Software Project Management

INF3708

Assignment 04: Due date 28 September 2018 Compulsory

ASSIGNMENT 04 - SEMESTER 2

ASSIGNMENT 04	
Due date	28 September 2018
Study material	Hughes & Cotterell: Chapters 8 and 9
Total marks	66 marks
If your assignment is late, please DO NOT PHONE OR E-MAIL asking for an extension but include a note in your assignment stating the reason for the late submission and we will decide whether or not it will be marked.	

Instructions:

1. **Download and complete** this assignment and submit online in a .pdf format by performing the calculations.

2. The following unique number has to be assigned to the assignment:

UNIQUE NUMBER:
768696

3. Show all your working (calculations).

Questions on Chapter 8 – Resource allocation

QUESTION 1 [10]

Calculating the cost of Right Solution software development project should be straightforward because the organization has standard cost figures for their staff and other resources. The project is scheduled to be finished in four months (120 days including installation and training of staff) since it is a big project. The staff cost for the Right Solution Project is shown in table 1 below. Peter is the main project manager. Due to planning and other post project review he spends 17 days extra on the project. "You" (call yourself anything) are the developing project manager assisting Peter in the Right Solution project and you only spent 5 day extra. The project overhead cost amount to R500 each day. Emma is scheduled to work daily for the duration of the project. Bester and Steve are training and support specialist so their services would only be needed for only the fourth month (the last 30 days). The remaining project teams members like John (System Design), Ana (Programmer) and Khumo (System tester) will work for three months (90 days) after the first month (30 day) of requirement analysis by Smith.

Staff member	Daily cost
Peter	R1000
"You" (the name here depends on what you call yourself)	R450
John	R500
Ana	R550
Emma	R550
Bester	R200
Steve	R200
Khumo	R400
Smith	R400

Table1 for Question

Based on the information in table 1, calculate the total cost for the Right Solution software development project. Show all your calculation.

Answer

The table below shows the calculation of the total cost of the Right Solution software development project we need to refer to the information for each individual.

Staff member	Daily cos1	Days required	Cost	
Peter	R1000	120+17=137	R 13,7000	1 mark
"You"	R450	120+5=125	R 56,250	1 mark
John	R500	90	R 45,000	1 mark
Ana	R550	90	R 49,500	1 mark
Emma	R550	120	R 66,000	1 mark
Bester	R200	30	R 6000	1 mark
Steve	R200	30	R 6000	1 mark
Khumo	R400	90	R 36, 000	1 mark
Smith	R400	30	R 12, 000	1 mark
Overhead costs*	R500	120	R 60,000	1 mark
Total			R 47, 3750	

***Note:* The overhead cost per day is very important to include in the calculation of the cost of the entire project. The overhead cost is calculated for the number of days for which the project is scheduled and not for additional days that some staff members may work. This cost can easily be overlooked with great influence on the final cost. In this scenario the overhead cost was only R 120, 000.

QUESTION 2 **[20]**

A project involves the design and building of four software modules, called A,B, C and D respectively. The estimated effort for each of the modules is 40 hours for A, 30 for B, 50 for C and 45 for D.

The organization that is undertaking the work assumes for EVA purposes that design takes up 30% of the effort, coding 40% and testing 30%

On the day that this EVA is conducted, the project should have been completed in full. In fact the situation is as follows:

Module	***estimated effort***	***design (actual hrs)***	***code (actual hrs)***	***test (actual hrs)***
A	*40*	*14*	*18*	*14*
B	*30*	*7*	*10*	*5*
C	*50*	*16*	*not completed*	*not completed*
D	*45*	*10*	*not completed*	*not completed*

Where actual hours are shown the task has been completed.

Calculate the following:

schedule and cost variances (SV and CV)
cost performance and schedule performance indicators (CPI and SPI).

Based on your calculations above, what general conclusion might be drawn from these figures about the overall state of the project?

Answer

Module	Overall estimated effort	Est. design hrs 30%	Actual design hours	Est coding hrs (40%)	Actual coding hours	Est Test hours	Actual testing hours
A	40	12	14	16	18	12	14
B	30	9	7	12	10	9	5
C	50	15	16	20	not completed	15	not completed
D	45	13.5	10	18	not completed	13.5	not completed
PV	165						
EV	98.5	49.5		28		21	
AC	94		47		28		19

Module A estimated design hrs at 30% is calculated as: 30/100 x 40/1

Do the same get the remaining estimated hours.

Schedule variance (SV) is ev – pv i.e. or 98.5 – 165 = -66.5.

The schedule performance indicator (SPI) SPI = ev/pv i.e. 98.5/165 = 0.60.

This means that the work is about 40% incomplete, that is seriously behind schedule.

The cost variance (CV) is ev – ac or 98.5-94 i.e. 4.5.

The cost performance indicator (CPI) is 98.5/94 or 1.05.

Where work is being completed, it is being done within the budget. This implies that the problems with the schedule are not necessarily to do with productivity. Non-completion of modules C and D could be because of resource shortages or external events.

QUESTION 3 [26]

In assignment 03 question 4, the below table was given (without resource column) and you were asked to Draw activity-on-node network and calculate earliest start (ES) and Latest finish (LF).

