

Ans 1a) To make a small team of employees to work on a project out of 300 employees, I would be selecting employees ensuring that there are people of different skills (software, hardware, development, documentation, etc), people of different personality traits (Task-oriented, interaction oriented and self oriented people) and a balance of motivation will be provided to team. A well balanced team is necessary to get innovative ideas and to solve problems easily as they arise. Also, as this is a safety critical project it has to be certified as safe by regulator. To achieve certification, safety case showing that rules in regulations have been followed have to be showed. Hence keeping this in mind the team would be asked to develop along with proper documentation.

Ans 1b) When a company charges more than normal this is known as over pricing or increased pricing. The price may be increased when a buyer wishes a fixed-price contract and so the seller increases the price to allow for unexpected risks. There can be several factors associated with such a situation as listed:

- (i) Contractual terms - A company ~~willing to sell~~ who wants to keep the source code of the developed with them will be charged high by the developer.
- (ii) Cost estimate uncertainty: The company is not sure of exact pricing and is expecting few changes while developing the project hence increased pricing will cover any such change.
- (iii) Financial health: The company may be a well established and financially rich, hence it doesn't care even if it loses a customer because of high price.
- (iv) Quality: The company might be providing latest technology.
- (v) Market opportunity: The company might be the only company in a particular field hence increased price will not give customer any other option.
- (vi) Requirements volatility;

Ans 2a) When management decisions are distributed among the members of the team such a team is called informal group. The group acts as a whole and comes to consensus on decisions affecting the system. The group leader here just serves as an external interface of the group but doesn't allocate specific work items. Rather, work is discussed by the group as a whole and tasks are allocated according to ability and experience.

Such an approach is successful for groups where all members are experienced and competent. But when this is not the case there can be problems in working, particularly in decision making.

- People with not so great communication ~~can~~ may convey wrong message.
- If group is larger communication with each one is harder hence converging to one decision also becomes harder.
- When group is only of people of some personality type, there may be deadlocks in making decisions. In this situation, team leader is needed for a solution.
- If group lacks experience, the decisions made may not be correct ones.

Ans 2b) While building team my contribution as team manager will include:

- Creating ~~pe~~ team having a good mix of people. People with skills including negotiation, development, testing, documentation, etc will be needed.
- The group organization should be good enough so that members can contribute to the best of their skills & capacity.
- ~~Deser~~ Ensuring good communication with the team members to make them comfortable and secure.
- All the selection may be on various constraints, hence managing to get people in low budget, less experience should be done if needed.

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While working on project:

- It is necessary to motivate team members regularly so they don't lose interest in work mid project.
- To cheer up employees away day can be organised once a month to refresh the team up.
- Keeping in touch with members to find and solve any problem that they are facing.

Ans 3a) : Maslow's hierarchy of needs include the following:

