Assignment : 3

Q-1 Explain software configuration Management

→ Software configuration Management (SCM) is a component of SQA
- This is the discipline that applies a rigorous approach to ensure Different items produced in software systems are all identified and tracked.
- changes to the various items are recorded and tracked.
- completion and proper integration of all various modules.
- Even SCM can help determine the impact of changes as well as control parallel development
- SCM deals with issues related to control of software changes, proper documentation of changes, registering and storing the approved software various versions tracking registered versions and move throughout the software system's life cycle.
- It can track and control changes in all aspects of software development
  - requirement
  - Design
  - code
  - Tests
  - Documentation.

- Advantages of SCM:

- Reduced redundant work.
- Effective management of simultaneous updates.
- Avoids configuration - related problems.
- facilities team coordination
- Helps in building management, managing tools and used in builds.
- Defect tracking : It ensures that every defect has traceability back to its source.

Q-2 Explain software Quality Assurance Activities

→ 1) SQA Management Plan:

- Make a plan for how you will carry out the SQA through out the project. Think about which set of software engineering activities are the best for project.

2) Setting the checkpoints:

- The SQA team sets up different checkpoints ~~structing~~ to which it evaluates the Quality of the project activities at the checkpoint/ project stage.

3) Apply software engineering techniques:

- Applying some software engineering technique aid a software designer in achiving a high Quality specification.

4) Executing Formal Technical Reviews:

- An FTR is done to evaluate the quality and design of the prototype.
- In this process, a meeting is conducted with the technical staff to discuss regarding the actual quality requirements of software & the design quality of the prototype.

5) Having a Multi-Testing Strategy.

- By multi-testing strategy, we mean that one should not rely on any single testing approach instead, multiple types of testing should be performed.

6) Enforcing Process Adherence.

- This activity insists the need for process adherence during the software development process.

7) Controlling Changes:

- use a mix of manual procedures and automated tools to have a mechanism for change control. By validating the change requests, evaluating the nature of change an control change.

8) Measure change Impact:

- If any defect is reported by the QA team then then the concerned team fixes the defects. After this, the QA team should determine the impact of the change which is brought by this defect fix.

9) Performing SQA Audits:

It inspects the entire actual SDLC process followed by comparing it against the established process.

10) Maintaining Records & Reports.

- It is crucial to keep the necessary documentation & related to SQA and share the required SQA information with the Stakeholders.

11) Manage Good Relations:

- In fact, it is very important to maintain harmony between the QA and the development team.

Q-3 Explain Capability Maturity Model (CMM)

→ The CMM model provides a framework for organising these evolutionary steps into five maturity levels.

- The Five Maturity Levels:

- The five maturity levels define a scale for measuring the maturity of an organization's software process and for evaluating capability of these process. The five levels are described below:-

1) Initial: The software process is characterised as ad hoc, and occasionally even chaotic. Few processes are defined, and success depends on individual effort and heroics.

2) Repeatable: Basic project management processes are established to track cost, schedule and functionality. The necessary process discipline is in place to repeat earlier successes on projects with similar applications.

3) Defined: The software process for both management and engineering activities is documented standardised and integrated into all processes for the organisation.

4) Managed: Detailed measures of the software process and product quality are collected. Both the software process & products are quantitatively understood & controlled.

5> Optimising :- continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

Q=4 Explain software Re-engineering.

→ software Re-engineering is a process of software development which is done to improve the maintainability of a software system. Re-engineering is the examination and alteration of a system to reconstitute it in a new form. This process encompasses a combination of sub-processes like reverse engineering forward engineering, reconstructing etc.

- Re-engineering is the reorganizing and modifying existing software systems to make them more maintainable.

- Objectives of Re-Engineering.

- To describe a cost-effective option for system evolution
- To describe the activities involved in the software maintenance process.
- To distinguish between software and data re-engineering and to explain the problems of data re-engineering.

