

Noorul Islam College of Engineering
M. Sc. Software Engineering (5 yrs)
IX Semester
XCS592- Software Project Management

8. What is the principle of prototype model?

A prototype is built to quickly demonstrate to the customer what the product would look like. Only minimal functionality of the actual product is provided during the prototyping phase.

9. What is RAD model?

RAD model stands for Rapid application Development model. The RAD model combines the features of the waterfall model and the prototyping model.

10. What is the advantage of Spiral model?

The main advantages of spiral model is , it is realistic and typifies most software development products/projects. It combines the best features of most of the earlier models. It strikes a good balance mechanism for early problem identification and correction while not missing out proactive problem prevention.

11. Name any two process models.

The ISO-9001 model.

The capability maturity model.

12. What is Metrics?

Metrics in a project management context is about measurements,. Measuring your progress in order to know where you are and what mid course corrections you need to take to achieve your goals.

13. What does SMART criteria stand for?

Specific, Measurable, Aggressive yet achievable, Result oriented, Time-bound.

14. What is configuration management?

Configuration management is the combination of software, services, and process that enable each developer to recreate and use the exact set of files and environment for a specific software product, version, and platform.

15. What is configuration?

A configuration is a set of related items identifiable by id.

16. What is a configuration item?

It is an elementary part of the configuration that must be identified or versioned., tracked and controlled.

17. What are the steps that constitutes configuration management?

Initial working, Base lining, Change management, management of workspaces, configuration status accounting, configuration audit.

18. Who reviews or approves the change request?

The configuration control board review and approves the change request.

19. What is workspace?

The workspace replicates the environment in which the developer can build the product under the same conditions in which the corresponding base line is built.

20 . Define configuration Audit.

A Configuration audit means ensuring that configuration management is being followed as per stated guidelines and that all the quality records are in place.

21. Define Quality.

Quality is about transforming as many of the implied requirements of the customer into stated requirements and meeting all the stated requirements.

22. What is Quality control?

Quality control refers to testing a product after a given phase to find out if it has any defects.

23. Define Quality Assurance.

Quality Assurance focuses on prevention of defects from the very start, and it is pro-active.

24. What are the five major areas of SQA?

Requirements fidelity, Process compliance, change control, minimizing the gap between defect injection and detection, and product quality.

25. Name some tools of software quality assurance?

Inspection and review, Audits, Cross SQAs information sharing, Defect classification and Analysis tools.

26. What is pareto Analysis?

The 80-20 rule is probably one of the most widely observed laws of nature. 80% of the productivity of an organization is contributed by 20% of its people.

27. what is fish-bone diagram?

Fish-Bone diagram is another common tools that is used for getting to the root cause of the defects.

28. What is Risk?

Risks are events that are usually beyond the planners control.

29. What is Risk management?

Risk management is the process of anticipating hurdles in carrying out the original plan and providing alternate plans so that the impact on the originally anticipated final outcome is minimal.

30. Give the two important characteristics of the risk management?

It is proactive, It strives to reduce the impact of uncertainty.

31. What are the three phases of Risk management?

Risk identification, Risk Quantification, and Risk mitigation.

32. What are the ways of identifying the potential risks?

Examining organizational history, preparing checklists, information buying, framework based risk categorization, simulation, Decision trees.

33. What are the Dimensions of Risk quantification?

Probability and the impact of Risk .

34. What is Risk mitigation?

Mitigation is a possible means if minimizing or even avoiding the impact of risk.

35. Give any two activities of project initiation.

Management team building.
Team formation.

36. what are the components of project plan?

The WHAT part, The WHAT COST part, The WHEN part, The HOW part, The BY WHOM part.

37. What is Work Breakdown Structure?

Work breakdown structure is the decomposition of the project into smaller and more manageable parts.

38. What are the external dependencies in project planning?

Staffing, Training, Acquisition and commissioning of new hardware, Availability of modules, Travel.

