Assignment Questions Semester 2 2017

In your own words explain what is: (2)
Project management
Project portfolio management

Answer

Project management: Is the application of knowledge, skills, tools and techniques to project activities, in order to meet specific goals and project requirements. Project management is managed by a **project manager**.
A project manager must strive to meet specific scope, time, cost, and quality of projects, as well as facilitating the entire process of meeting the needs and expectations of people involved in project activities or affected by them.
Project portfolio management: provides an overview of all the projects that an organization is undertaking or is considering**.** It is a process in which organisations group and manage projects as a portfolio of investments that contribute to the entire success of the organization. Project portfolio management is managed by **portfolio manager.**
Project portfolio management helps organisations make wise investment decisions by helping them to select and analyse projects from a strategic perspective.
It helps prioritize the allocation of resources to projects and decide which new projects should be accepted and which existing ones should be dropped.

1.2 How would you differentiate between project management and project portfolio management? (6)

Project management	**Project portfolio management**
Project management focus on meeting **tactical goals** of the organisations. Tactical goals are more specific and short-term goals.	portfolio management addresses **strategic goals**. Strategic goals are generally known as the long-term goals of an organisation
Project management addresses questions such as: Are we carrying out projects well? Are projects on time and on budget? Do project stakeholders know what they should be doing?	Project portfolio management addresses questions like: Are we working on the right project? Are we investing in the right areas? Do we have the right resource to be competitive?
Project management is managed by a **project manager**	Project portfolio management is managed by a **portfolio manager**

QUESTION 1 [10 Marks]

1.1 Software project estimations are very important in software development. They are carried out at various stages of software development. Name and discuss Barry Boehm's various software effort estimations techniques. (7)

See page 108. Section 5.5

Answer

Algorithmic models: With this technique, 'effort drivers' representing characteristics of the target system and the implementation environment to predict effort

Expert judgement: with this technique, software effort is estimated based on the advice of an expert or knowledgeable staff in the field**.**

Analogy: this technique base software estimation effort on the actual effort of a similar, completed, project.

Parkinson: is where the staff effort available to do a project becomes the 'estimate'

Price to win: the estimate is a figure that seems sufficiently low to win a contract

Top-down: overall estimate for the whole project is broken down into the effort required for the component task

Bottom-up: component tasks are identified and sized and the individual estimates are aggregated

1.2 As an emerging project manager working with a team on a new project. You have been mandated to investigate possible problems associated with under-estimating software project effort.

Answer

See page 107. Section 5.3 (3)

Under-estimated project might……:

- not be completed on time or to cost
- have effect on the quality of the project - less experience staff could respond to pressing deadlines by producing work that is substandard
- cause a substandard work to only become visible at later testing phases of a project, making it difficult to control. Because of this, extensive re-work can easily delay project completion.

3.1 A project activity must be defined to meet certain criteria if not it has to be redefined. What are the criteria? (4)

Answer

See section 6.5

An activity must have a clearly defined start and end-point, normally marked by the production of a tangible deliverable

The required resource of an activity must be forecastable and is assumed to be required at a constant level throughout the duration of the activity.

The duration of an activity must be forecastable – assuming normal circumstances, and the reasonable availability of resources

Precedence requirements. Some activities might require that others are completed before they can begin.

3.2. There are three approaches to identifying the activities or tasks that makes up a project. Name and discuss the first two approaches. (6)

Answer

Activity-based approach: this approach consists of creating a list of the activities that a project would be involved in. This approach is based entirely on structuring of activities and the considered favoured way of generating activity list is by creating Work Break Down structure (WBS). WBS start with identifying the main (or high-level) tasks required to complete a project. The high-level activities are further broken down into a set of lower-level tasks.

Product-based approach: this approach consists of producing a Product Breakdown Structure (PBS) and a Product Flow Diagram (PFD). PBS depict a relationship that exist between different hierarchy of project products or between project main products and their sub-component products. PFD indicates, for each product, which other products are required as inputs.

Product-based approached is particularly*…cont with page 135*

QUESTION 1 [14]

A resource is any item or person required for the execution of the project. As a project manager, explain to your team the seven categories a project resource can fall into.

Answer

See section 8.2 page 194 for solution

Labour: are staff of the development project team for example, project manager, system analysts and software developers. Also important are quality assurance team, support staff and any employees of the client organisation who undertake or participate in specific activity.

