Software Project Management - Exam Answers

# 1.Describe the 8 phases of software life cycle? (5pts)

The 8 phases of the software development life cycle (SDLC) typically are:

1. **Planning**
   * Define the scope, goals, and feasibility of the project.
   * Identify resources, costs, risks, and timelines.
2. **Requirements Analysis**
   * Gather detailed business and user requirements.
   * Stakeholder interviews, surveys, and documentation are common techniques.
3. **System Design**
   * Translate requirements into architectural and detailed design specifications.
   * UI/UX design, database design, and technical architecture are defined.
4. **Implementation (Coding)**
   * Developers write and integrate code based on the design documents.
   * Usually involves version control and testing modules individually.
5. **Testing**
   * Conduct various levels of testing (unit, integration, system, acceptance).
   * Ensure the software is bug-free and meets the requirements.
6. **Deployment**
   * Release the software into the live environment for use.
   * May involve data migration, user training, and support setup.
7. **Maintenance**
   * Ongoing updates, bug fixes, and improvements.
   * Respond to changing user needs or discovered issues.
8. **Disposal/Retirement**
   * Decommission the software when it’s no longer needed.
   * Ensure proper data migration and system replacement if necessary.

# 2. In which phase of the software life cycle does the project manager report progress to stakeholders? (5pts)

Answer: Monitoring and Controlling Phase  
  
In the Monitoring and Controlling phase of the Software Development Life Cycle (SDLC), the project manager reports progress to stakeholders. This includes regular status updates, performance reports, and communication about risks, issues, and any necessary changes to the project plan.

# 3. Please provide a detailed description of the three key factors (commonly referred to as the project development triangle) involved in project development. (5 points)

The Project Development Triangle, also known as the Triple Constraint, represents the three key factors that influence the success of a project:

* 1. Time

The schedule for the project, including deadlines for deliverables and overall project duration. Key considerations include estimating task durations, managing the project timeline, and meeting milestones. Challenges include delays and balancing fast delivery with quality.

* 2. Cost

The budget allocated for the project, including labor, tools, equipment, software, and other resources. It involves estimating total costs, managing expenses, and controlling overruns.

* 3. Scope

The specific goals, features, functions, and deliverables of the project. Clear definition and management of what is included and excluded from the project are crucial to prevent scope creep.

# 4. Name 3 main budget items for a computer project.

#### 1. Human Resources (Labor Costs)

-Salaries or hourly rates for developers, designers, testers, project managers, etc.Often the largest portion of the budget.

2. Hardware and Equipment  
- Costs of computers, servers, networking devices, and related setup or maintenance.

3. Software and Licenses  
- Expenses for software tools, operating systems, databases, licenses, and cloud services.

# 5.“He/she is the one who communicate with project manager(s) and get requirements/feedback from customer(s)” which type of participant is this person?

Answer: Business Analyst  
The Business Analyst acts as a bridge between stakeholders (customers/users) and the project team. They gather, analyze, and document business requirements and ensure the solution meets user needs and business goals.

# 6. Listing 5 stats shown in Gantt Chart (project planning chart)?

### 1. Task Name

### 2. Start Date

### 3. End Date

### 4. Duration

### 5. Progress/Completion Status

Task Name | Start Date | End Date | Duration | Progress

--------------------------------------------------------------------------------

Project Planning | Jan 1 | Jan 3 | 3 days | ████████░░ 80%

Design Phase | Jan 4 | Jan 10 | 7 days | █████░░░░░ 50%

Development | Jan 11 | Jan 20 | 10 days | █░░░░░░░░░ 10%

Testing | Jan 21 | Jan 25 | 5 days | ░░░░░░░░░░ 0%

Deployment | Jan 26 | Jan 27 | 2 days | ░░░░░░░░░░ 0%

# 7. Decompose the task of "Student Registration" into at least five detailed smaller tasks and subtasks. Providing more details will result in a higher score. (15 points)

Main Task: Student Registration

1. Collect Student Information

a. Gather personal details (name, date of birth, gender)

b. Collect contact information (phone number, email, address)

c. Obtain guardian or emergency contact details

d. Verify identity documents (ID card, passport, birth certificate)

2. Verify Eligibility

a. Check academic prerequisites (previous grades, certificates)

b. Confirm age eligibility based on program requirements

c. Validate residency status or citizenship (if applicable)

d. Review payment status of any outstanding fees (if re-enrolling)