39. What are internal milestones?

They are the measurable and quantifiable attributes of progress. They are the intermediate points in the project which ensure that we are in the right track. They are under the control of project manager.

40. What are the activities that increase the effect of project tracking?

- Status reporting
- Communications
- SPMP updates.

41. What are the methods of communication?

One to one, Group meetings, Conferencing among teams in various locations, non-work related outings.

42. what does project closure refer to?

Closure refers to the conclusion of a project or some logical part of the project.

43. What is the primary objective of project closure?

Evaluating effectiveness of the original project goals and providing to improve the system.

44. What are the dimensions of requirements gathering?

- Responsibilities
- Current system needs
- Targets
- Ongoing needs.

45. Give the classifications of system requirements.

- Functionality Requirements
- Performance requirements
- Availability needs
- Security
- Environmental definition.

46. List some of the skills essential for requirements gathering phase.

- Ability to see from customers point of view.
- Technology awareness
- Domain expertise
- Strong interpersonal skills
- Strong communication skills

47. Define estimation.

Estimation is a process of expectations setting which forms the basis of quantifying the resources required to accomplish certain goals, based on certain clearly stated assumptions.

48. What are the three phases of estimation?

- Size
- Effort
- Schedule estimate.

49. What are the formal models of size estimation?

- Lines of code
- Function points

50. What is second system effect?

It is a behavior pattern. When one goes from first project to the next there is a tendency to stereotype the second project to make it look like the first one.

51. What is variance?

For any estimate the metric to determine its effectiveness is the variance.

52. How to define variance?

Variance = (planned-Actual)/Planned * 100

53. What are the design techniques that one can follow to enhance diagnosability?

- Providing enough foot prints
- Making context self contained
- Having self identified data structures.

54. Give some design principles for maintainability.

- Module level accountability
- Proper documentation

55. Name some design principles for insatiability.

It should conform to a standard look-and-feel
Should assume intelligent context sensitive defaults.

56. What is testing?

Testing refers to the activities that are carried out to ensure that the final software product meets the requirements that the product is intended to satisfy.

57. What are the activities that make up testing?

- Test specification
- Test design
- Rest development
- Test Registration
- Test execution
- Test maintenance
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58. What is done in test design step?

The details of the layout, tooling and standards required for test development are designed in this stage.

59. List some of the testing done during SDLC.

White box testing, black box testing, integration testing, system testing, installation testing, Regression testing, Acceptance testing.

60. What is functionality testing?

It is a black box testing which exercises the basic functionality of the product from an external; perspective.

61. What is interface testing?

Testing which tests the interfaces among modules.

62. What do system testing do?

System testing focus on stressing the system under extreme conditions and ensuring that if there is any failure, it is well managed.

63. What are the steps carried out in installation testing?

- packaging
- Documenting
- Installing
- Verifying.

64. Define regression testing.

Regression tests are defined as those tests that are run to verify that problems do not resurface or regress.

65. What is done in maintenance phase?

The maintenance phase deals with the process of evaluating the customers product change request. making necessary changes to the product.

66. List the activities done in maintenance phase.

- problem reporting
- Problem resolution
- Solution distribution
- Proactive defect prevention.

67. what is problem reporting?

Once the user finds the difference in using the product behavior and the behaviors what it has to be the problem reporting takes place.

68. What is reactive maintenance?

Carrying out maintenance to fix problems after the problems surface

69. What is Proactive defect prevention?

The information about the problem occur that is collected in the problem repository can be used to prevent problem occurrence which is called proactive prevention.

70. What are the challenges in building global teams?

Cultural differences, communication issues, time zone differences and hiring and retention.

71. Name some models of global projects.

Resource model, lifecycle model, integrated team model.

72. Define Resource model

Here one of the team is signified as the primary team, and this directs and allocates work for other teams.

73. What is lifecycle model?

Here different teams have specialization and responsibility in different life cycle phase.

74. Explain integrated team model.

This is the true globally distributed model. The teams in different locations work together throughout all life cycle phases as peers.

