

Quality Management

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Quality concept in software engineering

Quality concepts :-

1. Portability : a software device is said to be portable if it can be freely able to work on different operating systems, multiple machines etc.
2. usability - if various categories of customer can easily invoke the function & feature it'll enhance the usability of software.
3. Reusability - if different modules of software can be quickly reused to develop new feature & product.
4. correctness : if the various component of SRE is completely implemented then it is correct.
5. maintainability :- if bugs can be easily managed & new features are easily added

Software Quality Assurance

it is the set of activity & that assure the quality and as well as standard & process that are suitable for software.

Software quality assurance Las.

1. Quality management approach
2. formal technical reviews
3. multi-testing strategy
4. effective software engineering tech.
5. measurement mechanism.

major software quality assurance activities →

1. SQA management plans → make a plan for how you will carry out sqa. thorough - out the project. Have a idea about which out of software engineering activity are best.

2. Set the check point:- must have checkpoints so that SQA team should have collect & analysis the -data.

3. Multi testing strategy → do not depend on single testing approach, whenever you have lot of testing approach available use them.

measure change impact:- the changes of making, the correction of new error sometimes he introduce more errors keep the measure of impact of change on project.

Benefits of software Quality assurance →

1. it produces high quality software
2. High quality application saves time and cost
3. SQA is beneficial for reliability
4. it is beneficial if there is no need of maintenance for long term
5. improves process of creating software
6. Quality also gets improved

Disadvantage of software quality assurance →

- adds more resource
- employe more worker to maintain quality.

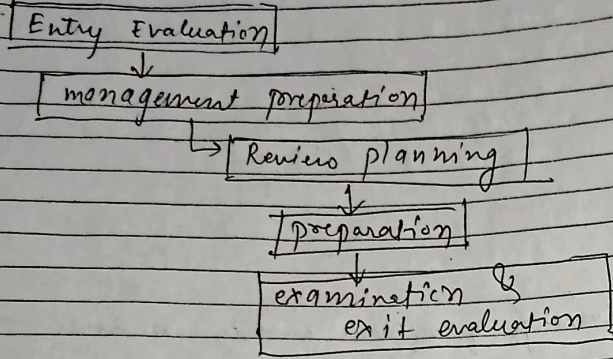
⊗ Software Review -

it is a systematic inspection of software by one or more individual who works together to find & resolve error and defects in s/w during early stages of SDLC. This helps to maintain the quality and functionality of other vitals features.

objectives of software reviews

1. to improve the productivity of Development team.
2. to make taking time & cost effective
3. make final software less defective.
4. eliminate inadequacies

Process of software reviews-



Types of software reviews-

1. Software Peer Reviews-

peer review is the process of accessing the technical content and quality of product. Peer review is performed in order to examine or resolve the defects in software.

Peer review has following types →

1. code review - computer source code is examined in systematic way.

2. pair programming - It is a code where two developers develop code together at the same platform.

3) walk-through-

members of development guide by author and other interested parties and the participants ask question.

4) technical reviews-

a team of highly qualified individuals examine the software for it's client use and identify technical deficit.

5) Inspection → follows well defined process to find defects.

ii) Software Management reviews-

evaluates the work status. In this section decision regarding downstream activities are taken.

ii) Software audit review - is a type of external review in which one or more external who are not part of development team, organisation an independent inspection of the software product and its process to assess their compliance with stated specifications.

Advantage of software review -

- Defects can be identified earlier stages of SDLC.
- also reduces maintenance cost of s/w
- used to train technical authors
- used to remove process inadequacies

④ Software Metrics

used to measure of software character-
istics which are measurable & countable.

Software metrics are valuable for many reason including measuring software performance, planning work item, measuring productivity.

Classification of Software Metrics :-

1. Product metrics -

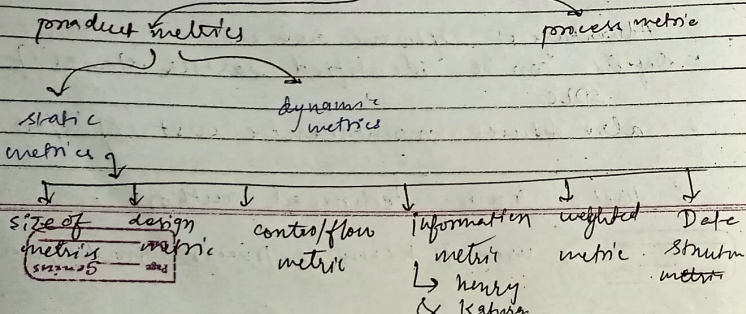
1. size & complexity of software
2. Quality & reliability of software

These can be computed in different stages of SDLC.

2. Process metrics :- used for measuring efficiency of fault detection methods, techniques and tools used to make software

Classification

SW metrics



size metrics

- LOC
- tokens count
- function count

control flow metrics

function count $\times 5$

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slow science metrics

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test ability

Types of Metrics :-

i) internal metrics:- used to measure property that are viewed to be of greater importance to a software developer, for example LOC.

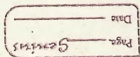
ii) external metrics - used to measure the property that are viewed as greater importance e.g. portability, reliability, functionality, usability.

iii) hybrid metrics - this combines product, process or resource metrics. example - cost per FP, FP stands for function point metrics.

Advantage of Software Metric :-

- 1) used in preparation of software quality specific
- 2) getting idea about the complexity of code
- 3) in allocation of testing resource for testing the code.

4) in verification of compliance of SRS.



Disadvantage of software metric :-

- The verification and justification of software metrics based on historical data is validation is difficult
- most of predictive models rely on estimates of certain variable which are often not known precisely.
- not useful for evaluating the performance
- definitions & derivations are based on assumption