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- Need of software - Re engineering

- software re-engineering is an economical process for software development and quality enhancement of the product.
- The software reengineering is necessary for having:

A) Boost up Productivity: software reengineering increase productivity by optimizing the code & database so that processing gets faster.

B) Processes in continuity: The functionality of older software product can be still used while the testing or development of software.

C) Improvement Opportunity: Meanwhile the process of software re-engineering not only software qualities.

d) Reduction in risks: Instead of developing the software product from scratch or from the beginning stage.

e) Saves time: As we stated above here that the product is developed from the existing stage rather than the beginning stage so the time consumes in software engineering is lesser.

f) Optimization: The process defines the system features, functionalities and reduces the complexity of the product by consistent optimization as maximum as possible.

Q-5 Explain Project communication techniques.

→ Communication is a critical factor in project management. There are instances where projects have failed because of miscommunication and communication gaps.
- If an effective communication methodology is not followed by the project manager, it may lead to many discrepancies and ultimately may also lead to project failure which is not appropriate for the organization.
- It is also important that the right information is delivered to the right person.
- So, Project managers have the responsibility to properly channelize the communication process, so that right persons receive the right information. Another important point that project manager must take note of is that the information sent must be clear, concise & informative. Sometimes improper information may also lead to miscommunication as they are interpreted by the recipient, which can lead to bad work Quality.

- Interactive communication:

- It is effective communication, that allows all the Stakeholders live interaction with all the people related to the project. some of

the best examples of interactive communication methods are video conferencing, live chat and phone calls the interactive communication process is more suitable for the stake holders located in the different regions.
- Usually project managers prefer face-to-face communication method, as they have a better opportunity to explain the project status with charts, analysis and can get their instant feedback.

- Push communication:

- In this communication type, the information is passed to the recipients and where the feedback is not required immdicately. Project managers can use this medium of communication for sending meeting notes and other information. They can do this mechanisms to pass information to stakeholders through a press release.

Pull communication:

- As the name itself suggests, this communication method is suitable for the large-scale audience, who like to access information at their own convenient time. The project managers store this information in the data repository on the company server or a place where it can be used by the team members.

Assignment : 4

Q-1 Explain Software Maintenance Problems.

→ Lack of Traceability:

- codes are rarely traceable to the requirements and design specification
- It makes it very difficult for a programmer to detect and correct a critical defect affecting customer operations
- like a detective, the programmer pores over the program looking for clues
- Life cycle documents are not always produced even as part of a development project.

- Lack of code comments:

- Most of the software system codes lack adequate comments. Lesser comments may not be helpful in certain situations.

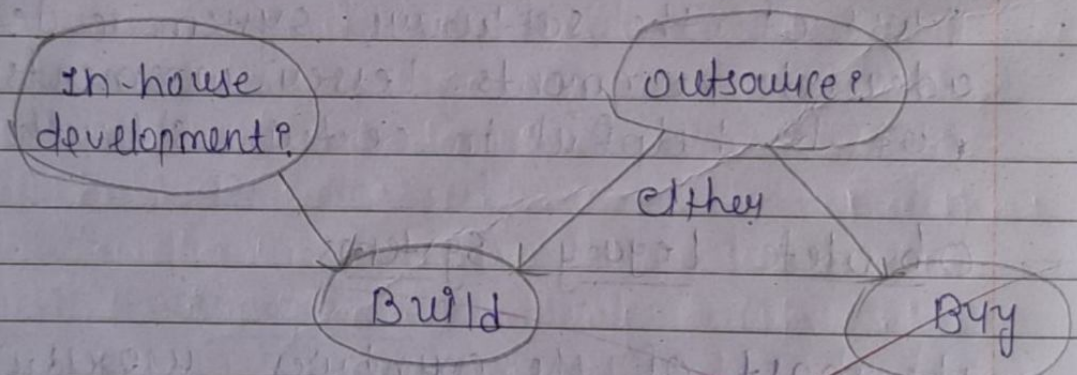
- Obsolete Legacy Systems

- The most of the countries worldwide, the legacy system that provide the backbone of the nation's critical industries, e.g. telecommunications, medical, transportation utility services, were not designed with maintenance in mind.
- They were not expected to last for a quarter of a century or more.

