SOFTWARE PROJECT MANAGEMENT
TUTORIAL LETTER 204
FOR

INF3708

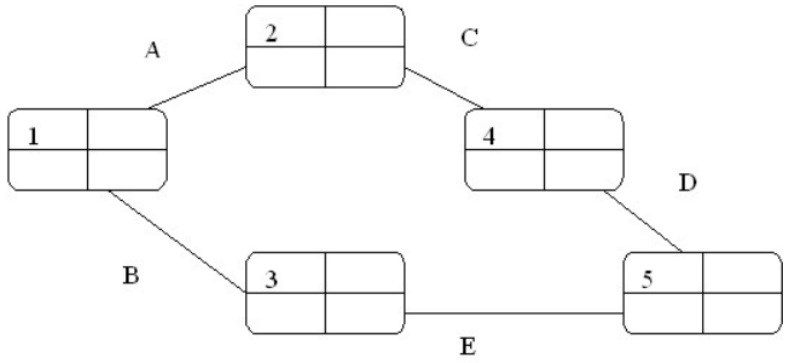
Assignment 04: Due date 10 April 2015

Unique nr: 594175
Marks weight: 30%

ASSIGNMENT 04 – SEMESTER 1

ASSIGNMENT 04	
Due date	10 April 2015
Study material	Hughes & Cotterell: Chapters 6, 7 & 9
Total marks	50 marks = 100%
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.	

Question 1: Questions on Chapter 7 (25 marks)
In the PERT network illustrated in the figure below, the targeted date for the completion of the project is nine (9) weeks.



	Optimistic (a)	Most likely (m)	Pessimistic (b)	Expected (t_e)	Standard deviation (s)
A	1	2	3		
B	3	4	5		
C	2	3	4		
D	1	2	3		
E	3	4	5		

Table: *Values for the PERT network*
Use the table above to calculate the following:
1.1 Calculate the expected (te) values and standard deviation (s) (10)

Use the formula below to calculate the te values of each activity:

$$t_e = \frac{a + 4m + b}{6}$$

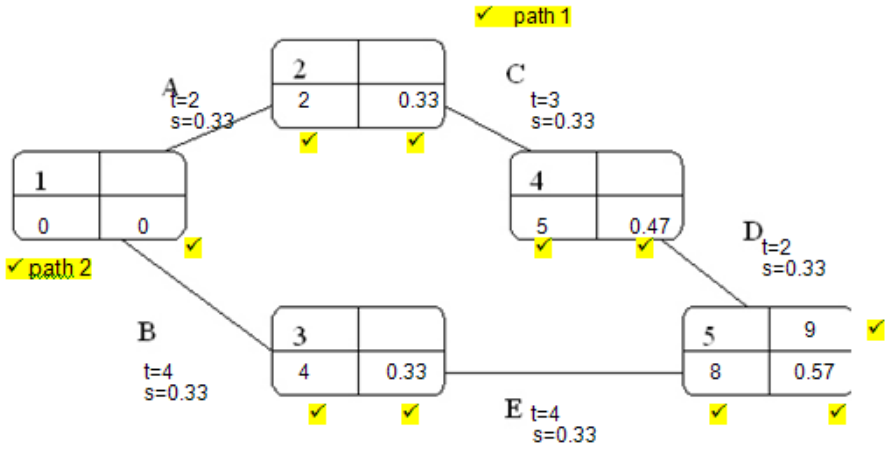
Calculating the t_e value of Activity A: $t_e = [1 + 4(2) + 3] / 6 = 12 / 6 = 2$ ✓
Calculating the t_e value of Activity B: $t_e = [3 + 4(4) + 5] / 6 = 24 / 6 = 4$ ✓
Calculating the t_e value of Activity C: $t_e = [2 + 4(3) + 4] / 6 = 18 / 6 = 3$ ✓
Calculating the t_e value of Activity D: $t_e = [1 + 4(2) + 3] / 6 = 12 / 6 = 2$ ✓
Calculating the t_e value of Activity E: $t_e = [3 + 4(4) + 5] / 6 = 24 / 6 = 4$ ✓

