Project 2 CS-320

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SUMMARY

This project involved three features Appointment, Contact and Assignment. Each of these features was developed in java and tested using the Junit5 framework. The first feature, Contact, was developed with two files Contact and ContactService and two Junit tests ContactTest and ContactServiceTest. This aligned to the software requirements by being able to take in a contact into the contact object, test for the specific length requirements with the fields, and set and get the information using java methods. It also had a ContactService class that stored the information in an arraylist so it could be accessed later by the testing classes. The next class is the appointment class. It is designed in java to make an appointment and test for length requirements in the fields and hold the date and description as well as update and delete the information as needed. It is created with and TaskService class that holds the data in an arraylist so it can be accessed by the unit test classes. Finally, the assignment class consists of two files as well task and task service. It involves assigning a task ID and name and description for the task as well as holding it in a state involving arraylists as well. This concludes the basic summary of the three programs written for this project.

Junit testing was effective in each case. Coverage was over 80%, meaning that each method was covered in testing, in each program and it successfully demonstrated that the field length requirements were being individually and successfully tested in each method of the ‘setters.

My experience writing Junit tests was to ensure that my code was technically sound, by using the assertions module I was able to assert each method in each class and define that the proper length requirements were in place for each of the fields. Also, I tested whether the appropriate methods were able to do their function of add, update, or delete. Finally, I feel the code was efficient because It followed the requirements in detail in each class and in the unit testing.

REFLECTIONS

The software testing techniques employed with this project were non-functional or ‘white box’ techniques. The difference between function and non-functional techniques is that Non-functional testing is the testing of a software application or system for its non-functional requirements: the way a system operates, rather than specific behaviours of that system. This contrasts with functional testing, which tests against functional requirements that describe the functions of a system and its components. The names of many non-functional tests are often used interchangeably because of the overlap in scope between various non-functional requirements. For example, software performance is a broad term that includes many specific requirements like reliability and scalability ((*Non-Functional Testing*, 2021). Another type of testing technique is functional testing. **Functional testing** is a [quality assurance](https://en.wikipedia.org/wiki/Quality_assurance) (QA) process[[1]](https://en.wikipedia.org/wiki/Functional_testing#cite_note-Prasad-1) and a type of [black-box testing](https://en.wikipedia.org/wiki/Black-box_testing) that bases its test cases on the specifications of the software component under test. Functions are tested by feeding them input and examining the output, and internal program structure is rarely considered (unlike [white-box testing](https://en.wikipedia.org/wiki/White-box_testing)).[[2]](https://en.wikipedia.org/wiki/Functional_testing#cite_note-KanerFalkNguyen1999-2) Functional testing is conducted to evaluate the compliance of a system or component with specified functional [requirements](https://en.wikipedia.org/wiki/Requirement).[[3]](https://en.wikipedia.org/wiki/Functional_testing#cite_note-3) Functional testing usually describes *what* the system does.

Since functional testing is a type of black-box testing, the software's functionality can be tested without knowing the internal workings of the software. This means that testers do not need to know programming languages or how the software has been implemented. This, in turn, could lead to reduced developer bias (or [confirmation bias](https://en.wikipedia.org/wiki/Confirmation_bias)) in testing since the tester has not been involved in the software's development.[[4]](https://en.wikipedia.org/wiki/Functional_testing#cite_note-4)

Functional testing does not imply that you are testing a function (method) of your module or class. Functional testing tests a slice of functionality of the whole system *(Functional Testing, 2021).*

The practical uses and implications of the said techniques are as follows:

The term non-functional testing is commonly used to refer to testing the features not specific to functions. This includes testing for performance, usability, efficiency, security, the breaking point of the software, and many more.

In essence, most of these tests help us to understand the quality and reliability of the product. Quality is a term that has a widespread implication, and when thought about in the context of non-functional testing, it covers the following major areas:

* Functionality (quality in terms of Features, Business Processes, and Integrations)
* Security (quality in terms of Application, Data, Network, and Compliance)
* [Performance](https://www.cigniti.com/performance-testing) (quality in terms of Speed, Resource Consumption, Scalability, and Sizing)
* Usability (quality in terms of Navigation, Aesthetics, Flexibility, A/B Testing, and Documentation) *(Cigniti Technologies, 2021)*

Functional Testing can be described as:

 Functional testing in [software testing](https://softwaretestinglead.com/) process check the ability of the applications functional and the application for the users. It is a process that is mostly incorporated and preferable in comparison to other kinds of testing processes. It is considered as positive testing, which provides the results to make decisions in the future and present. If you are using a good testing tool, then it can become your instrument to check the software’s ability to do the business tasks and helps you to protect the future with the help of data which is already existed. The main target of [**functional testing services**](https://www.indiumsoftware.com/functional-testing/) or [software testing services](https://codoid.com/) is to make the prophets and test the application to check its functionality before releasing the product for the end-users(*Functional Testing and Its Advantages and Disadvantages*, 2019).

I employed caution while testing this application by using the Junit5 testing framework and making sure that each test coincided with a particular java method put forth in the code. Also, I made sure that the tests provided the proper coverage of the overall app and its methods. It was important to understand the complexities and interrelationships of the code so I could understand what was being asked of each method, it’s code correctness and whether the code matched the requirements set forth in the rubric. For example, in the Assignment task I was asked that the date method produce a current date, not a date in the past. I tried to limit bias in the code by making sure that each test was configured to work similarly to the others. As a developer bias is a problem because you have ‘stock’ in your own code and are not looking at it from an outside perspective. Being disciplined in your commitment to quality is an important aspect of the development process. One must make sure that all the code written is done so in the desired format and needs to be tested the same way. It is important to not cur corners in coding or testing because this will affect the final product and not provide adequate test results in the final stages. You avoid technical debt by being thorough and detailed about all your coding and testing jobs.

One final word, Coding and testing are what software developers and engineers do. The need to use proper techniques, take their time and be detailed in each stage of the process.

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