**Individual Project 04: Software Metrics**

A Web Service to Manage User’s Password

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**Introduction**

A software metric is a measure of software characteristics as it is valuable for many reasons such as measuring software performance, planning work iterations, and measuring productivity and different use cases. They are an important component of quality assurance, management, debugging, performance, and estimating costs. In this project, the author will analyze some quality metrics for the usability, security, and validation testing of the system designed in the previous assignment, which is a web service to manage user’s password. The author will also explain how each metric will be collected and evaluated as well as what the effect of the metric is on the overall of the project quality.

**Software Metrics for the Web Services**

Well-designed web service allows businesses to gain competitive advantage as well as attract more customers. Hence, it is essential to have measurable or quantifiable metrics to gauge the quality of the web. Users evaluate the quality of the web based on their experience with its functionalities, the values it provides, and other services such as maintenance or upgrades. On the other hand, the quality of software is measured based on project metrics, costs, stakeholders involved, and many more aspects. Below is some major metrics to consider for this web service project:

1. ***Usability metrics for this web:***

* Usability testing assesses the ease with which end-users consume the web. It makes sure effective interaction between the user and the web service. Some of the things should be considered are the images and the content of the web should be placed appropriately, to avoid distractions. The options “LOG IN” OR “CREATE AN ACCOUNT” should be easy to find.

Graphical user interface, application

Description automatically generated

*Figure 1: User Login Interface Example. Source:* [*https://lastpass.com/?ac=1*](https://lastpass.com/?ac=1)

In addition, the author will also use application performance index, a.k.a Apdex, metric to measure the level of satisfaction based on the feedback received from the users when they interact with the web service. According to an article “*What is Apdex Score: Definition, Calculation & How to Improve it*” article, below is the equation for this method:

Table

Description automatically generated with low confidence

*Figure 2: The equation of Apdex method. Source:* [*https://sematext.com/blog/how-to-use-your-apdex-score-to-measure-user-satisfaction/*](https://sematext.com/blog/how-to-use-your-apdex-score-to-measure-user-satisfaction/)

* “T = desired or defined latency of request
* Satisfied count = number of samples (or requests) that received a response in T or less
* Tolerating count = number of samples (or requests) that are 4 times T or less
* Total samples = Total number of requests used to calculate your Apdex score” (Lozano, 2019).

Apdex averages the score in a range from 0-1. Below are some of the levels to be scored for the web service performance with Apdex:

* 1.00-0.94 = Excellent
* 0.93-0.85 = Good
* 0.84-0.70 = Fair
* 69 and 0.49 = Poor
* >0.49 = Bad

1. ***Security metrics for this web service:***

It is important to select the right metrics to align with the project goals and objectives. This may include data relating to the types of threats being found, how they are discovered, and how long it takes to resolve. Some of the metrics that will strengthen the effectiveness of the web service are showed below:

* It is always important to know how many vulnerabilities exits within the web service as well as how server each threat is.
* It is also necessary to average days to resolution when the issues are discovered.
* New releases and updates are a constant with Agile development. Hence, it is important to know how many new threats are introduced when a new release is deployed. This metrics will help to monitor risk as well as evaluate performance when it comes to writing secure codes.

1. ***Key metrics to measure this web service maintainability:***

These performance metrics include:

* Lead time is the time between the definition of a new feature and its availability to the user.
* Mean time to repair is to see how fast we can deploy fixes to the consumers.
* Code coverage the amount of code measured in lines of code that is covered by a unit test.
* Bug rates is the average number of bugs that are generated as new feature are being deployed.
* Moreover, there are more statistics that should be considered such as response times, transactions, disk space, error count, and so on.

These metrics are to increase deploy times and make code update easier as a part of CI/CD (Denies, 2019).

**Reference:**

Lozano, E. (2019, January 30). *What is Apdex Score: Definition, Calculation & How to Improve it.*

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