

Question 1.a : *List the problems you experienced when you carried out a recent ICI-related assignment. Try to put these problems into some order of magnitude. For each problem consider whether there was some way in which the problem could have been reduced by better organization and planning by yourself.*

when working on my project, the following are common issues arise:

1. Lack of clear project scope and objectives: Without a clear understanding of what needs to be accomplished, it can be difficult to make progress and stay on track.
2. Insufficient resources: Depending on the nature of the project, a lack of necessary equipment, personnel, or funding can impede progress.
3. Difficulty in communication and coordination: Miscommunication and lack of coordination among team members can lead to delays and errors.
4. Technical difficulties: Depending on the complexity of the project, unexpected technical issues can arise that can slow down or halt progress.
5. Unforeseen challenges or obstacles: Even with careful planning, unforeseen issues can arise that can impede progress or require a change in approach.

In many cases, these problems can be reduced or avoided by better organization and planning. This includes setting clear project objectives, identifying and acquiring necessary resources, establishing effective communication and coordination among team members, and anticipating and preparing for potential challenges or obstacles.

Question 1.b : *Identify the main types of personnel employed in an information systems department. For each stage of a typical IS development project, list the types of personnel who are likely to be involved.*

The main types of personnel employed in an information systems (IS) department include:

1. Systems analysts: These individuals are responsible for gathering and analyzing business requirements, designing and developing systems and procedures, and testing and implementing new systems.
2. Database administrators: These individuals are responsible for designing, implementing, and maintaining databases that support the organization's systems and applications.
3. Network administrators: These individuals are responsible for designing, implementing, and maintaining the organization's network infrastructure, including servers, routers, and other networking equipment.

4. **Programmers/Developers:** These individuals are responsible for creating, testing, and maintaining software applications, including custom-built applications as well as off-the-shelf software.
5. **IT Project Managers:** These individuals are responsible for planning, coordinating, and overseeing the development and implementation of information systems projects.
6. **IT Support Staff:** These individuals are responsible for providing technical support and assistance to users of the organization's systems and applications, troubleshoot and resolve issues, and perform maintenance tasks.

Here is a list of the types of personnel who are likely to be involved in each stage of a typical IS development project:

1. **Planning:** Systems analysts, IT project managers, IT support staff
2. **Analysis and design:** Systems analysts, programmers/developers, database administrators, network administrators
3. **Implementation:** Systems analysts, programmers/developers, database administrators, network administrators, IT support staff
4. **Testing:** Systems analysts, programmers/developers, IT support staff
5. **Deployment:** Systems analysts, IT project managers, IT support staff
6. **Maintenance:** Systems analysts, programmers/developers, database administrators, network administrators, IT support staff

Question 2.a : *If you were asked as an expert to provide an estimate of the effort needed to make certain changes to an existing piece of software, what information would you like to have to hand to assist you in making that estimate?*

If I were an expert asked to provide an estimate of the effort needed to make certain changes to an existing piece of software, I would like to have the following information to assist me in making that estimate:

1. **Detailed requirements:** A clear understanding of the specific changes that need to be made, including any functional or non-functional requirements.
2. **Current design and architecture:** Information about the existing software's current design and architecture, including any relevant documentation and diagrams.
3. **Source code:** Access to the existing software's source code, including any relevant libraries or frameworks used.

4. Test cases: Information about the existing software's test cases, including any automated tests.
5. Technical Environment: Information about the technical environment in which the software runs, including the operating system, hardware, and any other software dependencies.
6. Schedule constraints: Information about any specific deadlines or schedule constraints that must be met.
7. Team's skillset: Information about the skill set of the team members who will be working on the project and their availability.
8. Historical data: Information about similar projects that have been completed in the past, including the effort required, any problems that were encountered, and how they were resolved.

Having this information will allow me to better understand the scope of the changes and the potential impact on the existing software, which will assist me in providing a more accurate estimate of the effort required.

Question 2.b. *What are the factors that make Project Management vary for different Projects? Explain in brief.*

Project management can vary for different projects due to several factors, including:

1. Project complexity: The complexity of a project can significantly impact the project management approach. A simple project with a limited scope may have a more streamlined approach, while a complex project with multiple stakeholders and dependencies may require a more detailed and comprehensive project management plan.
2. Project size: The size of a project, in terms of budget, resources, and team members, can also impact the project management approach. Larger projects may require more resources and a higher level of project management structure to ensure successful completion.
3. Project environment: The external environment in which a project is being undertaken can also impact the project management approach. Different industries have different regulations, best practices, and standards that must be adhered to, and this can affect the project management approach. Also, projects that have a high degree of uncertainty and dynamism in the environment require a more adaptive and flexible project management approach.

