

## **Exercise1 – Homework 1**

1. Explain the stages of the Software Development Life Cycle (SDLC). Briefly describe what happens at the team level during each phase:

-Requirement Analysis (Planning), Design, Development, Testing, Deployment.

### **1. Requirement Analysis (Planning):**

- The project requirements are identified and analyzed;
- The project's scope and objectives are defined;
- Documentation is created;
- Priorities are established;
- Meetings with stakeholders are organized.

### **2. Design:**

- The system or site architecture is created;
- Implementation technologies are selected;
- Databases are defined;
- The user interface is designed.

### **3. Development:**

- The source code is written;
- The Agile methodology is used to receive feedback and make efficient changes;
- Developers collaborate with each other;
- Code is reviewed.

#### **4. Testing:**

- Test cases are written;
- Code is tested;
- Test reports are created;
- Developers check and fix identified bugs.

#### **5. Deployment:**

- The environment for launching the software is installed and configured;
- The software is launched;
- Support is provided.

2. What are the QA activities during each SDLC stage?

#### **1. Requirement Analysis (Planning):**

- Analyzes the requirements;
- Requests additional information if needed;
- Assesses risks;
- Plans test cases;
- Reviews test steps;
- Gives and receives feedback.

#### **2. Design:**

- Analyzes the design;
- Verifies that the design meets functional and non-functional requirements;

- Identifies potential issues that might affect testing;
- Adjusts testing methods to match the design;
- Communicates with the designer.

### **3. Development:**

- Sets up the test environment;
- Writes test cases;
- Executes unit testing;
- Collaborates with developers.

### **4. Testing:**

- Executes tests;
- Creates reports;
- Tracks bug resolution.

### **5. Deployment:**

- Prepares documentation to ensure all bugs have been fixed;
- Creates a user guide;
- Participates in acceptance testing;
- Continues to monitor and check software performance after launch;
- Ensures that the software was implemented successfully.

3. We have the following environments: dev, test, staging, and production. Describe the activities and types of testing performed in each environment.

#### **1. Development Environment:**

- Developers start writing the code;
- Updates are applied;
- Initial bugs are discovered;
- First testing takes place.

##### **Testing types:**

- Unit Testing – each part of the code is tested individually;
- Integration Testing – the interaction between different code components is tested.

#### **2. Test Environment:**

- Testers validate the code using manual and automated methods;
- Bug reports are created for discovered issues;
- Testing occurs in an isolated environment, so it doesn't affect the code base;
- It's verified whether the software works according to the requirements.

##### **Testing types:**

- Functional Testing – verifies that functionalities meet requirements;
- Integration Testing – checks how different parts of the software work together;
- Regression Testing – ensures that updates don't break existing functionality.

### **3. Staging Environment:**

- Pre-production environment;
- Ensures the application is free of errors before going live;
- Final testing is done before launch;
- Verifies readiness of the software for production.

#### **Testing types:**

- Performance Testing – observes app behavior under user load; checks speed and stability;
- Security Testing – identifies system vulnerabilities;
- Acceptance Testing – done by QA team and sometimes end users before release;
- Smoke Testing – tests core functionalities to ensure system stability.

### **4. Production Environment:**

- Final environment where users interact with the live software;
- Application is in use;
- Testing here ensures that everything works correctly post-launch.

#### **Testing types:**

- Smoke Testing – confirms core functionality is working in production;
- Monitoring and Logging Testing – monitors performance and logs for real-time error detection;
- Post-Deployment Testing – confirms deployment was successful and app behaves as expected.