Equipment: this include workstations and other computing and office equipment. Other equipment include desks and chairs.

Materials: are consumed items. In most software project material are of little consequence but can be important for some software project.

Space: this include office space for the staff of the organisation

Service: Some project requires procurement of special services – development of wide area distributed system.

Time: time as a resource is often offset against other primary resources – project timescales can sometimes be reduced by increasing other resources and will almost certainly be extended if they are unexpectedly reduced.

Money: money is a secondary resource. It is used to buy other resource and will be consumed as other resources are used. Money is available at a cost as interest are charged to borrow money.

4.1 List and explain the various visualization method (9)

Answer:

The Gantt chart: this chart is one of the simplest and oldest techniques for tracking project progress. It is essentially an activity bar chart indicating scheduled activity dates and durations, frequently augmented with activity floats.

is used to indicate scheduled activity dates and durations frequently associated with activity floats. The Gantt chart can visually indicate if a project is ahead or behind schedule. One disadvantage is that this chart is very difficult to keep up to date.

The Slip chart: The slip chart is a more striking visual indication of the progressing of activities than the Gantt chart. The slip chart has a slip line that indicates the variation from the plan. The more the slip line bends the greater the variation. The project manager can then decide to reschedule some activities if the chart has a very jagged slip line.

The timeline: The timeline chart illustrates the way in which targets have changed through-out the duration of a project. Planned time is shown along the horizontal axis and actual time along the vertical axis. In the ideal situation (no delays), the Planned Time and the Actual Time will correspond on the diagonal.

Assignment Questions Semester 1 2017

In your own words explain what a project portfolio management is. What its functions are and discuss the three key aspects of project portfolio management. (8)

Answer

Project portfolio management provides an overview of all the projects that an organization is undertaking or is consideringV. It helps prioritize the allocation of resources to projects and decide which new projects should be accepted and which existing ones should be dropped. √

It is a formal process where:

Project proposals are accesses for costs, risks, benefits, and contributions to objectives

Decisions are made conscientiously to authorize certain projects, retain some and dispose those with limited potential.

Scare resources are allocated effectively so as to insure that approved, priority projects get adequate funding and support.

The functions of project portfolio management include:

Identifying which project proposals are worth implementation

Assessing the amount of risk of failure that a potential project has

Deciding how to share limited resources, including staff time and finance, between projects.

Being aware of the dependencies between projects, especially where several projects need to be completed for an organization to reap benefits.

Ensure that projects do not duplicate work

Ensuring that necessary developments have not been inadvertently been missed

The three key aspects of project portfolio management are:

Project portfolio definition

Project portfolio management

Project portfolio optimization

QUESTION 1 [10 Marks]

Due to several reasons, software effort estimations are carried at various stages of a software projects. These include:

Answer

Strategic planning stage: at this stage, the costs and benefits estimations are done for new applications in order for priorities to be allocated.

Feasibility study stage: Software effort estimation is done at this stage to confirm if the benefits of the potential system will justify the costs.

System specification stage: At this stage, effort needs to be estimated on the implementations of different design proposals. Efforts are also estimated at this stage to confirm that the feasibility study is still valid.

Evaluation stage:

Project planning stage: Estimates performed at this stage will confirm earlier broad-brush estimate, and will support more detailed planning, especially staff allocations.

QUESTION 2 [10 Marks]

2.1 Differentiate between waterfall and prototyping as software project development models. (5)

Answer

A prototype is a working model of one or more aspects of the projected system. It is a development approach that is constructed and tested quickly and inexpensively in order to test out assumptions.

This approach enables organisations to reduce uncertainty.

Prototype is an approach that: allows learning by doing; improves communication and user involvement.

Waterfall is a classical model development that is also known as one-shot. Waterfall model consist of sequence of activities working from top to bottom.

It is a development method that is linear and sequential.

Waterfall is a suitable approach where the requirements are well defined and the development methods are well understood. The approach allows project completion times to be forecast with some confidence, allowing the effect control of the project.

2.2 As a potential project manager, indicate some of the reasons why you will not recommend waterfall model to your project team as an appropriate project approach? (5)

Answer

The answers to this question are the disadvantages of waterfall model which include:

Waterfall is a less effective approach where: (1) Requirements are not well defined at the beginning.