Use the formula below to calculate the s values of each activity:

$$s = \frac{b - a}{6}$$

Calculating the s value of Activity A: $s = [3 - 1]/6 = 2 / 6 = 0.3$ ✓
Calculating the s value of Activity B: $s = [5 - 3] / 6 = 2 / 6 = 0.3$ ✓
Calculating the s value of Activity C: $s = [4 - 2] / 6 = 2 / 6 = 0.3$ ✓
Calculating the s value of Activity D: $s = [3 - 1] / 6 = 2 / 6 = 0.3$ ✓
Calculating the s value of Activity E: $s = [5 - 3] / 6 = 2 / 6 = 0.3$ ✓

1.2 Indicate the t_e and s values on the diagram. (12)



1.3 Calculate the Z value on the last event (2)

$$Z = \frac{T - t_e}{S}$$

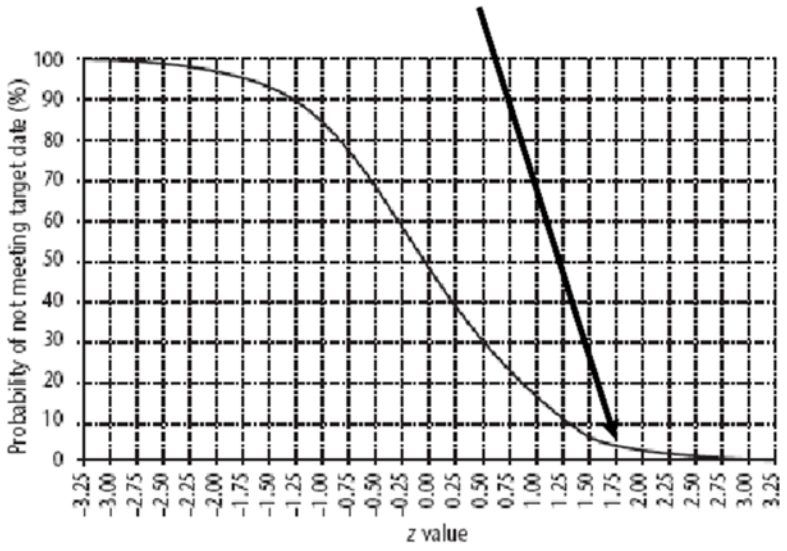
Z = (T – te)/S
= (9 – 8)/0.57 ✓

= 1/0.57

= 1.75 ✓

1.4 According to figure 7.8 in your textbook, what is the probability of not meeting the target date? (1)

The probability of not meeting the target date is approximately 5%. Any value from 4% to 6% is acceptable because it is not easy to pinpoint the precise value from the graph. ✓



Question 2: Questions on Chapter 7, Chapter 6 and Chapter 9 (25 marks)

2.1 Discuss the categories of cost. (6)

- *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.

2.2 Explain what is a critical path. (3)

There will be at least one path through the network or activity planning diagrams that defines the duration of the project.

The *Critical Path* is the longest path through the network; it is the path joining all nodes with a slack of zero.

2.3 The timeline chart is useful both during the execution of a project and as part of the post-implementation review. John is the project leader and his duty is to make sure the project is finished in time. The other members and their job specifics are:

Anna – Analyse existing systems (2 weeks)

Bennie – Obtain user requirements (3 weeks)

