Module 1] Functional Test Engineer Foundation Program:

1.1] Introduction to Software Testing

1.2] SDLC phases and deliverables

1.3] SDLC Models

1.4] Software engineering and software process

1.5] SEI CMMI levels

1.6] Software Configuration Management

1.7] SQA & SQC – Verification and Validation

1.8] Testing Roles and Responsibilities

1.9] Testing terminology

1.1] Introduction to Software Testing:

- **Definition:**
  - To ensure that whether our application is working as per customer requirements or not.
  - Software testing is process of verifying whether the project will be acceptable to all its End user or not.
  - Continuously maintaining and managing quality of software.
- **Types of Testing:**
  1. Structural or White Box testing
  2. Functional or Black Box Testing

  1. **Structural or White Box testing :**
     - This testing is based on knowledge of the internal logic of an applications code.
     - Internal software & code working should be known for this type of testing.
     - Tests are based on coverage of code statements, branches, paths & conditions.
     - **Example:** Unit level testing and Component level testing belongs to White Box testing
  2. **Black Box Testing(By Test Engineer)**
     - Internal system design is not considered in this type of testing.
     - Tests are based on the requirements and functionality.
     - **Example:** Smoke testing, Sanity testing, testesting,Tec.:Equivalent class partitions, Boundary Value analysis etc.

1.2] SDLC phases and deliverables:

- Software Development Life Cycle is the process of developing various information system.
- **Phases in SDLC:**
  1. Requirement Capturing
  2. Analysis
  3. Design
  4. Coding
  5. Testing
  6. Implementation
  7. Support / Maintenance
- **Request for proposal(RFP):**
  - Amazon will prepare & distribute the RFP to selected vendors (Software companies).
  - Software company sales and marketing team respond the RFP with their proposal (About the company, Technical solution, delivery schedule, budget timeline, deliverables etc.)

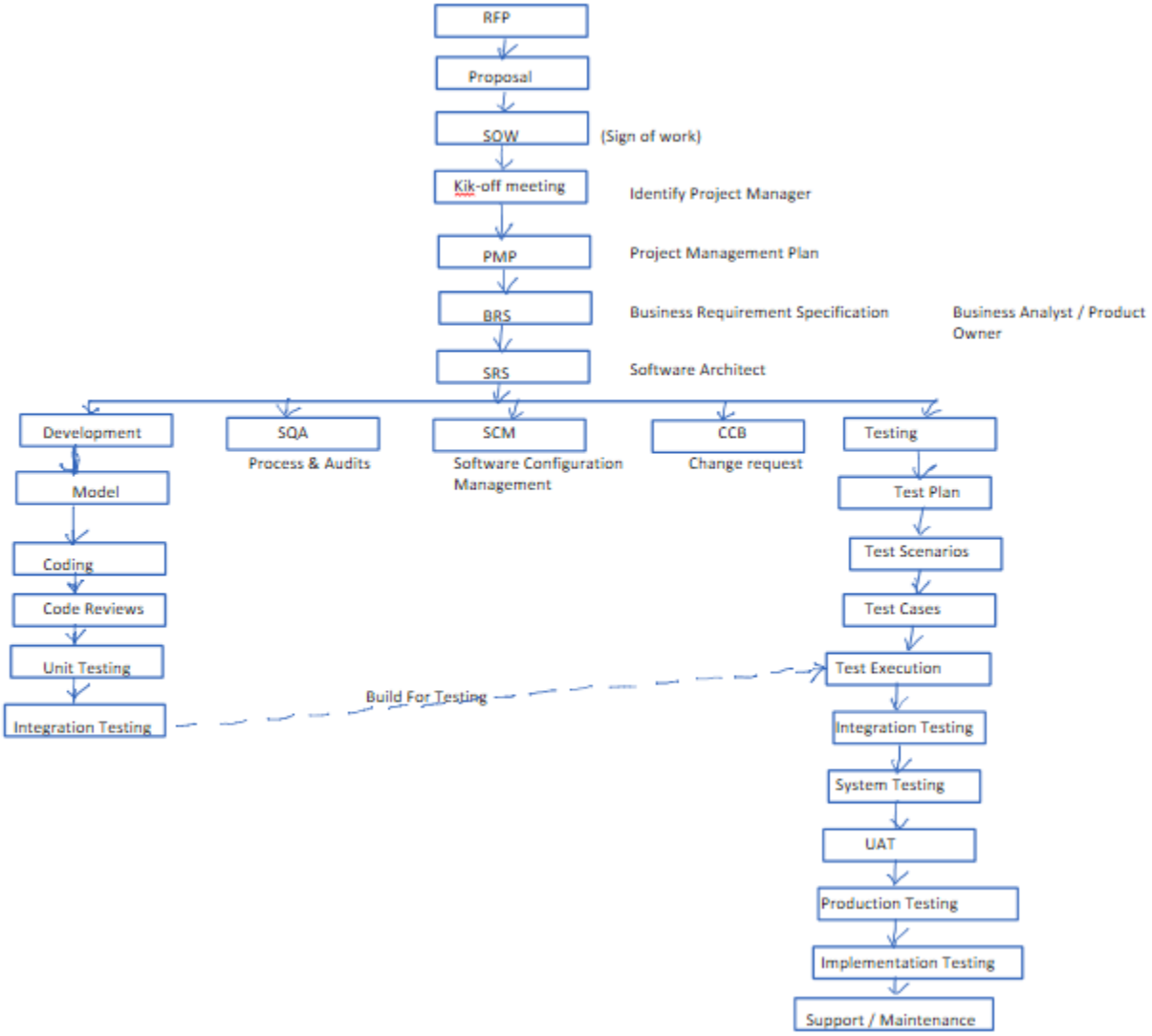
- If Amazon like proposal from any vendor then they will sign statement of work(SOW) with that vendor(work order)
- Conduct project kick-off meeting (Its high level meeting between the senior managers, CTO and project managers)
- Identify project manager
- Project manager will prepare project management plan(PMP)
- After High-level meeting with customer, Business Analyst / Technical team will release Business Requirement Specification(BRS)
- BRS is a high level document containing project requirements from customer.
- Person should be domain expert / Functional expert he is eligible to convert the BRS in to Software Requirement Specification (SRS).