75. What are the two main characteristics of internet economy?

- * Neck breaking speed
- * Drastic reduction in product cycle times

76. What is the effect of internet on project management?

- Reduction In training time
- Reduction in software distribution costs

77. What does P-CMM model stand for?

P-CMM stand for people CMM.

78. What are the challenges in building global teams?

Cultural differences, communication issues, time zone issues, hiring and retentions.

79. Explain Integrated testing team model?

There is one project manager who manages both the development and the testing functions.

80. What is dedicated testing team model?

In this model the testing team reports directly to the next level of senior management. Thus the conflicts between operational delivery responsibilities and testing responsibilities are avoided.

81. What is Unit testing?

Unit testing is done when a part of the code or function or single transaction is to be tested. This test can be nested in any kind of testing.

82. Define regression testing.

This is another form of stress testing. This testing is done when any modification is done in the software.

83. What are the factors that lead to Risk?

- * Estimation errors
- * Planning assumptions
- * Business risks

84. What is meant by hazard?

Hazard is an event that create a problem for successful completion of a project.

85. What are the various steps under risk analysis?

- * Risk Estimation
- * Risk identification
- * Risk evaluation

86. What is risk likelihood?

The probability of a hazard occurring is known as the risk likelihood.

87. What is risk impact?

The effect that the resulting problem will have direct impact of the project is known as risk impact.

88. What are the various categories of resources?

- * labour
- * equipment
- * materials
- * space

89. What is meant by activity schedule?

Activity schedule indicates the planned start and completion dates for each activity.

90. What is mean by resource schedule?

Resource schedule shows the date on which each resource will bw required and the level of that requirements.

91. What is cost schedule?

Cost schedule shows the planned cumulative expenditure cost by the use of resource overtime.

92. What are the various types of charts used in visualizing progress?

Gantt chart, slip chart, Bar chart, Timeline chart.

93. What are the types of cost?

- * Staff cost
- * Overheads
- * Usage charges.

94. What is review point?

Project level progress reviews will generally takes place at particular points during the life cycle of project is known as review point.

95 what is the role of the project board?

The overall responsibility for ensuring satisfaction progress on a project is the roll of the project board.

96. What is the role of project manager?

The project manager is responsible for day to day administration of the project.

97. What is closed system?

Closed systems are those that do not interact with the environment.

98. Define stake holder.

These are people who have a stake of interest in the project.

99. What is embedded system?

A system that is a part of a large system whose primary purpose is non-computational.

100. What is function point?

Function point is the unit for measuring size of a software application.

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1. Give the phases of product development life cycle.

- Idea generation
Ideas come from various sources like customers, suppliers, employees, market place demands.
- Prototype development phase
This entails building simplistic model of final product.
- Alpha phase
This moves skeleton prototype to usable product.
- Beta phase

This iron out the kinks in the product and add necessary supporting infrastructure to roll out the product.

- Production phase
In this phase product is ready for prime time.
- Maintenance and obsolescence phase
In this critical bugs are fixed after which the product goes into obsolescence.

2. Explain water fall model in detail.

- The project is divided into sequence of well defined phases
- One phase is completed before next starts.
- There is a feedback loop between adjacent phases
- What the actual phase are depends on the project.

Adv:

- Simplicity
- Lining up resources with appropriate skills is easy

Disadv

- Highly impractical for most projects
- Phases are tightly coupled.

3. Explain prototyping model

- project has access to customers
- Project has access to forth generation languages
- A prototype is built to quickly demonstrate to customer what the product would look like.
- Customer and developer sit together side by side,

Adv:

- Responsiveness to change
- Identifies more implied requirements

Disadv

- customers expectation is too high,

4. Explain RAD model in detail

- The customer and developer agree on breaking the product into small units.
- Development is carried out using modeling tools and CASE tools
- Customer is kept in touch so the changes are reflected time
- Quality assurance is imposed.

Adv.

- Responsiveness to change
- Ability to capture user requirements effectively
- Application turn around time is shorter.

