Daniel Smith
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19/01/2023

Software engineering 1

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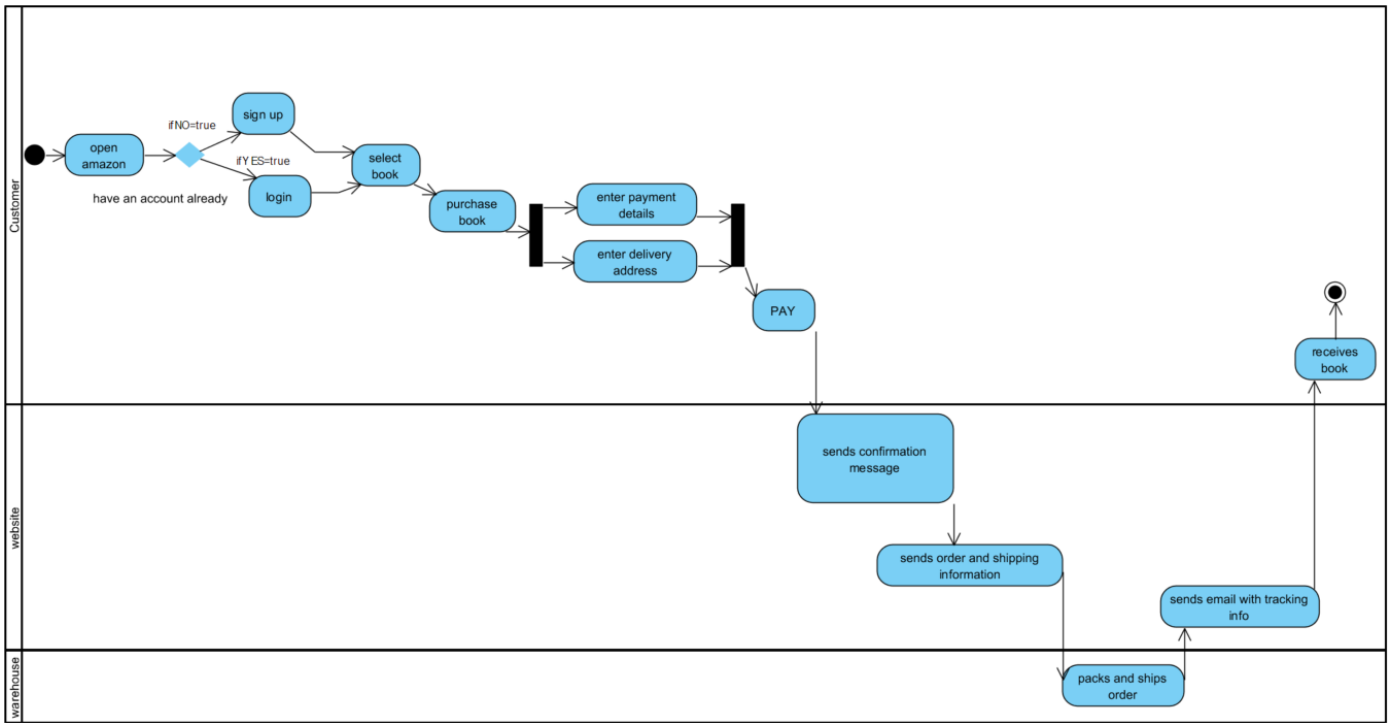
PART A

1.



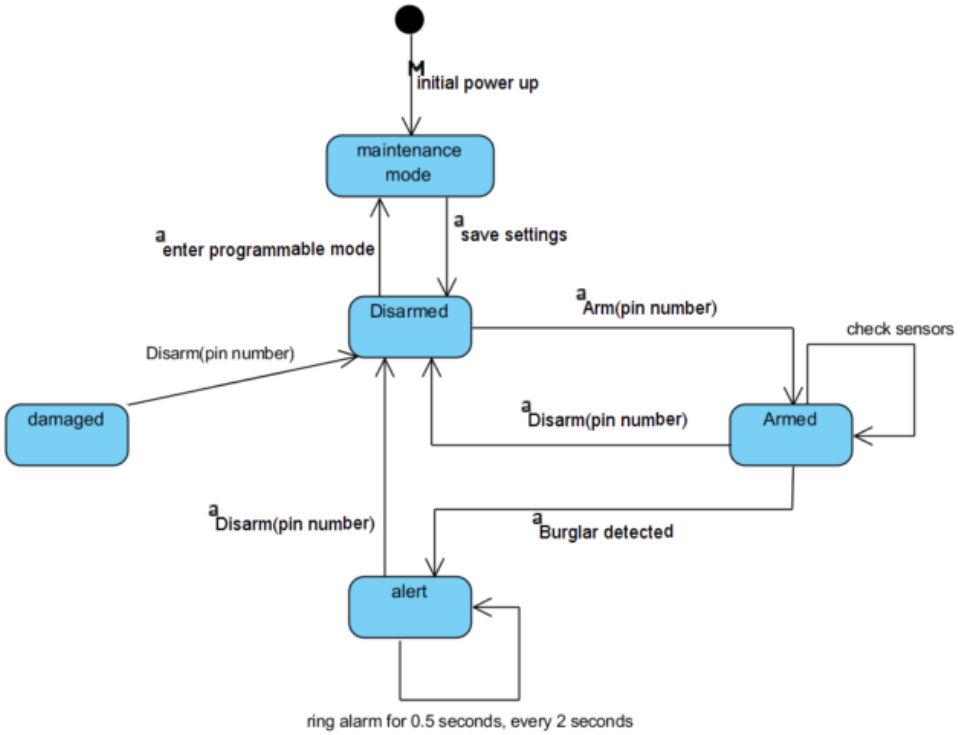
2.

