**Software Measurement and Metrics**

**Software Measurement:** A measurement is an manifestation of the size, quantity, amount or dimension of a particular attributes of a product or process. Software measurement is a titrate impute of a characteristic of a software product or the software process. It is an authority within software engineering. Software measurement process is defined and governed by ISO Standard.

**Need of Software Measurement:**
Software is measured to:

1. Create the quality of the current product or process.
2. Anticipate future qualities of the product or process.
3. Enhance the quality of a product or process.
4. Regulate the state of the project in relation to budget and schedule.

**Classification of Software Measurement:**
There are 2 types of software measurement:

1. **Direct Measurement:**
In direct measurement the product, process or thing is measured directly using standard scale.
2. **Indirect Measurement:**
In indirect measurement the quantity or quality to be measured is measured using related parameter i.e. by use of reference.

**Metrics:**
A metrics is a measurement of the level that any impute belongs to a system product or process. There are 4 functions related to software metrics:

1. Planning
2. Organizing
3. Controlling
4. Improving

**Characteristics of software Metrics:**

1. **Quantitative:**
Metrics must possess quantitative nature.It means metrics can be expressed in values.
2. **Understandable:**
Metric computation should be easily understood ,the method of computing metric should be clearly defined.
3. **Applicability:**
Metrics should be applicable in the initial phases of development of the software.
4. **Repeatable:**
The metric values should be same when measured repeatedly and consistent in nature.
5. **Economical:**
Computation of metric should be economical.
6. **Language Independent:**
Metrics should not depend on any programming language.

**Classification of Software Metrics:**
There are 2 types of software metrics:

1. **Product Metrics:**
Product metrics are used to evaluate the state of the product, tracing risks and undercovering prospective problem areas. The ability of team to control quality is evaluated.
2. **Process Metrics:**
Process metrics pay particular attention on enhancing the long term process of the team or organisation.
3. **Project Metrics:**
Project matrix is describes the project characteristic and execution process.
	* Number of software developer
	* Staffing pattern over the life cycle of software
	* Cost and schedule
	* Productivity