Disadv:

- need for modeling tools which adds expence.
- Places restriction on type and structure

5. Explain the Capability Maturity Model

- CMM model strives to achieve predictability and consistency as a precursor to continuous improvements by following a set of process in a well defined framework.
- Level 1 is Initial level
- Level 2 is repeatable which helps in achieving repeatability of performance and quality should the organizations undertake a similar project again.
- Level 3 is defined level
- Level four is measured level.
- Level 5 is optimistic level , here people always work towards a target.

6. The process activities of software configuration management

The steps that constitutes software configuration management are:

- Initial working
- Base lining
- Change management
- Management of workspaces
- Configuration status accounting
- Configuration audit.

7. Explain the software quality assurance tools.

Review and Inspections:

Formal review and inspections are among the most effective tools to weed out the defects from as close as possible to the point of injection. The salient features of a formal review are

- review is formal.

Audits:

- senior management schedules periodic audits
- Audit can be conducted by external body
- Each audit is assigned to a lead auditor.

Cross SQA info sharing:

Early warning signals of organizations wide can be got.

Defect classification and analysis tools:

SQA can add significant value to the project teams if besides just identifying the defects the can also perform some analysis and classifications.

- Pareto analysis.

- Fish bone diagrams.

8. Explain the common risk tools and techniques.

There are atleast six different ways of identifying the potential risks. These are:

- Examining organizational history.
- Preparing checklists
- Information buying
- Framework based risk categorization
- Simulation
- Decision trees

9. List the activities during project Initiation

Important activities during project initiation phase:

- Management Team building
Enables the team members to understand one another.
Minimize the impact of cultural and language barriers.
- Scope and high level work division agreements
- Management reporting and escalating procedures.
- Involvement of infra structure/support groups.
- Team formation
 - i. Project kick off meeting is attended by formally all concerned so that everyone has a common understanding of what is expected.

10. What is work breakdown structure?

Work break down structure is the decomposition of the project into smaller and more manageable parts with each part satisfying the following criteria...

- Each WBS unit has a clear outcome
- The outcome has a direct relationship to achieve the overall project goal
- Each point has single point of accountability.

Why do work breakdown structure?

- Divide and conquer
- Estimate the size of final product
- Means to explore reuse
- Ability to identify skill sets
- Ability to multiplex people and hardware resources
- Linking WBS units with milestones as ways of measuring progress
- Meaningful interface

11. What are the issues that get discussed during project closure?

- What were the goals that we set out to achieve?
- How effective were the in process metrics?
- What were the root causes for under-achievement or over achievement?
- Was our estimation effort correct?
- What were the factors in the environment that would like to change?
- What did we gain from the system or environment?

- Was our estimation of the hardware correct?

12. What are the dimensions of requirements gathering?

- Responsibilities : Commitments on either side
Requirements form the basis for the success of further activities in a project.
- Current system requirements
 - i. Functionality requirements
 - ii. Performance requirements
 - iii. Availability needs
 - iv. Security
 - v. Environmental definitions
- targets
- Acceptance criteria
- Ongoing needs
 - Documentation
 - Training
 - Ongoing support.

13. List the skill sets required during the requirements phase:

- availability to look the requirements
- domain expertise
- Technology awareness
- Strong interpersonal skills
- Strong negotiation skills
- Ability to tolerate ambiguity
- Strong communication skills

14. what are the activities that make up testing?

- Test specification
- Test design
- Test development
- Test registration
- test execution
- Test maintenance

15. List the various types of testing done during product life cycle .

- white box testing
- black box testing
- integration testing
- system testing
- installation testing
- regression testing
- Acceptance testing

16. What are the activities done during maintenance phase?

Problem reporting:

When the customers find any differences in product behavior and their understanding of what the behaviour of the product should have been.

Problem resolution

It is clear that the problem is new one that currently does not have a fix. Now the action shifts to the product development organizations.

Solution distribution:

When should the fix be sent to customer/

Proactive defect prevention

Analyzing common user errors and updating documentation as necessary.