3. Course Selection

a. Provide available courses or programs list to the student

b. Assist student in selecting desired courses or major

c. Verify seat availability in selected courses

d. Confirm prerequisites for chosen courses

4. Fee Payment and Financial Processing

a. Calculate total fees based on selected courses

b. Provide payment options (online, in-person, installment)

c. Process payments and issue receipts

d. Update student account with payment status

5. Finalize Registration and Documentation

a. Enter all collected data into the registration system/database

b. Issue student ID number and registration confirmation

c. Provide student handbook and important guidelines

d. Schedule orientation or first-day instructions

e. Send confirmation email/SMS to student and guardian

# 8. The project manager has allocated additional personnel to the development team to ensure early completion of the project. What type of risk management strategy is being implemented?

Answer: Risk Mitigation  
- Risk Mitigation is a strategy where actions are taken to reduce the probability or impact of a risk.

- Allocating additional personnel to speed up development reduces the risk of delay.  
- This is a proactive step to minimize the chance of not meeting deadlines.  
  
Other risk strategies include Avoidance, Transfer, and Acceptance.

# 9. Estimate task “Student management” using bottom-up method (12 points) Student management task includes list students, sort students, filter students, add new students, update students’ information, unban student, reset student password, send newsletters, send payment notification, request student feedback, list student feedback, move student group, issue certificate, issue transcripts. Breakdown of subtasks and estimated effort (hours):

**Step 1: Break down the main task into smaller subtasks:**

|  |  |
| --- | --- |
| Subtask | Estimated Effort (hours) |
| List students | 4 |
| Sort students | 3 |
| Filter students | 3 |
| Add new students | 5 |
| Update students’ information | 5 |
| Unban student | 2 |
| Reset student password | 2 |
| Send newsletters | 4 |
| Send payment notification | 3 |
| Request student feedback | 3 |
| List student feedback | 3 |
| Move student group | 4 |
| Issue certificate | 4 |
| Issue transcript | 4 |

**Step 2: Sum up the estimated efforts**  
Total effort = 4 + 3 + 3 + 5 + 5 + 2 + 2 + 4 + 3 + 3 + 3 + 4 + 4 + 4 = **45 hours**

**Step 3: Add contingency**

Add 10-15% contingency for unforeseen issues:

* Contingency (15%) = 45 × 0.15 = 6.75 ≈ 7 hours

**Final estimated effort:**  
Final estimated effort = 45 + 7 = 52 hours

| **Task** | **Estimated Hours** |
| --- | --- |

Student Management 52 hours

# 10. Using PERT project method, calculate Duration (Estimation) and fill in column Durations(day) in table below (10pts)

| **Activity** | **Duration (days)** | **Predecessors** |
| --- | --- | --- |
| T1 | 27 | T2 |
| T2 | 7 | - |
| T3 | 16 | T2 |
| T4 | 18 | T2 |
| T5 | 25 | T2 |
| T6 | 4 | T4, T5 |
| T7 | 23 | T1,T3, T6 |
| T8 | 16 | T6, T7 |
| T9 | 9 | T8 |

# 11. Draw network diagram and then find the Critical Path of the system?

**Answer in excel file :** [**Click here**](Answer10-13.xlsx)

# 12. Calculate the total number of days this project may take, and the number of workers can be done in parallel?

**Critical Path Analysis**:

**Critical Path:** T2 → T5 → T6 → T7 → T8 → T9

**Total Duration** =  
T2 (7) + T5 (25) + T6 (4) + T7 (23) + T8 (16) + T9 (9)  
= **84 days**

**Answer: 84days**

IF CONDISTION GET ORIGINAL :  
**Total Duration** =  
T2 (6.67) + T5 (24.83) + T6 (3.17) + T7 (22.17) + T8 (15.67) + T9 (8.17)  
= **80.68 days**

# 13. Estimate the budget required to develop this project by applying worker’s rate 8$ per man-hour.

1. Total Project Duration from Critical Path: **84days**
2. Assume 1 standard workday : **8 hours**
3. Convert days to hours : **84 days×8 hours/day= 672 hours**
4. Apply the rate ($8/hour) : **672×8 =$5,376**
5. Final Answer: Estimated Budget : **$5,376**