**Sofware Maintenance**

**Assignment 1**

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| Name | ID | Group |
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Assignment:

Define at least 5 of the quality attributes ( aka. non-functional requirements)  
and mention how each is measured.

**Answer:**

1. Reliability

Refers to the quality of the system or the component and the product in performing its functions in specific and specific circumstances

And the sub characteristics is:

* Maturity: is how will the system is able to meet your needs
* Availability : refers if the system is operation and accessible
* Fault Tolerance : refers the quality of the system despite software/hardware faults
* Recoverability: refers how and when the system can cover the data in time of failure.

Measure:inter-rater reliability,test-retest reliability

parallel forms reliability , internal consistency

1. Compatibility

Refers how the system Exchange information and data while sharing the same software/hardware environment

And the sub characteristics is:

* Co-existence : Refers how the system Exchange information and data while sharing the same software/hardware environment without negatively impacting of any product of component
* Interoperability : Refers how the system Exchange information and data and use it

1. Portability

Portability refers to the quality of how well a system can be transferred from one environment to another

And the sub characteristics is:

* Adaptability: Refers to the quality of how well a system can be adapted for different or evolving hardware, software, or other usage environments.
* Installability: Refers to how successfully a system can be installed and/or uninstalled.
* Replaceability: Refers to the quality of how well a product can replace another comparable product.

Measure: maximum amount of effort required to transfer from one system to another system

1. Performance Efficiency

the performance related to the amount of resources used.

And the sub characteristics is:

* Time Behavior: the response and processing times, and throughput rates of a system while it’s performing its functions
* Resource Utilization: the amounts and types of resources used by a system while performing its functions.
* Capacity: the maximum limits of a system parameter.

Measure: caching techniques, data partitioning, load balancing, scalability, First Things First (FTF)

Latency, deadline, throughput, jitter, miss rate, data loss

1. Security

refers to the quality of how well a product or system protects information and data from security vulnerabilities.

And the sub characteristics is:

* Confidentiality: how well a system is able to ensure that data is only accessible to those who have authorized access.
* Integrity: how well a system, product, or component is able to prevent unauthorized access and modification to computer programs and/or data.
* Non-repudiation: how well actions or events can be proven to have taken place.
* Accountability: Refers to the actions of an unauthorized user can be traced back to them.
* Authenticity: Refers to how well the identity of a subject or resource can be proved.

Measure: Assess how well system responds to attack.

ability to protect data from unauthorized access