Student 23170981 – Sergio Oliveira

Part A – Exercise 2

**Use case - Buy Items**

To describe my use case, I chose to apply the system sequence diagram.

Through it, you can see all the interaction between the actor and the system step by step.

The process of buying a product begins the moment the customer, who has no interaction with the system, arrives at the cashier to purchase an item. From there, the cashier has the responsibility to trigger the new sale process.

After that, the system will enable the user to enter the item through the bar code or description and its respective amount. Note that the system allows a sale to have one or more items. Consequently, a partial sum will be updated as the items are registered.

Therefore, after the end of the items which the customer wants to buy, the cashier will trigger the process of closing the sale, enabling a new step named checkout.

The exception granted in the system was attributed to the possible non-existence of a register for the item in which the customer wants to buy, thus returning to the system operator an error, making impossible the normal course of the system.

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Description automatically generated

As a team

Part A – Exercise 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Glossary: Garden Centre | | | | |
| Use Case | | Category | Type | Comments |
| Name | Description |
| Employee | General idea that includes records of employees | ID | Attribute | To distinguish employees from each other |
| Type | Unique Number |
| Nome | Attribute | Pesonal registration of the employee in the company |
| Type | String |
| Address | Attribute | Pesonal registration of the employee in the company |
| Type | String |
| Phone | Attribute | Pesonal registration of the employee in the company |
| Type | String |
| Garden Centre | Store responsable to sell garden items | Name | Attribute | Name of the company |
| Type | String |
| Address | Attribute | Address of the company |
| Type | String |
| Phone | Attribute | Contact phone number of the company |
| Type | String |
| Email | Attribute | Contact email of the company |
| Type | String |
| Item | An Item for sale in a Garden Centre | Code | Attribute | To distinguish items from each other |
| Type | Unique Number (Interger) |
| Description | Attribute | Short description to summarize the item |
| Type | String |
| Price | Attribute | Price of the item that will be charged |
| Type | Interger |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Glossary: Garden Centre | | | | |
| Use Case | | Category | Type | Comments |
| Name | Description |
| POST | Point-of-sale-terminal(POST) - System used to record, calculte and handle payments | Sum\_Item\_price | Method | Sum each item and shows the grand total of the sale |
| Type | Int |
| Sales | Sales transactions | Data | Attributes | Store data at the day the purchase was made |
| Type | Date format (dd/mm/yyyy) |
| Time | Attribute | Store data at the time the purchase was made |
| Type | Time format (hh:mm) |
| Identifier | Attribute | To distinguish sales from each other |
| Type | Unique Number (Interger) |
| Create\_identifier | Method | The sales create itself the identifier when the trigger new sales is started |
| Type | Unique Number (Interger) |
| Sales LineItem | Line create in sales transaction covering the quantanty of the item | Qty | Attribute | The sales create itself the identifier when the trigger new sales is started |
| Type | Interger |
| Specification | All informations that discrible the specification and characteristics of the good |  |  |  |
|  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Glossary: Garden Centre | | | | |
| Actors | | Category | Type | Comments |
| Name | Description |
| Cashier | As a user, the cashier has a responsibility to records the items and/or search items asked by the customer and collect the payment | Employee\_ID | Attribute | To distinguish employees from each other |
| Type | String |
| Create\_sales | Method | The cashier can create new sales |
| Type | New sales transaction |
| Login | Method | The cashier enter in the system to access functions such as create sales and search items |
| Type | Boolean, the user has access or not |
| Search\_Item | Method | The cashier can execute this comand to find item asked by the customer |
| Type | **Is that a boolean?** |
| Customer | Customer arrives at checkout in the Garden Centre with items to purchase | Nome | Attribute | **Field does not required, pesonal name** |
| Type | String |
| Manager | Responsible to manage the application adding and deleting users | Employee\_ID | Attribute | To distinguish employees from each other |
| Type | String |
| Add\_User | Method | Create new user to get access the system |
| Type | **Create line?** |
| Drop\_User | Method | Delete user that does not belong the process anymore |
| Type | **Drop line?** |

As a team

Part A – Exercise 4

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Part A – Exercise 5

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Part A – Exercise 6

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# Create Sale

The process described in the communication diagram here describes the interaction of the users from login to the process of entering items.