In summary, the complexity, size, and environment of a project can all impact the project management approach, and a project manager must take these factors into consideration when planning and executing a project.

Question 2.c : *Why do software development Projects fail? Explain with proper example/s.*

Software development projects can fail for a variety of reasons, including:

1. Lack of clear requirements: Without a clear understanding of the project's objectives and requirements, it can be difficult to make progress and stay on track. This can lead to delays and errors, and the final product may not meet the needs of the stakeholders.
2. Insufficient resources: Depending on the nature of the project, a lack of necessary equipment, personnel, or funding can impede progress. This can lead to delays and errors, and the final product may not be of sufficient quality.
3. Difficulty in communication and coordination: Miscommunication and lack of coordination among team members can lead to delays and errors. This can also lead to misunderstandings and confusion about the project's objectives and requirements.
4. Technical difficulties: Depending on the complexity of the project, unexpected technical issues can arise that can slow down or halt progress. These issues may require additional resources and expertise to resolve, which can further delay the project.
5. Unforeseen challenges or obstacles: Even with careful planning, unforeseen issues can arise that can impede progress or require a change in approach. This can lead to delays and errors, and the final product may not meet the needs of the stakeholders.

For example, the failure of the U.S. healthcare.gov website is a well-known example of a software development project that failed due to several of these factors. The project was plagued by lack of clear requirements, insufficient resources, and difficulties in communication and coordination. As a result, the website did not function properly when it was launched, causing significant problems for users and damaging the reputation of the project.

Question 3.a. *If you have access to project planning software, use it to produce an activity plan for your own project and include the staff resource requirements for each activity. Explore the facilities of your software and answer the following questions.*

i. Can you set up resource types and ask the application to allocate individuals to tasks?

ii. Will your software allow you to specify productivity factors for individual members of staff so that the duration of an activity depends upon who is carrying it out?

iii. Will your software carry out resource smoothing or provide a minimum cost solution?

Project management software typically allows you to plan and manage resources, including staff and equipment. Many project management software have features like:

- i. Setting up resource types and allocating individuals to tasks: This feature allows you to assign specific individuals or teams to specific tasks or activities within the project. It allows you to track the availability and workload of each resource, and to ensure that the right resources are available at the right time.
- ii. Specifying productivity factors for individual members of staff: This feature allows you to assign different productivity rates or factors to different resources, based on their skills, experience, or other factors. This can help to more accurately estimate the duration of tasks or activities, and to ensure that the project stays on schedule.
- iii. Carrying out resource smoothing or providing a minimum cost solution: Some project management software can automatically adjust the project schedule to balance the workload of resources, or to minimize the overall cost of the project. This can help to ensure that the project stays on schedule and within budget.

Keep in mind that the features and capabilities of project management software can vary widely depending on the specific product you are using, so it's important to review the product documentation or contact the vendor for more information on the specific features and capabilities of the software.

Question 3.b : *What do you understand by CMMI level? Describe each level of CMMI in details.*

CMMI (Capability Maturity Model Integration) is a framework that provides organizations with a set of best practices for improving the process of software development and management. The CMMI framework defines five maturity levels, each representing a different stage of process maturity. These levels are:

1. Level 1 - Initial (Performed): At this level, processes are ad hoc and unstructured. They are performed in an unsystematic and unpredictable way. There is little or no process discipline, and the organization does not provide a stable environment for its projects.
2. Level 2 - Managed (Repeatable): At this level, processes are repeatable, but not always performed in a consistent manner. The organization has a basic understanding of its processes and is able to repeat them. Management oversight is present, but not always effective.
3. Level 3 - Defined (Defined and Quantitatively Managed): At this level, processes are defined and quantitatively managed. The organization has a clear understanding of its processes and is able to measure and control them. Processes are performed consistently across the organization, and management oversight is effective.
4. Level 4 - Quantitatively Managed (Optimizing): At this level, processes are quantitatively managed, and the organization is able to optimize them. The

organization has a clear understanding of its processes, and is able to measure and control them. Processes are performed consistently across the organization, and management oversight is effective. The organization continuously improves its processes.

5. Level 5 - Optimizing (Optimizing): At this level, processes are continuously improved in an explicit and quantitative way. The organization has a clear understanding of its processes, and is able to measure and control them. Processes are performed consistently across the organization, and management oversight is effective. The organization continuously improves its processes, and has a culture of continuous process improvement.

The levels of CMMI describe the level of maturity in an organization's processes and provide a roadmap for improving them. Each level provides a set of best practices that organizations can use to improve their processes and achieve better results. An organization's maturity level is determined by a formal assessment that compares its processes to the CMMI model. Organizations can use CMMI to improve the quality of their software products, increase customer satisfaction, and reduce costs.