Q-3 Explain selecting Project Approach.

→ It is concerned with choosing the right approach to a particular project. Various technical planning, project analysis, methods engineering and methods tailoring.

- In-house : Means that the developers and the users of the software are in the same organization.
- suppliers: Means that the developers are and the users of the software are in the different organization.
- Need for tailoring : as different customers have different needs.



- In-house

Developing a new IT application in-house:

- Time is needed to develop a software
- would often require the requirement of new technical staff to do the job.
- usually the new staff won't be needed after the project is completed.

- Outsourcing

contracting the project out to an external IT development company (outsourcing):
- time is needed to develop the software
- the client would still do management efforts to establish and manage the contracts.

- some advantages of off-the-shelf (OTS) software

- cheaper as supplier can spread development costs over a large number of customers
- some software already exists
- can be installed by potential customer

- some possible disadvantages of off-the-shelf

- customer will have same application as everyone else! no competitive advantage, but competitive advantage may come from the way application is used.
- customer may needed to change the ~~way~~ they work in order to fit in with OTS applications.
- customer does not own the code and can't change it
- Danger of over-reliance on a single supplier.

Q-3 Discuss function point analysis with suitable example.

→ FPA is used to make estimate of the software project, including its testing in terms of functionality or function size of the software product. However, functional point analysis may be used for the test estimation of the product. The functional size of the product is measured in terms of the function point, which is a standard of measurement to measure the software application.

→ Objectives of FPA:

The basic and primary purpose of the functional point analysis is to measure and provide the software application functional client to size. customer & stakeholders on their requests further. It is used to measure the software project development along with its maintenance consistently throughout the project irrespective of the tools and technologies.

Q-4 Explain Technical Problems of Re-engineering.

→ Practical limits do the extent of re-engineering.

2) Major architectural changes or radical reorganization of the systems data management has to be done manually.

3) Re-engineered system is not likely to be as maintainable as a new system develop using modern software Re-engineering methods

4) Re-engineering doesn't help with poor modularization where related components are dispersed through out the code.

5) It doesn't suit every business need as it depends on factors like size & availability of resource it usually benefits large organization.

6) The business process Re-engineering approach does not provide an immediate resolution.

→ It concentrates significantly upon long hand income contribution of a business

which not only takes some effort to take shape but are hard to gauge as well.

7) It might requires a substantial investment in it along with proper planning fantastic teamwork & exceptional implementation.

8) Other problems like:

- Inadequate knowledge.
- Wrong direction & Incongruity in implementation.
- Unused analysis & lack of support.

Q-5 Explain BPM in Detail.

→ Business Process Management

- BPM is a discipline that uses various tools & methods to design model, execute monitor and optimize business process.
- It helps to reduce the business's operational costs by decreasing waste & network & by increasing the overall efficiency of the team.

Types of BPM systems:
- system-centric BPM
- Human-Centric BPM

BPM lifecycle:

- The 5 steps in Business process Management.

1) Design:

- Business analysts review current business rules interview the various stakeholders & discuss desired outcomes with management.

2) Model:

Modeling refers to identifying, defining & making a representation of new processes to support the current business rules for various stakeholders.

3) Execute:

- Execute the business process by testing it live with a small group of users first & then open it up to all users

4) Monitor:

- Establish key performance Indicates & track metrics against them using reports or dashboards.

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- It is essential to focus on the macro or micro indicates an entire process vs. process segments.

5) Optimize:

- Business process optimization is the redesign of the business processes to streamline & improve process efficiency & strengthen the alignment of individual business processes with a comprehensive strategy.

- Benefits:
  - Improved Business Agility
  - Reduced costs
  - Higher efficiency
  - Better visibility.