(2) Development methods are not well understood.

Waterfall is also a less effective approach where there is uncertainty about how a system is to be implemented. This is because it is a less flexible approach. Approaches that can handle uncertainty about system implementations require more flexibility and iteration.

Waterfall is often very useful for large and high risk projects

With waterfall model, no working system/software is produced until later in the development.

4.2.3 In a table format, calculate the earliest start time, earliest finish, latest start time, latest finish and total float of the tasks for the activity-on-arrow network. [10]

answer

Similarity	Difference
Both PERT and CPM use the expected durations of the activities to carry out a forward pass through a network.	CPM uses single estimate for the duration of each task while PERT requires three combined estimates (namey: Most likely; Optimistic time; and Pessimistic time) to form a single duration.
PERT and CPM are project scheduling technique that shows/model projects activities, relationships and dependencies on a network.	Unlike the CPM approach, the PERT method does not indicate the earliest date by which a project could be competed but the expected date.
PERT and CPM are both referred to as network analysis, programming models and critical path analysis (CPA)	Unlike PERT, CPM approach allows an explicit estimate of costs in addition to time meaning that CPM is able to control both cost and time.
Both PERT and CPM are project management techniques and scheduling tools that allows managers to plan, manage and control complex tasks and projects.	An advantage of PERT approach over CPM is that it places emphasis on the uncertainty of the real world and on the uncertainty of the estimation of activity duration.
Both of these techniques uses an activity-on-arrow approach to joining circles, or nodes, which represent the possible start and/or completion of an activity or set of activities.	PERT is a more suitable approach for project performed for the first time where the estimate of duration are uncertain while CPM is best suited for routine and projects where time and cost estimates can be accurately calculated.

QUESTION 1 [10]

A resource is any item or person required for the execution of the project. As a developing project manager involved in a team of software development project in your organization (Right solution), you understand the important of allocating individual members of staff to activities as early as possible, as it can lead your team to revise estimate of their duration. Your team has mandated you to list and discuss possible factors that need to be considered when allocating individuals to tasks.

Answer

The factors that need to be considered when allocating individuals to tasks include:

Availability: when allocating individual to task, it need to be ascertain whether the individual will be available when required.

Criticality: Allocation of more experienced personnel to activities on the critical path often helps in shortening project durations or at least reduces the risk of overrun.

Risk: To help allocate staff, it is important to identify those activities posing the greatest risk, and have knowledge of the factors influencing them. Allocating the most experienced staff to the highest-risk activities is likely to have the greatest effect in reducing overall project uncertainties.

Training: It would be benefit organisations if positive steps are taken to allocate junior staff to appropriate non-critical activities where there will be sufficient slack for them to train and develop skills.

Team building: The selection of individuals must also take account of the final shape of the project team and the way they will work together.

3.2 Why is it important to prioritize activities in projects? (2)

Answer

Allocating a resource to particular activity limits the flexibility for resource allocation and scheduling of other activities. Therefore, it is important to prioritize activities so that resources can be allocated to competing activities in some rational order. The priority should always be to allocate resource to critical path activities and then to activities that would most likely affect others.

3.3 Discuss at least two ways of prioritizing activities (4)

Answer

Total float priority: With this method, activities are ordered according to their total float. Activities with smallest total float have the highest priority. This means that activities are allocated resource in ascending order of total float.

Ordered list priority: this method allows activities that can proceed at the same time to be ordered according to a set of simple criteria.

Assignment Questions Semester 2 2016

QUESTION 2 [10]

2.1 Explain in detail what a project manager can do when a project will not meet the target date. What should he NOT do? (5)

Answer:

Section 9.8 Page 229-232

- Renegotiate due date / cost with client
- Revisit requirements (MOSCOW)
- Ensure effective resources are on critical path (re-allocation of resources)
- Schedule overtime
- Re-look tasks start dates to maybe start sooner
- Shorten critical path

Do Not

- add new resources
- compensate on quality
- skip steps in the SDLC
- give in on testing (quality)
- Be careful to shorten critical path and then create another critical path

