

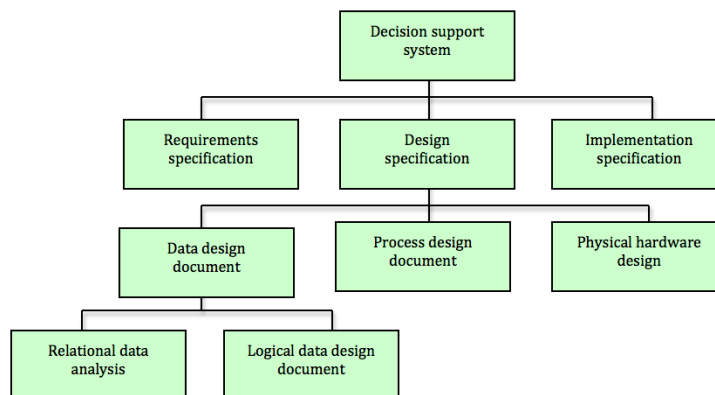
Exercise 1

1



Exercise 1

- A **product breakdown structure** for the *Decision support system* needed to produce the **Implementation specification**



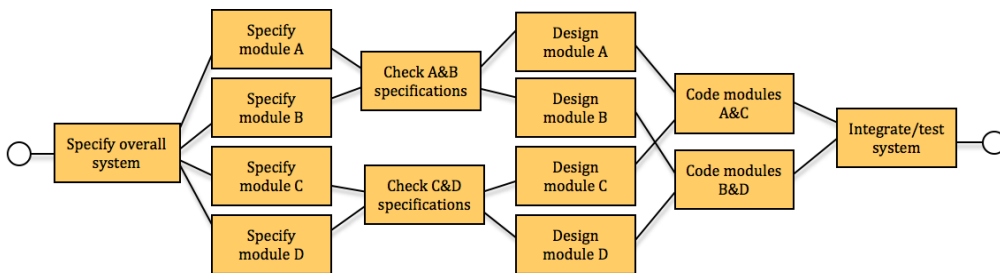
- **TASK:** Based on the Product Breakdown Structure draw a possible **Product Flow Diagram**

2

Exercise 2



Exercise 2



• **TASK:** Using the activity durations given in the table, calculate the *earliest completion date* for this project and identify the *critical path(s)* on the network

Activity	Estimated duration (days)	Activity	Estimated duration (days)
Specify overall system	10	Design module A	15
Specify module A	4	Design module B	17
Specify module B	7	Design module C	10
Specify module C	3	Design module D	13
Specify module D	5	Code modules A&C	25
Check A&B specifications	12	Code modules B&D	22
Check C&D specifications	9	Integrate/test system	3

Exercise 3

5



Exercise 3

- **Situation 1:**
 - A finance director needs to ensure that a software application is changed to conform with new legal requirements.
- **Situation 2:**
 - A system analyst needs clarification of what is meant by a particular term used in a banking domain.
- **Situation 3:**
 - The novice bank clerk does not understand how he needs to perform the financial transaction using the online banking system

TASK: Describe what would be the best *mode of communication* for these three situations

6

Exercise 4

7



Exercise 4

- A new project has *average* novelty for the software supplier that is going to execute it and thus given a *low* rating on this account for precedentedness (PREC). Development flexibility (FLEX) is *high*, but requirements may change radically and so the risk resolution exponent (RESL) is rated *very low*. The development team is all located in the same office and this leads to team cohesion (TEAM) being rated as *very high*. But the software house as a whole tends to be very informal in its standards and the procedures and the process maturity driver (PMAT) has therefore been given a rating of *low*.

- **TASK:**

- Calculate the *scale factor* (*sf*) in this case
- Estimate the overall *effort* if the size of the application is estimated as 2000 lines of code

8

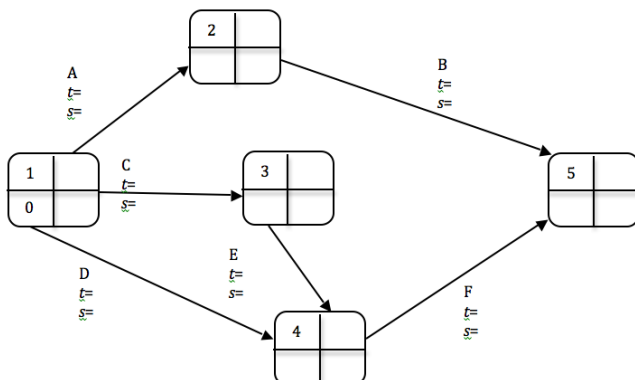
Exercise 5



Exercise 5

Application of PERT

Activity	Optimistic time (a)	Most likely time (m)	Pessimistic time (b)	Expected time (t)	Standard deviation (s)
A	4 (weeks)	5 (weeks)	7 (weeks)		
B	6	9	10		
C	5	7	9		
D	2	3	6		
E	3	6	9		
F	1	2	3		