- **QA & Testing:**
    - Identify standards and guidelines, procedures, checklist & templates require to develop the project.
    - Review and approval of SRS (Mapping SRS with BRS) – Business Analyst
    - Once SRS is approved, create baseline of SRS.
    - Test manager / test lead will prepare test plan for project.
    - Review & approval of test plan.
    - Test engineer will identify the test scenario for project (what is to be tested).
    - Review & approval of test scenarios.
    - Test engineer will prepare test cases for approved test scenarios(How what is to be tested)
    - Review and Approval of test cases.
    - Test execution (Perform integration level testing)
    - Test result pass & fail.
    - Defect reporting of failed test cases.
    - Defect status tracking & retesting of fixed defects.
    - Once system level testing is approved, release the application for user acceptance testing.
    - Perform UAT.
    - Once UAT is approved release the application of production department to create .exe
    - Once .exe is ready perform installation testing.
    - Once installation testing is approved, implement the developed software into customer environment and provide user training.
    - Provide support to the customer for any defect/issue/questions and future enhancement.

- **Development :**
    - Based on approved SRS, software architect will design model of project(Blue print or Prototype)
    - Based on approved design document developer are going to convert logic specified in the design documents in to coding as per chosen programming language and they will release code (LOC).
    - Perform code reviews.
    - Once code is approved, perform unit level testing.
    - Once unit level testing is approved developer will integrate the units & release the “Build” for testing.
    - Developer are going to fix the defects which are reported by testing department.
- **Model Contains:**
    - Architectural design (Models, Subsystem etc.)
    - Database design
    - User Interface design
    - UML diagrams: Use cases, class, object, sequence etc.

- **Review & Approval of design documents:**
    - Mapping design documents with requirements.

- **Diagram:**


RFP
Proposal
SOW
(Sign of work)
Kik-off meeting
Identify Project Manager
PMP
Project Management Plan
BRS
Business Requirement Specification
Business Analyst / Product Owner
SRS
Software Architect
Development
Model
Coding
Code Reviews
Unit Testing
Integration Testing
SQA
Process & Audits
SCM
Software Configuration Management
CCB
Change request
Testing
Test Plan
Test Scenarios
Test Cases
Test Execution
Integration Testing
System Testing
UAT
Production Testing
Implementation Testing
Support / Maintenance
Build For Testing