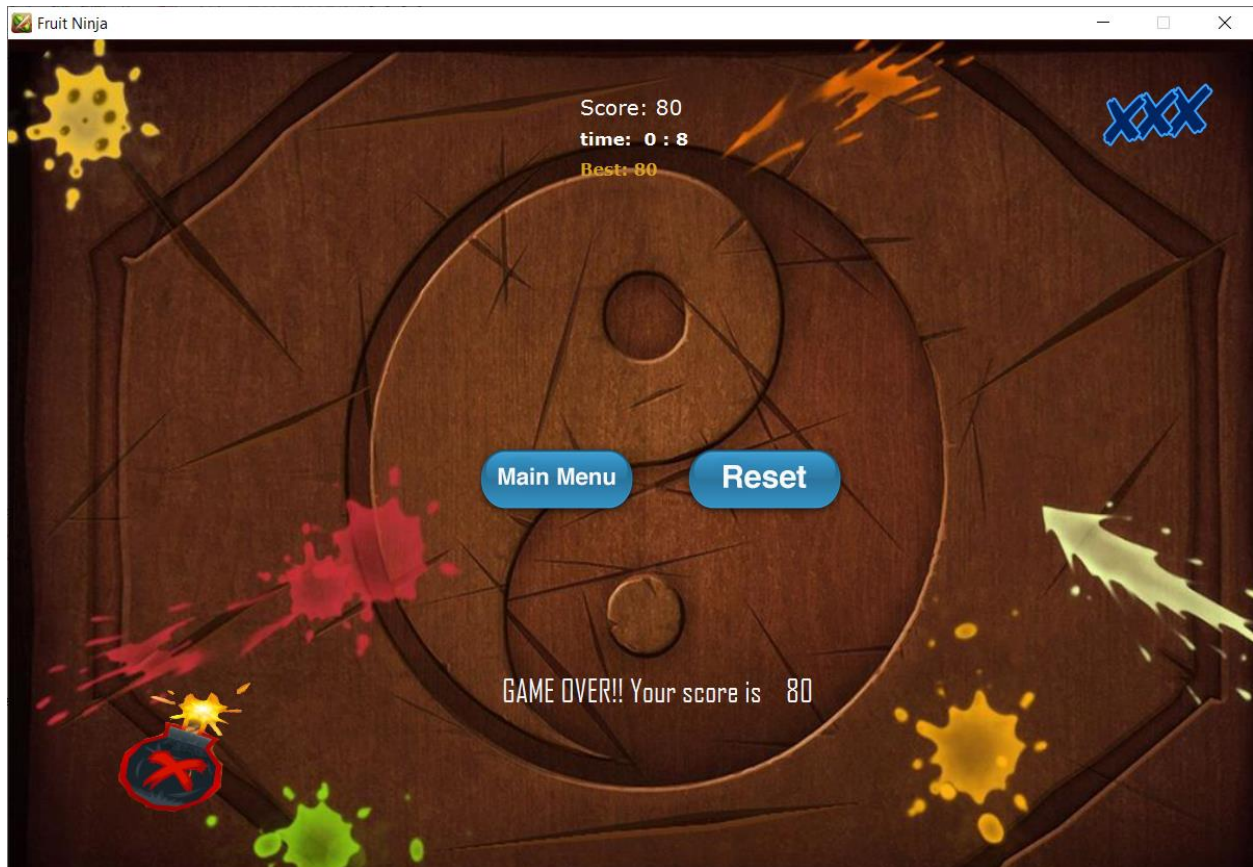


During Classic Gameplay



During Arcade Gameplay





## Game Over View

### How To Play:

1- When you Start the game, you choose a game mode between Classic (Easy , Medium, Hard) or Arcade , or choose "High Scores" to view the highest saved scores.

2- During the gameplay, you simply move the mouse across a fruit to slice it.

3-In Classic Mode, (The difference between the modes is the number of fruits that appear together)

->Beware of bombs!! Fatal bombs causes an instant game over, Dangerous Bombs causes a life loss.

->There is 3 types of special fruits (1 that Double your game score , 1 that Give you 100 Points, 1 that Give you extra life if your lifes are less than 3) Be sure you not miss them.