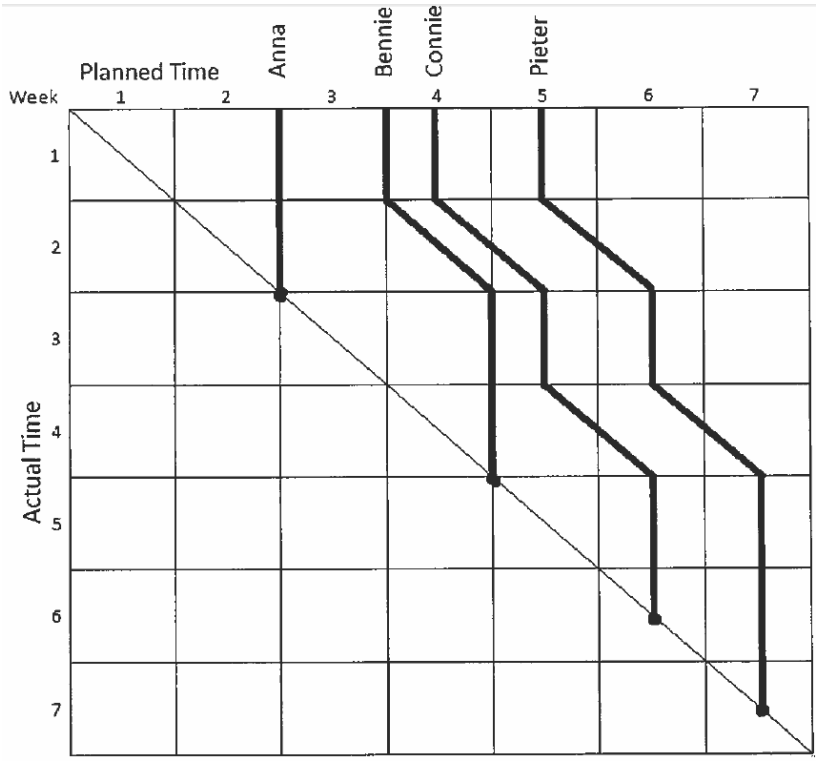
Connie – Plan office layout (3,5 weeks)

Pieter – Issue tender (4,5 weeks)

(Note: the weeks in brackets are the scheduled time for the project to be completed.)

After the second week Anna is on schedule with her work but Bennie is delayed with a week. At the end of the third week Bennie did not experience further delays. By the end of the fourth week Bennie is finished but now Connie is delayed with a whole week. This was the last delay in the project.

Draw a timeline chart, based on the information provided above. (8)



2.4 Discuss *Monitoring Earned Value*. (8)

This question was marked based on individual student approach. See textbook:

The next target after creating the baseline budget (PV) is to monitor *earned value* (EV) as the project progresses. This is achieved by monitoring the completion of tasks (or activity starts and milestone achievements in the case of the other crediting techniques). As well as recording *earned value* (EV), the actual cost of each task can be collect as *actual cost* (AC). This is also known as the *actual cost of work performed* (ACWP).

The following performance statistics can be derived from, or shown directly on, an earned value analysis chart:

- Schedule variance (SV): This is measured in cost terms as *earned value minus planned value* (SV = EV - PV) and indicates the degree to which the value of completed work differs from that which was planned. A negative SV value means the project is behind schedule.
- Time variance (TV): This is the difference between the time when the achievement of the current earned value was planned to occur and time now.
- Cost variance (CV): This indicates the difference between the earned value (or budgeted cost) and the actual cost of completed work, calculated as CV = EV - AC. It can also be an indicator of the accuracy of the original cost estimates. A negative CV means that the project is over cost.
- Performance ratios: Two performance ratios are generally tracked: *Cost Performance Index* (CPI = EV/AC) and the *Schedule Performance Index* (SPI = EV/PV). These two ratios can be thought of as 'value-for-money' indices. A value greater than one indicates that work is being completed better than planned, whereas a value of less than one means that work is costing more than and/or proceeding more slowly than planned.

CPI can also be used to produce a revised cost estimate for the project (*estimate at completion*, EAC). EAC is calculated as BAC/CPI where BAC (*budget at completion*) is the current projected budget for the project. Similarly, the current SPI can be used to project the possible duration of the project given the current rate of progress.