Lecture Notes of Chapter_3 (Risk Management)

1) What do you mean by risk? What is software risk? Explain all types of software risks. Risk :

- "A situation involving exposure to danger is known as risk".
- Software risk can be defined as the exposure to injure or loss. In case of software project risk refers to an adverse effect on cost, quality and schedule of the project.
- Risk management is an area in which the negative effect on cost schedule and quality of the project can be minimized.
- During the risk management, commonly occurring unexpected events are handled. For example change in technology; people leaving the projects are some commonly occurring events that can be handled in risk management.
- In risk management, the effect of risk is minimized.
- Risk management revolves around two things. – Risk assessment and risk control.

- **Types of risk**
- Reactive and proactive risk strategies are the approaches used for managing the risks.

- **Reactive risk strategy**
- Reactive risk management is a risk management strategy is a when project gets into trouble then only

  corrective action is taken. But when such risks cannot be managed and new risks come up one after the other, the software team files into action in an attempt to correct problems rapidly these activities are called "Fire fighting" activities.
- Resources are utilized to manage such risks. And if still the risks do not get managed then project is in danger.
- In this strategy no preventive care is taken about the risks. They are handled only on their occurrences.
- This is an older approach of risk management.

- **Proactive risk strategy**
- Proactive risk management strategy begins before the technical activities considering the probable risk.
- In this strategy potential risks are identified first then their probability and impact is analyzed. Such risks are then specified according to their priorities. Finally the software team prepares a plan for managing these risks.
- The objective of this strategy is to avoid the risks. But it is not possible to avoid all the risk, hence team prepares the risk management plan in such a manner that risk controlling can be done efficiently.
- This is an intelligent strategy for risk management and nowadays it is used by most of the IT industries.

2) Explain RMMM plan. OR Explain risk control.

- Risk control can be done using three factors.
  - Risk mitigation.
  - Risk monitoring

Risk management.

1. Risk Mitigation :

- Risk mitigation means preventing the risk to occur (risk avoidance). Following are the steps to be taken for mitigation the risks.
- Communicate with the concerned staff to find of probable risk.
- Find out and eliminate all those causes that can create risk before the project starts.
- Develop a policy in an organization which will help to continue the project even though some staff leaves the organization.
- Everybody in the project team should be acquainted with the current development activity.
- Maintain the corresponding documents in timely manner. This documentation should be strictly as per the standards set by the organization.
- Conduct timely reviews in order to speed up the work
- For conducting every critical activity during the software development, provide the additional staff if required.

2. Risk Monitoring :

- In risk monitoring process following things must be monitored by the project manager,
- The approach or the behaviour of the team members as pressure of the project varies.
- The degree in which the team performs with the spirit of "team-work".
- The type of co-operation among the team members.
- The types of problems that are occurring

- Availability of jobs within and outside the organization.
- The project manager should monitor certain mitigation steps. For example,
- If the current development activity is monitored continuously then everybody in the team will get acquainted with current development activity.
- The objective of risk monitoring is,
- To check whether the predicted risks really occur or not.
- To ensure the steps the steps defined to avoid the risk are applied properly or not.
- To gather the information this can be useful for analysing the risk.

3.Risk Management

- Project manager performs this task when risk becomes a reality. If project manager is successful in applying the project mitigation effectively then it becomes very much easy to manage the risks.
- For example, consider a scenario that many people are leaving the organization then if sufficient additional staff is available, if the current development activity is known to everybody in the team, if latest and systematic documentation is available then any 'new comer' can easily understand current development activity. This will ultimately help in continuing the work without any interval.

3) What is risk identification? Describe the difference between risk components and risk drivers.

- Risk identification can be defined as the efforts taken to specify threats to the project plan. Risks identification can be done by identifying the known and predictable risks.
- Also, Risk identification is a systematic attempt to specify threats to the project plan (estimates, schedule, resource loading, etc.). By identifying known and predictable risks,

the project manager takes a first step toward avoiding them when possible and controlling them when necessary.

- Difference between Risk Component and Risk Drivers

Risk Components	Risk Drivers
Catastrophic : - It is a consequence of error. Great chance of natural disaster that could be in a shape of earthquake, flood, soil, erosion, fire out breaks, etc.	Performance : - Degree of uncertainty that product will meet its requirements and be fit for its intended use.
Critical : - Consequences of error. In a sense of critical could be an operational, execution, technical or any other problem in front of development.	Support : - Resultant software will be easy to correct, enhance and adapt.
Marginal : - Consequences of failure to achieve the desired result. This kind of risk could be manageable within resources or some time can be exceeding from available resources.	Cost : - The degree of uncertainty that the project budget will be maintained.
Negligible : - Consequences of error. Consequence failure to achieve desired result	Schedule : - Result in increases cost and schedule delays. Product schedule will be maintained.

4) Explain risk estimation.

- Risk projection, also called risk estimation, attempts to rate each risk in two ways

1. the probability that the risk is real
2. the consequences of the problems associated with the risk that should it occur.

- The project planner, along with other managers and technical staff, performs four risk projection activities:

1. Establish a scale of a risk,
2. Determine the consequences of the risk,
3. Estimate the impact of the risk on the project and the product, and
4. Note the overall accuracy of the risk projection so that there will be no misunderstandings.

Developing Risk Table

A risk table provides a project manager with a simple technique for risk projection.

Risks	Category	Probability	Impact	RMMM
R1	PS	60%	2	
R2	PS	30%	3	
R3	PS	70%	2	
R4	BU	40%	3	
R5	BU	50%	2	

Impact values:
1. Catastrophic.
2. Critical.
3. Marginal.
4. Negligible.

Assessing Risk Impact

- Three factors affect the consequences that are likely if a risk does occur: its nature, its scope, and its timing.
- The following steps are recommended to determine the overall consequences of a risk:

1.Determine the average probability of occurrence value for each risk component. 2.Determine the impact for each component based on the criteria shown.

3. Complete the risk table and analyse the results as described in the preceding sections. 4.The overall risk exposure, RE, is determined using the following relationship

RE = P x C

- where P is the probability of occurrence for a risk, and C is the the cost to the project should the risk occur.

Risk Assessment :

Therefore, during risk assessment, we perform the following steps:

1. Define the risk referent levels for the project.
2. Attempt to develop a relationship between each (ri, li, xi) and each of the referent levels.
3. Predict the set of referent points that define a region of termination, bounded by a curve or areas of uncertainty.