Self realization needs

Esteem needs

Social needs

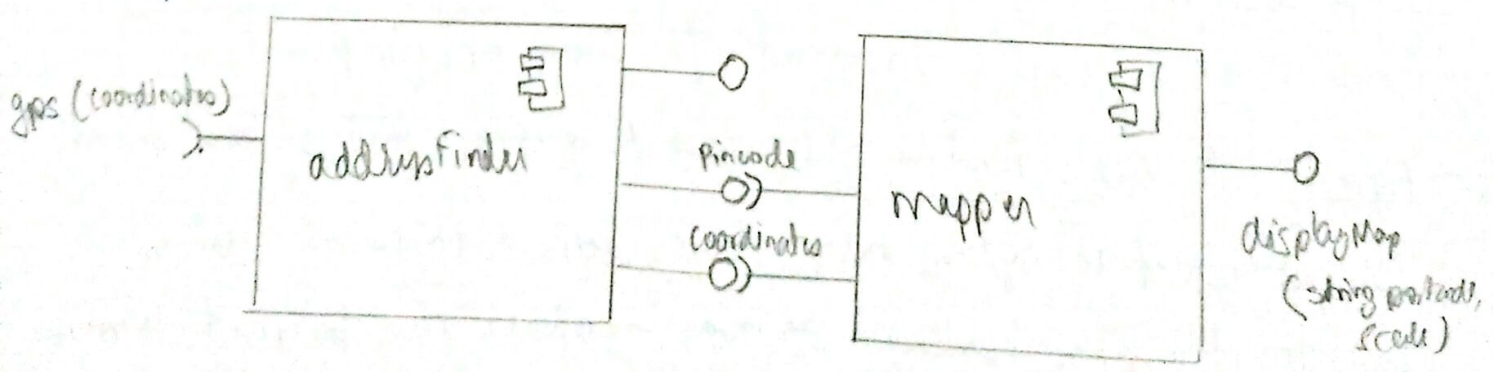
Safety needs

Physiological needs

- As a project manager, the safety and physiological needs are considered to be already satisfied on an member.
- To facilitate social needs, communal facilities may be provided. If any employee believing in Islam needs a place to pray during Ramadan, arrangements for the same can be made. Interaction between members can be encouraged via informal modes like social networking. This makes them feel part of society & helps them open up.

- To satisfy esteem needs members' achievements needs to get recognized. Any member who shows hard working nature by delivering quality work well before deadlines should be recognized and appropriate rewards such as increment, bonus, holiday coupon or gift can be given.
- To satisfy self realization needs training (for members to learn new things) can be given and appropriately responsibilities can also be assigned. If an employee is struggling to complete a task because of lack of skills, he/she will be given proper training for the task and then if suitable responsibilities can be assigned.

Ans 3b) Component Based Software Engineering is an approach to software development that relies on the reuse of entities called 'software components'. A scenario of a cab booking app is considered wherein, anyone can book a nearby cab to reach a destination they want. In such a scenario display of location of pickup, drop, customer and cab on a map will be more helpful than displaying raw addresses. Also, developing map functionality will be expensive.



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Hence, components that find address and display on map can be used as shown. Given the GPS location of device, address can be extracted and from it coordinates can be extracted by addressfinder. Then pincode and coordinates are passed on to mapper that displays the location on interactive map. These components may be available on payment of much less fee compared to their development. Google maps is an example of such a component.

Ans 4a) Considering a case of wilderness weathering system the reliability can be achieved in following ways:

- **Fault avoidance:** When developing a system development techniques are used to either minimise the possibility of mistakes or map mistakes before they result in system system faults. To make sure this, a thorough testing, verification and validation process for the weathering system will be done, removing errors from both collection and storing subsystem.
- **Fault detection and removal:** Verification and validation techniques to increase probability of detecting and collecting correcting errors. The weathering system will be tested by developers and also get tested in real environment for long enough period.
- **Fault tolerance:** Redundant techniques to ensure that system faults do not result in system errors and system errors in system failures. Exception handling ~~router~~ routines can be used to make sure this. Recovery for database facility can be provided.

- Maintaining consistency: while developing the system consistency in work like always using modularity should be used so that the code has same pattern throughout.
- Documentation: The code should be well defined. All other components in the weathering system must have well defined functionality so that they can be reused by anyone in future.

Q46) Factors for hiring a member:

- His/her ability and skills will be assessed to check if it is suitable for job.
- His interest in the job so that he doesn't leave in between.
- His dedication level towards the field by assessing his previous work.
- Assessing the experience to check if the required experience level for the job is possessed.
- His communication skills and behaviour to work in a team will be assessed.
- His capacity to handle stress and heavy workload will be checked.

Ans 5a) To plan a project following steps are involved,

- (i) identify constraints: various time, financial & resource constraints will be assessed.
- (ii) The risks associated with the project ~~are~~ will be assessed and correspondingly tackling plan will be made.
- (iii) Milestones and deliverables will be defined against which progress will be measured.
- (iv) The schedule of project will be made and work will be assigned.
- (v). The progress is measured and changes in plan are made. if needed if progress is not according to what was expected.
- (vi) If risk arises then mitigation plan is executed or the project is explained.

Ans 5b) As we are in an industry relating to animation, financing is a new field for us, hence the software will be under priced as to first get into the industry. As there may be ~~into~~ companies in the field providing quality software only way to attract customers remains is low pricing.

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- How much a similar software is charged in the market will be analyzed.
- What workforce we have to develop a software of a new field ~~etc~~ will have to be assessed.
- Assessment of what the buyer is willing to pay
- Calculation of development cost including all hardware, software and employee efforts will be made.
- Profit margin will be kept as low as possible as it is a new field.

Ans 5(a)
Contd.