In UML class diagrams, method overriding occurs when a subclass has a method with the same name and signature as a method in it's base class. The subclass method is said to override the superclass method. Based on the scenario of the purchase of a book on the web, here is an example:

- **A bass class "Login" has a method "username"**
- **A subclass "sign up" has a method "username" (with the same signature as method in base class)**

It's important to note that when a method is overridden, the subclass method must have the same method signature and return type as the superclass method.

3.



PART B

4.

```
Feature: Vending Machine

Scenario: User Deposits Money
  Given User wants to deposit Money
    And User is Using cash
  When Cash is deposited appropriately
  Then Add correct amount to balance

# paper cash has a different way to deposit than coins

Scenario: User selects item from Vending machine
  Given Money has been deposited
    And user knows what they want
  When Code of desired item is entered
  Then Check whether code is correct

Scenario: User collects item
  Given Item code is correct
  When Item drops
  Then Flap at the bottom unlocks for user to collect item
    And Cash balance is reduced accordingly
    And Remaining Cash is withdrawn
```

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5.

Description: provision of a web interface for users.

Rationale: Easy for customers to quickly order food for lunch.

Type: Functional, User

Fit criteria: After 5 minutes of training 8 out of 10 volunteers will be able to pass a practical test on using the websites basic functions.

Volatility: Enduring, as the technology is unlikely to change or be superseded.

Description: fast turnover from user ordering to delivery.

Rationale: Customers get their food when they want it.

Type: non-functional, User

Fit criteria: test 5 deliveries (all in different areas of greater London) and 4 out of the 5 should arrive on time.

Volatility: Enduring, because it'll benefit the reputation of the business, allowing them to grow.

6.

Plan driven development is a method of software development where we plan and develop the desired features a user wants in the final product, and follow the plan throughout the development of it, and a way of doing this is using the waterfall method for example. However due to the constant changes of requirements this can become quite inconvenient as it disrupts the whole process. Changing of a requirement will cause weeks or even months of work to be a waste as the developers will have to start from scratch. Also, plan driven development methods such as the waterfall method are mostly used on very large, multi-site projects so if the user decides to change what they want, it can cause a huge disruption.

However, plan driven development is beneficial for large, multi-site projects as it makes large scale coordination much easier. Furthermore, plan driven development is still very relevant in large scale projects, as it allows the teams to track and make better progress when they work alongside a plan so they can attack large projects effectively.

7.

I would say that I am willing and eager to take on the release testing for the software because I have the necessary skillset. Also, as the unit tests are already written, which will save time and will be useful in ensuring the software is functioning correctly. However, it will be very beneficial for us to also use a third party to test the code with their own tests, so we can be sure that it works perfectly under different testing environments.

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8.

Project: A mobile application for a small start-up company that allows users to order and pay for food deliveries from local restaurants.

Key characteristics:

- **The project is prone to uncertainty and change, as the new company is still trying to understand and meet the needs and wants of its customers. Also, after the first release they may need to make significant changes on the app based on customer feedback.**
- **The project requires close collaboration between the development team and the stakeholders, as the stakeholders need to provide constant feedback on the app's functionality and design to ensure it meets the needs of users.**
- **The project has a small and cross-functional team, with all members working together to get the app on the market. Developers, designers and product managers are all necessary in the release.**
- **The project has a fast delivery schedule, and individual parts are delivered incrementally, allowing the company to release a base product and gather feedback early on, and then improve it after receiving criticism based off of customer feedback.**

9.

As a customer, I want to order food from different restaurants on the same receipt, so that I can pay for the food and delivery in one go.

10.

A DevOps approach highlights collaboration and communication between development, operation teams and stakeholders, making it much easier to identify and resolve issues. Also due to continuous integration and delivery, it allows for faster deployment of code changes and the ability to receive feedback on those changes.

11.

Availability is a measure of the amount of time that a system can function properly. For example, a website for a small business, which didn't see much traffic throughout the year, would have a high rate of availability due to it not being put under a lot of stress. However, that's not the full story when it comes to determining the reliability of it.

Firstly, a drawback of using availability as the only measure of a system's reliability is that it doesn't consider the impact of the downtime on the users of the system. For example, a system with very little traffic will have a lot less of an impact on its users than if a big corporation had its servers shut down for a small amount of time as many more users will have been affected and in a more sever way. e.g. A payment service such as PayPal will have a catastrophic impact compared to a small business.

Finally, availability does not consider the quality of the service provided when the system is up and running. A system may be running constantly but may not be running consistently or at a high level for its users. This is important as its necessary for the system to work smoothly when it is running.

To conclude, availability isn't a great way to be the primary measure of a system's reliability because it doesn't consider the impact of downtime on users or the quality of service provided when the system is up and running.

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12.

i.

Equality Act 2010 – have significantly different wages between age groups.

ii.

FOI Act – reply to a request but not answering the request upfront, just delay the time it takes to answer the request.

iii.

DPA – lie about informing users about how and where their data is being used.

iv.

GDPR - Inferring Data, e.g. saying someone who is 80+ years old is counted as 'old' in a system.