**Design Patterns Report**

Adapter:

JAXB library is used to save player data to Xml file, in order to achieve single responsibility principle adapted copy of player class and adapter are added to transform player class to suitable copy that can be saved properly.

Factory :

Since game depends on creating random game objects it was better to have factories for fruits and bombs to use it in Objects Generator thread to separate creating objects, so single responsibility achieved .

Singleton :

As game’s difficulty needs to be instantiated only one time in the program, so it is used in classic difficulty and arcade difficulty.

Observer :

For game object to observe it’s creation to show it on GUI window

Command :

For each game object when it is sliced it gives a command to play the sound effect.