2.2 Discuss the categories of cost.

- *Staff costs*: These include staff salaries as well as other direct costs of employment such as the employer's contribution to social security funds, pension scheme contributions, holiday pay and sickness benefit. These costs are commonly charged to projects at hourly rates based only weekly work records completed by staff. It should be noted that contract staff are usually charged by the week or month, even when they are idle.
- *Overheads*: Overheads represent expenditure that an organisation incurs, which cannot be directly related to individual projects or jobs, including space rental, interest charges and the costs of service departments (e.g. HR). Overhead costs can be recovered by making a fixed charge on development departments (usually appears as a weekly or monthly charge for a project), or by an additional percentage charge on direct staff employment costs. These additional charges or on-costs can easily equal or exceed the direct employment costs.
- *Usage charges*: In some organisations, projects are charged directly for use of resources such as computer time (rather than their cost being recovered as an overhead). This will normally be on an 'as used' basis.

Assignment Questions Semester 1 2016

2.3 "Planning does not only take place during the project start-up." Discuss this statement, referring to when and why planning takes place as it does. (5)

ANSWER:

"The importance of ongoing planning throughout the project life cycle cannot be stressed enough – often neglect in this area may result in overall project failure or costly delays. Planning is an ongoing process of refinement with each iteration becoming more detailed and more accurate than the last.

The emphasis and purpose of planning shifts over successive iterations. During the feasibility study and project start-up the main purpose of planning will be to estimate timescales and the risks of not achieving target completion date or keeping within budget.

The emphasis will be placed upon the production of activity plans for ensuring resource availability and cash flow control as the project proceeds beyond the feasibility study. Monitoring and replanning must continue throughout the project to correct any drift that might prevent meeting time or cost targets until the final deliverable has reached the customer" (Saunders F, 2015).

3.1 Briefly discus a framework for dealing with risk. (8)

ANSWER

Students are referred to the textbook p. 166 section 7.4

2 marks will be allocated for naming and discussing each of the following basic steps:

Risk identification; 2 marks

Risk analysis and prioritization; 2 marks

Risk planning; 2 marks

Risk monitoring. 2 marks

1. **Risk Identification**: Involves the use of checklists and brainstorming. A checklist is an already developed list of risks likely to occur in a software development project, as well as countermeasures that can be taken to reduce the risk. Organizations may have their own organizational risk checklist. Table 7.1, p167 gives an example of such a checklist.

This is discussed by a group of project stakeholders once there is a preliminary project plan. The checklist as well as knowledge and experience of the participants are used to identify problems that may occur. This collaboration is important in giving a sense of ownership of the project to stakeholders.

It is recommended that on review of completed projects, any problems identified and the steps taken to avoid or resolve them be documented. These could in some cases be added to the organizational risk checklist.

2. **Risk Analysis and Prioritization**: Once the risks have been identified they need to be distinguished in terms of which are most likely and how damaging exposure to the risk would be. Risk exposure formula is a way of estimating potential damage the risk can cause. Risk exposure may be indicated as a monitory or duration value {p168-169}.

It is important that planners prioritize risks, and give focus to highest risks, and the potential impact the risk may have. Probability impact matrix (p171) represents the risks according to the probability and impact.

3. **Risk Planning (p172- 173**): Once the risks are identified and prioritized the next step is to decide on how to deal with each of them. This includes

a. Risk acceptance- do nothing, particularly if the anticipated damage would be less than the cost of trying to reduce the likely occurrence of the risk.

b. Risk voidance- take a decision of whether to continue or change direction based on the level of the risk. For example an alternative may be found instead of developing the software.

c. Risk reduction and mitigation - when a decision has been made to continue, precautions to reduce the probability of the risk may be taken. Risk reduction involves reducing the likelihood of the risk occurring, while risk mitigation is related to contingency planning, and involves reducing the impact of the risk in the event that it occurs.

d. Risk transfer - In this instance the organization may choose to move the risk to someone else other than itself, for example through outsourcing. This has the potential of increasing the cost because the outsourced organization may want to cover the risk. Competition may however keep prices down.

4. **Risk Monitoring**: This involves the contingency planning (p174) and drafting and maintaining a risk register (Fig 7.5 p. 175). A contingency plan is a planned action to be carried out if the particular risk materializes. There are costs associated with taking the contingency measure. Most important is that the contingency measure should be costeffective. The cost-effectiveness of a risk reduction action can be calculated using the risk reduction leverage (RRL) formula (p174). Example of a risk register is on p175 (Fig 7.5).