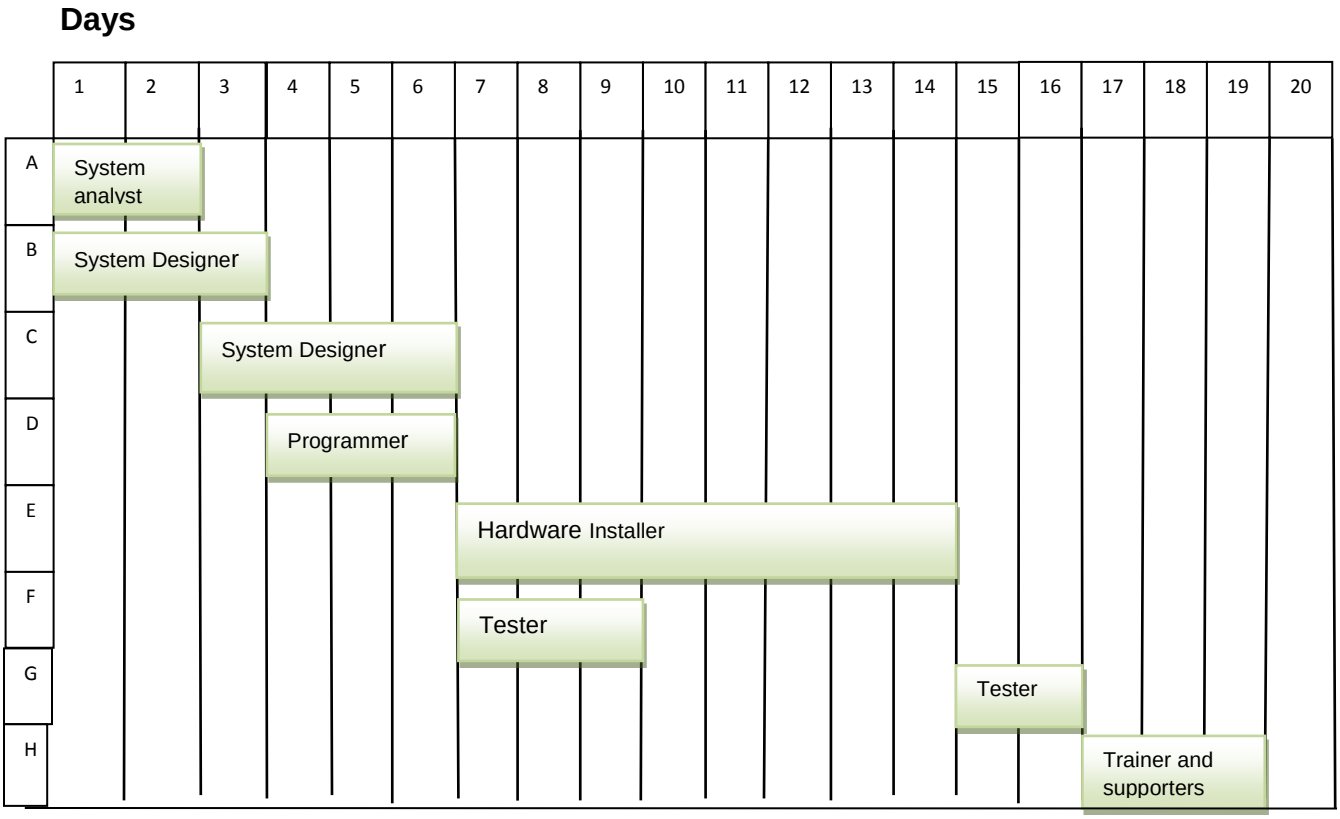
Activity	Resources	Duration (working weeks)	Precedents
A	System analyst	2	None
B	System Designer	3	None
C	System Designer	4	A
D	Programmer	3	B,A
E	Hardware Installer	8	D,C
F	Tester	3	C
G	Tester	2	E
H	Trainer and supporters	3	F,G

Table 2 for question 3

3.1 Use your activity plan (i.e your activity-on-node answer for question 4.1.1) to schedule the resources of the project as indicated in table 2. Assume each project activity is scheduled to start at its earliest start date. (10)

Answer:

Based on the ES and LS in the above figure, resources are scheduled using a bar chart below.



3.2 Assuming that there is only one system designer and tester, draw up a resource table showing the number of each type of resources needed on each day of the project. (10)

Answer

weeks	1-2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SD1	B	B	C	C	C	C													
PROG1			D	D	D														
INSTAL							E	E	E	E	E	E	E	E					
TESTER							F	F	F						G	G			
T&S																	H	H	H
SA	A																		

3.3 What impact did you notice with the duration of the project given the limited resource (designer and tester) (4)

Answer

Though activity C depends only on activity A to start, the resource restriction has made this impossible [2]. Both Activity B and C depends on one system designer and activity B comes before activity C, so according to the resource table, activity C can only start after the system designer is finished activity B. This is the only time the system designer can be free to start activity C since is only one person. This affects the project completion time.

3.4 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.

QUESTION 4 [10 Marks]

After calculating the schedule variance and scheduled performance indicator, the project manager responsible for the project in question 2 of this assignment realized that the project might be behind schedule.
Discuss the two main strategies the project manager should consider when drawing up plans to bring the project back on target.

Answer

The solution for this question is explained in detail in section 9.8 particularly from page 230 to 231.

Shortening the project critical should be considered when drawing up plans to bring the project back on track. This can be achieved by **increasing the use of current resources** level by making the staff available for longer time. Staff might be asked to work overtime for the duration of an activity and computing resources might be made available at times when they might otherwise be unreachable. Project critical path can be shorten by project manager **allocating more efficient staff to activities critical path (reallocation of staff to critical activities)** or swapping resources between critical and

non-critical activities. Another way is for the project manager to reduce the amount of work to be done by **reducing the scope of the project**.

The second strategy is **reconsidering the precedence requirements**. If effort to shorten critical activities prove not sufficient, a project manager can consider the constraints by which some activities have to be deferred pending completion other activities. Probably the original project network drawn up with the assumption of ideal conditions and normal working practices. In order to avoid late delivery of project, project managers might need to start interrogating the original project network whether as yet un-started activities really do have to await the completion of others. One way to overcome