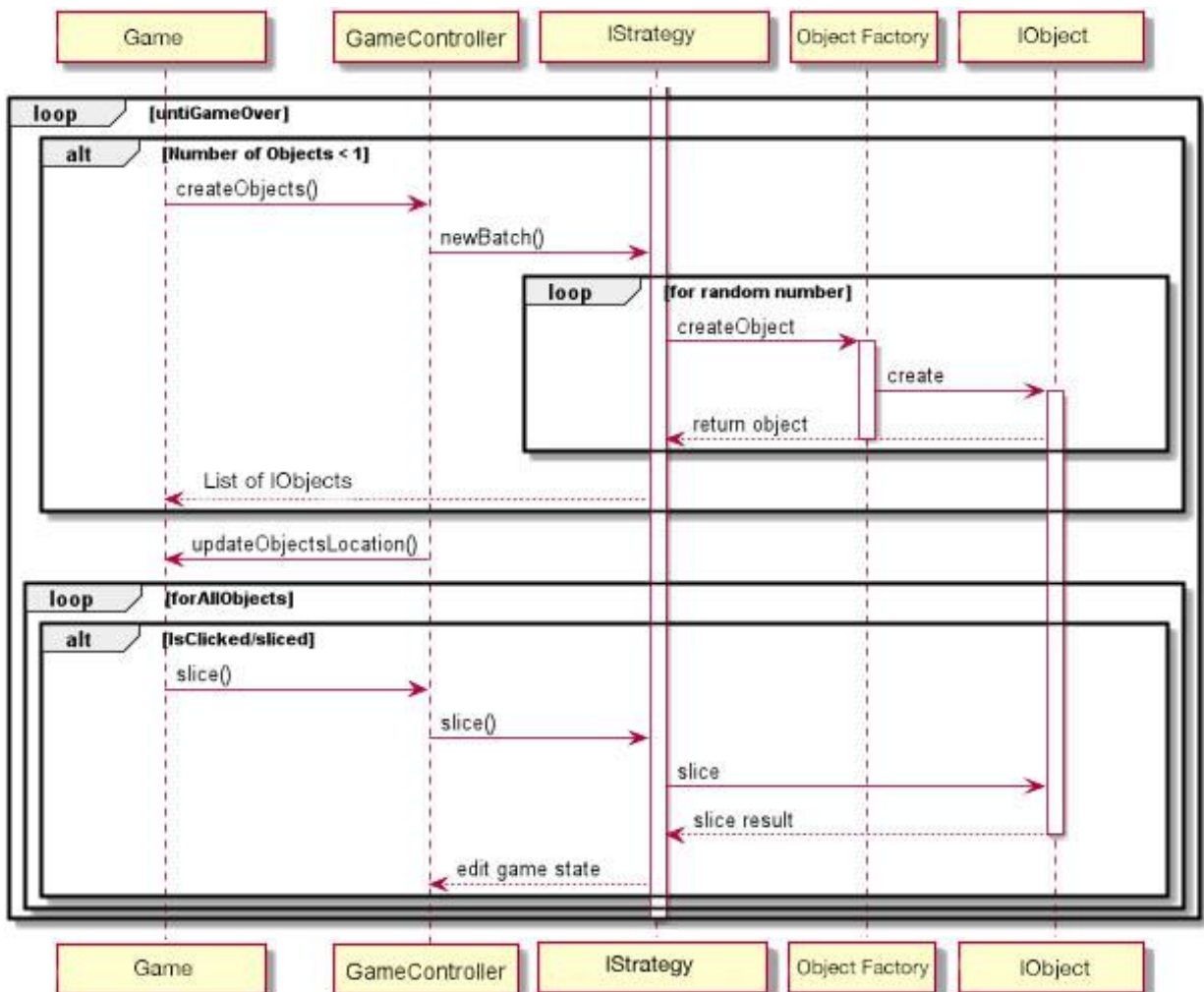
4- There are no bombs and special fruits in Arcade mode, but the game ends right after 60 seconds, so try to get the highest score you can.

5-You can pause the game in anytime you want and then you can choose 1 of 3 options ( resume game, reset the game with the same game mode, Go back to Strat Menu).

6-In High Scores Gui, there is 4 buttons you press on any button of them to view the highscores in each mode (mode is known by clicking on the button of it).

## Diagrams:

### Sequence Diagram



(the original photos of the diagrams are in the project file)