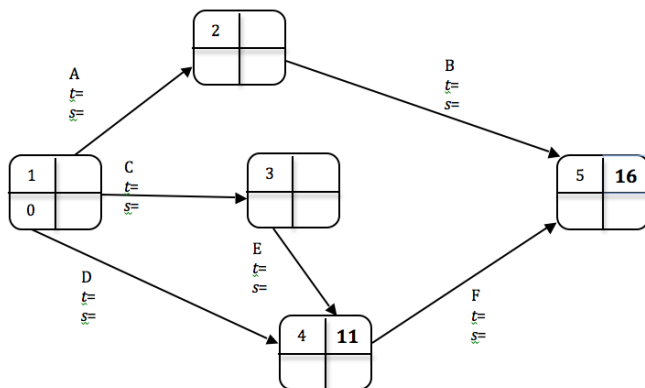
- T1:** Calculate *the expected duration* and *standard deviation* for each *activity*
- T2:** Identify *the critical path*
- T3:** Calculate the *standard deviation* for each project *event (node)*



Exercise 5

Application of PERT

Activity	Optimistic time (a)	Most likely time (m)	Pessimistic time (b)	Expected time (t)	Standard deviation (s)
A	4 (weeks)	5 (weeks)	7 (weeks)		
B	6	9	10		
C	5	7	9		
D	2	3	6		
E	3	6	9		
F	1	2	3		



T4: Calculate **z values** for each node that has a target date

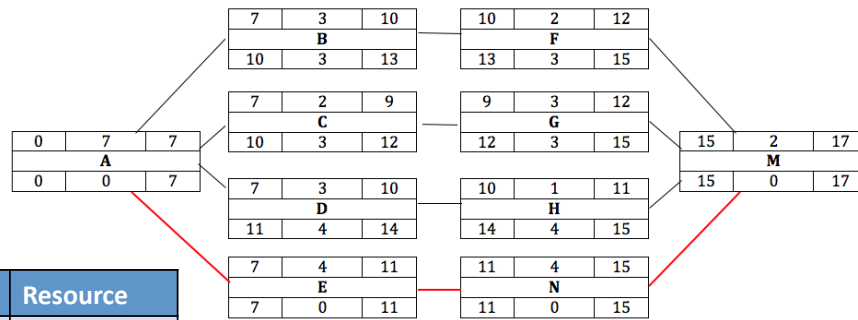
T5: Convert **z values** to probabilities

- What is a probability to complete **activity E** by week **11**?
- What is a probability to complete the **project** within **16** weeks?

Exercise 7



Exercise 7



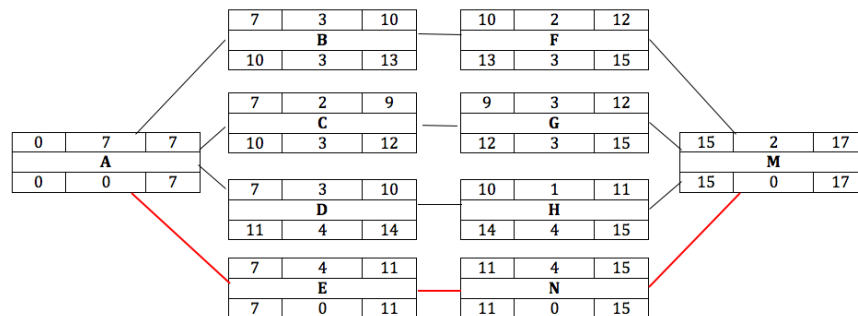
Activity	Weeks	Resource
A	7	Analyst
B	3	Designer
C	2	Designer
D	3	Designer
E	4	Designer
F	2	Developer
G	3	Developer
H	1	Developer
N	4	Developer
M	2	Analyst

- Resources to run this project:
 - One analyst
 - Three designers available until the end of week 11
 - Three developers available after week 11 and only two developers available after week 13
- TASK:** What is the impact of resource assignment to the activity network
 - What are the critical activities and critical paths after the resource allocation?

13



Exercise 7



- Draw the resource histogram assuming that every activity starts as early as possible
- Smooth the histogram taking into account the available resources
- Draw the new activity network according to smoothed histogram
 - Identify critical activities
 - Identify critical paths

Exercise 8

15



Exercise 8

- **Usability quality**
 - **Q1:** The system could have only few major problems
 - **Q2:** Majority of users shall find system easy to learn (easiness was precisely defined before asking the users)
- **Performance quality**
 - **Q3:** When switching to the next screen typing must be possible after very short delay. It should take short time to showing simple report screens.
 - **Q4:** In standard workload, the task should be performed quickly.
- **Security quality**
 - **Q5:** information losses should be very small during long period.

TASK: Define **fit criteria** for each of these qualities