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Unit: Software quality assurance

i. Identify TWO specific issues faced by XYZ Inc

1.Lack of proper documentation and analyzing defects of the software being used.

2.Lack of formal product life cycle management and software development life cycle.

ii. Explain THREE possible solutions to each of the issues identified

Lack of proper documentation and analyzing defects of the software being used.

1. XYZ should not only create a document and leave it but also update it when required.
2. XYZ should share all project-related documents at a single location, accessible to every team member for reference as well to update whenever required.
3. XYZ Inc should apply defect analysis to classify defects into categories and identify possible causes in order to direct process improvement efforts eg Root Cause Analysis (RCA) whose goal is identify the root cause of defects and initiate actions so that the source of defects is eliminated.
4.XYZ should also make sure to include a clear description of the defect, reproduce steps, affected area and details about the author while documenting any defect.

Lack of formal product life cycle management and software development life cycle.

1.XYZ should choose a software model to use. As in formalize the development cycle since It acts as a guide to the project and meet client's objectives and helps in evaluating, scheduling and estimating deliverables.
2. XYZ should conduct formal technical reviews to reveal functional and logical errors at ealy stages of sdlc.
3. XYZ should have a well defined,outlined and managed life cycle of the product starting from it development stage,growth till it testing and maintenance.
4.XYZ should perform design Inspection**:** Design inspection is done using a checklist that inspects the below areas of software design:

- General requirements and design
- Functional and Interface specifications
- Conventions

iii. Propose an SQA framework (Quality System) for XYZ

XYZ Inc should use the following framework for quality system:

Creating an SQA Management Plan:

The foremost activity includes laying down a proper plan regarding how the SQA will be carried out in the project.

Along with what SQA approach it is going to follow what engineering activities will be carried out and it also includes ensuring that you have a right talent mix in your team.

Setting the Checkpoints:

The SQA team sets up different checkpoints according to which it evaluates the quality of the project activities at each checkpoint/project stage. This ensures regular quality inspection and working as per the schedule.

Apply software Engineering Techniques:

Applying some software engineering techniques aids a software designer in achieving high-quality specification. For gathering information, a designer may use techniques such as interviews and FAST (Functional Analysis System Technique).

Later, based on the information gathered, the software designer can prepare the project estimation using techniques like WBS (work breakdown structure), SLOC (source line of codes), and FP(functional point) estimation.

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 the software and the design quality of the prototype. This activity helps in detecting errors in the early phase of SDLC and reduces rework effort in the later phases.

Having a Multi- Testing Strategy:

By multi-testing strategy, we mean that XYZ inc should not rely on any single testing approach, instead, multiple types of testing should be performed so that the software product can be tested well from all angles to ensure better quality.

Enforcing Process Adherence:

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

Controlling Change:

In this activity, we 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 and controlling the change effect, it is ensured that the software quality is maintained during the development and maintenance phases.

Measure Change Impact:

If any defect is reported by the QA team, then the concerned team fixes the defect.

After this, the QA team should determine the impact of the change which is brought by this defect fix. They need to test not only if the change has fixed the defect, but also if the change is compatible with the whole project.

For this purpose, we use software quality metrics which allows managers and developers to observe the activities and proposed changes from the beginning till the end of SDLC and initiate corrective action wherever required.

Performing SQA Audits:

The SQA audit inspects the entire actual SDLC process followed by comparing it against the established process. It also checks whatever reported by the team in the status reports were actually performed or not. This activity also exposes any non-compliance issues.

Maintaining Records and Reports:

It is crucial to keep the necessary documentation related to SQA and share the required SQA information with the stakeholders. The test results, audit results, review reports, change requests documentation, etc. should be kept for future reference.

Manage Good Relations:

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

We often hear that testers and developers often feel superior to each other. This should be avoided as it can affect the overall project quality.