The use case relationship includes the client by association, who does not have direct interaction with the system but rather plays the role of the trigger for the start of the process.

Starting from the principle where the user is enabled to access the system, it is possible to simplify the process into two steps, which are the creation of the sale and the storage of the moment of its start.

To put it simply, the goal of this process is to enable the system for the user, role played by the cashier, to input the items that will be purchased.

The process described follows an abstract idea, being possible to replicate the patterns in all cases where a user is accessing a system, digitizing the item in search of obtaining the total sum.

As a team

Part A – Exercise 7

**7. Discuss how risk, quality and communication will be managed in your project. Provide justifications for your choices**

Risks, quality and Communication will be all managed upon the Agile principles as they have useful practices rather than traditional approaches, which can have a considerable level or risk, cost and less efficient in comparison to Agile principles

With that said, throughout the software development involved risks may occur (i.e., confusing actors, miscommunication etc.) however, they can be significantly reduced by a proper amount of analysis and proper use of design modelling. As well as small incremented deliveries along with timely feedback between customer and client may reduce the chances of a client’s dissatisfaction at the end of project.

Moreover, our project will be based upon the eleven Agile principles that distinguished from any others processes and have a substantial impact on the quality of the project. Basically, there are two principles that takes the quality into accountability. Customer satisfaction through early and continuous delivery of valuable software and a constant but suitable pace from the development team involved in the project, should be excellent approach for a quality management.

Lastly, Agile principles will be used for communication as part of the project management, preferably face-to-face conversations between the participants. Curiously, conversation will be a default standard as written plans, design etc. will in case of an immediate and significant necessity. Worth also to mention that constant communication and feedbacks will guide the project success for the business, especially in the execution phase.

In order others words, risks, quality and communication are parameters to be considered part of a project management. Therefore, Agile principles and its practices have been and shown the most suitable and efficient approach, even used by big Techs (i.e., Google, Microsoft etc.). currently and good practices within Object Oriented Software Engineering for software development.

As a team

Part A – Exercise 8

**8**.  **Describe and justify the development methodology you will follow.**

Through the definitions of success, challenge, and loss, we were able to achieve personal, technical, and organizational goals through the Agile methodologies usage for the project.

In short, to justify such choice these principles seek to deliver the project with all the features provided –*Successful, Challenged and Impaired—*within the time enabled.

In addition, the selected Agile philosophies support the combination of Extreme Programming and Scrum methods, which here were applied individual elements such as version control and the application of coding patterns, where moulded to our reality enabling the development, interaction between those involved and monitoring through weekly dismantling of the project in search of customer satisfaction.

Due to the constant change in the market and the need for adaptability due to the economic scenario, the difficulty of managing Garden Centre becomes more real and challenging. For this reason, applying the XP development methodology allows us to eliminate these constant changes and requirements of the market and consequently achieve the desired success. The method's efficiency makes it possible to eliminate delays and miscommunication by emphasizing face-to-face collaboration and thus allowing constant evolution by performing simultaneous phases, such as analyses, projects, coding, testing, and deployment.

Moreover, by having both of the methodologies selected, a team can break work into small and manageable pieces for a certain period, a so-called *Sprint* – completed within two or four weeks – with potentially shippable code. Also, teams may be small but well-organized, cross-functional and self-organized. Additionally, items are organized in a list based on priorities that are estimated with the relative effort of each one.

In summary, the reapplication of patterns enable the practicability of the methods and concepts mentioned earlier. In addition, the construction of the use case in the first stage of this project demonstrates the application of those methodologies for this concept. Based on the list of commons objects identified, a significant amount of considerations followed by an analysis performed, allowed the team to develop a more robust solution to the domain problem.