The risk register should be reviewed and amended as part of the project control lifecycle. Risk identification, analysis and prioritizing and planning would also be probably repeated throughout the project lifecycle.

Note: the question is "Discuss" a framework. This requires that you deliberate or examine the framework. This is more than simply describing or just outlining. The expectation is that you will describe as well as deliberate (discuss) the framework.

Assignment Questions Semester 2 2015

Question 2: Questions on Chapter 7 and Chapter 9 (17 marks)

2.1 Discuss the nature of resources. (12)

Answer

Resource – any item or person required for the execution of the project, from paper clips to key personnel.

Stationery and standard office supplies role of office manager.

Project Manager must plan for resources otherwise they may not be available when required.

Project manager is a resource that is required throughout the project.

Other resources such as a specific software developer may be required for a specific activity.

The developer may be involved in other projects and be controlled at programme level, hence the importance for the Project Manager to plan for resources otherwise they may not be available when required.

Seven categories of resources:

Labour – development project team – project manager, system analysts, software developers; QA team, support staff, client organization staff

Equipment – workstations, computing and office equipment, desks, chairs

Materials – items that are consumed such as disks, rather than equipment that is used.

Space – additional recruited or contracted staff need office space. Existing staff used in projects usually have readily available space

Services – specialist services required for some projects eg scheduling of telecommunications services for development of a wide area distributed system

Time – time is the resource that is being offset against the other primary resources.

Increasing other resources can reduce timescales.

Money – money is a secondary resource, used to buy other resources. It is consumes as other resources are used up. It is available at a cost, ie interest. The cost of money is a factor taken into account in Discount Cash flow (DCF) techniques such as NPV.

Question 3: Questions on Chapter 6 (5 marks)

"Planning does not only take place during the project start-up." Discuss this statement, referring to when and why planning takes place as it does. (5)

ANSWER:

"The importance of ongoing planning throughout the project life cycle cannot be stressed enough

– often neglect in this area may result in overall project failure or costly delays. Planning is an ongoing process of refinement with each iteration becoming more detailed and more accurate than the last. The emphasis and purpose of planning shifts over successive iterations.

During the feasibility study and project start-up the main purpose of planning will be to estimate timescales and the risks of not achieving target completion date or keeping within budget. The emphasis will be placed upon the production of activity plans for ensuring resource availability and cash flow control as the project proceeds beyond the feasibility study.

Monitoring and replanning must continue throughout the project to correct any drift that might prevent meeting time or cost targets until the final deliverable has reached the customer" (Saunders F, 2015).

May/June Exam 2017

QUESTION 2 **[12]**

2 1 Differentiate between Information Systems and Embedded Systems Please give one example of each system (2)

2 2 As a potential project manager, if you are given a software project to manage, outline the steps you will consider for planning of the project Name also at least two activities within each step (10)

QUESTION 5 **[10]**

5 1 ABC is a software development company that assists business in different software development You have been recently appointed as junior software project manager in the company Your direct manager mandated you to explain to a new client company (namely Something - Sweety) at least four different models/approaches of software development that you would consider when developing their software Include in your explanation the advantages and disadvantages of the models (6)

5 2 Something Sweety is a small start-up company that buys and sells sweet in large quantity Due to their limited resources (finances) the company has decided to introduce a new computer based inventory management system that will enable them to operate with few staff members but work efficiently in order to make profit The company is uncertain on what to expect since this would be their first software development project As a result, the company wants to be involved and communicate constantly in the development process of their software and at the same time learn in the process

What software development model would you best recommend for Something Sweety and why? (4)

Oct/Nov 2016 Exam

QUESTION 2 [8]

General project management has many similarities with software project management. However, software projects have certain inherent characteristics which make them particularly difficult and different from general projects. Name and discuss the four characteristics that are unique to software projects.

May/June 2016

5.1. Name and describe three ways that a manager can use to visualise this data.
(10)
5.2. Present this data visually in each of the three ways named in the previous question Assume that each activity to a specific person can start at the same time.
(10)

Oct/Nov 2015

QUESTION 3 [

A resource in a project is any item or person required for the execution of the project
a Describe any 5 of the 7 categories of resources in a project **(3 marks each)**
b Give a suitable example for each resource category described in (a) **(1 mark each)**

May/June 2015

4 1 Discuss the difference between *activity-on-arrow* and *activity-on-node* (4)