Exercise 2

Singleton Design Pattern

Singleton pattern has been implemented for the Game class. In our design, this class should only be made once and that's why we implemented the singleton design pattern. We made the game constructor private and added a method that will ensure only one instance will be made and referenced.

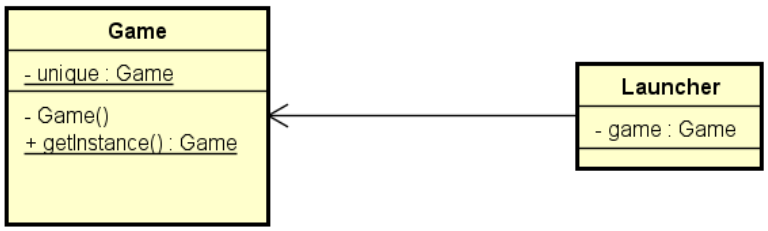

Figure 1. Class diagram.

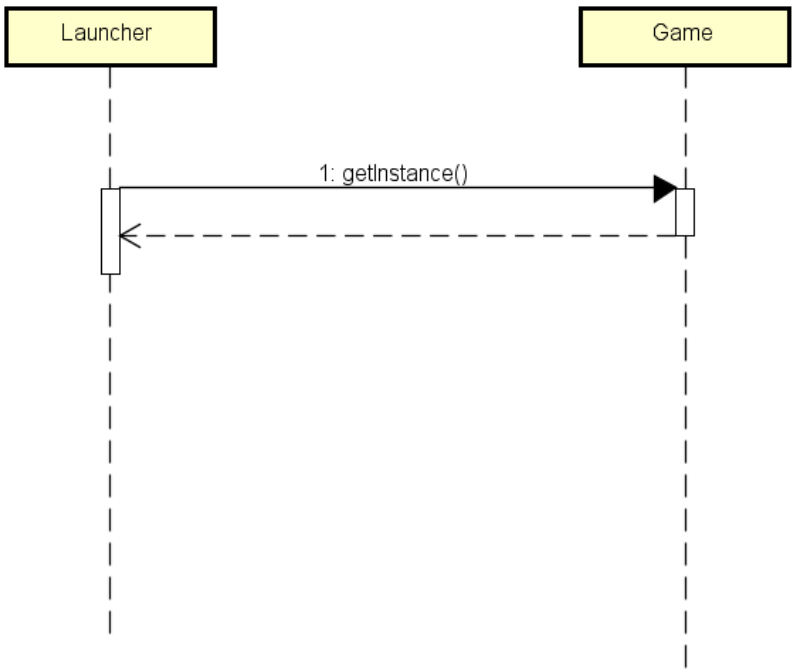

Figure 2. Sequence diagram

State Design Pattern

State pattern has been implemented into the player class. The player has several states with different behavior, such as walking and idle, thus a state pattern is applicable. A PlayerState interface has been created and the states of the player implement this interface.

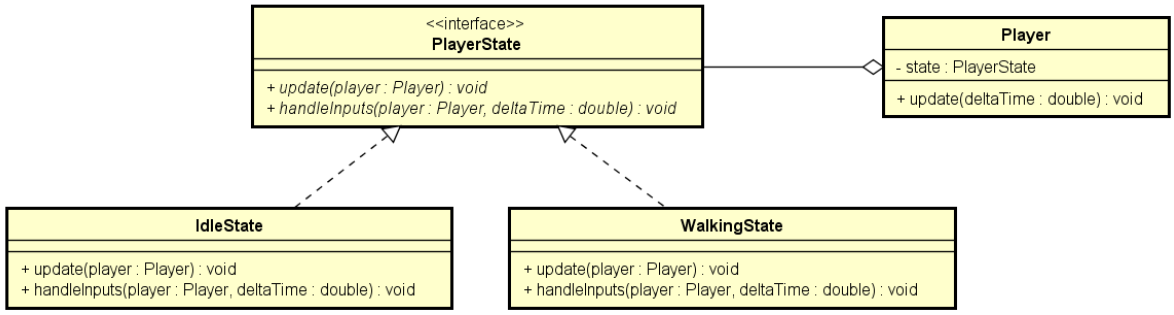

Figure 1. Class diagram.

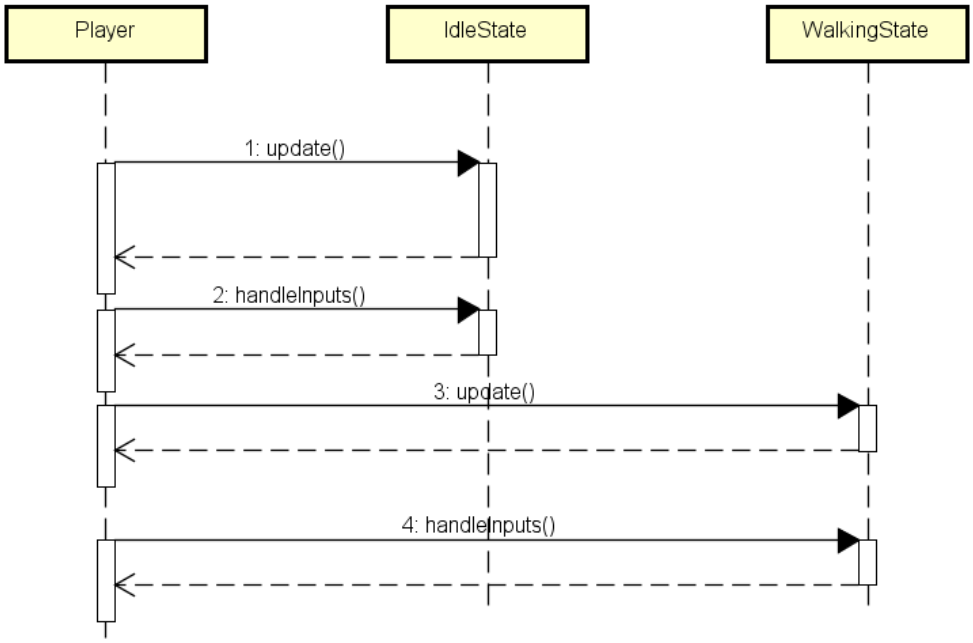

Figure 2. Sequence diagram.

Exercise 3

1. Good practices will have low costs with relatively a small amount of time needed, and bad practices will have higher costs and will take bigger amounts of time.
2. It has nothing to do with the design, planning or approach on a project. It only concerns implementation, which is not what the research was focusing on.
3. a. On-the-fly requirement changes. This would of course be a bad practice, but they could've tried to find out just how much it affects a project.
   b. High pressure from board/directory. This could affect the project in a good way, to speed up the process. But if too much, this would be a bad practice, because being forced to speed up the project could lead to more errors and bad quality product.
   c. Good Git usage. This would be a good practice, but it would've been interesting to see how much it would affect the project.

4. a. “Many team changes, inexperienced team“. When you have many changes in a team, teambuilding will be harder, the team will cooperate worse and development will be slower. Also, a team consisting of inexperienced people will much more likely result in having messier code, a slower process and will raise the likelihood of errors.
   b. “Technology driven”. A technology driven project means that the project will be one of the first to apply and use certain technologies, which directly means that there is not much experience on the new practice. Mistakes are bound to happen because people are exploring new grounds (which means advancing in technology, but also means getting there is a lot more risky).
   c. “Dependencies with other systems”. If your system is dependent on another system, this will be hard to maintain. When the other system changes or becomes instable, your system would have to change or will become instable as well.