Assignment 3 Question 4

| | Advantages | Disadvantages |
|---|---|---|
| Method 1 | An advantage of using MVC is that views and controllers can be modified without affecting other components of the system. This can even be done at runtime. This also makes testing and maintenance easier. By separating the functions of the system into different components (model, view and controller), the overall complexity of the system is reduced. | There must be strict rules in the use of the controllers (keyboards and scanners) in order to interact correctly with the model (CashRegister). This must be taken into account when creating modifications. There is also high coupling between the view (Display and TicketPrinter) and the model (Cash Register). The specificity of this model makes it difficult to reuse and test. |
| Method 2 | Through implementing the View interface, it creates a clear separation between the view (View interface) and the controllers (Keyboard and Scanner). Centralizing the view creates a more organized system, which makes it easier to develop and modify. This creates high cohesion between the Display and TicketPrinter (which implements view), and reduces coupling between the model and the view. This shows a clear separation of layers in the software architecture, as the controller and the view from the user interface, and the Model creates the application domain. | The high level of separation between the different components shows a higher complexity. Similarly to the first method, there must be strict rules in place to use the controllers (keyboards and scanners) in order to interact correctly with the model (CashRegister), which is taken into consideration when making changes to the system. |
| Method 3 (observer pattern) | The observer pattern reduces coupling between objects that interact with each other. Data can be sent to objects without creating changes in the Observer class. Observers can also be added and removed at any point. | There is an increase in the code complexity. Having a high number of registered observers requires a large amount of computing time. |