



# Exercises

- **7 exercises** (E1, E2, E3, E4, E5, E7, and E8)
  - Released on the **23.April**
    - Check the course website!
  - Solutions submitted by the **30.April (firm!)**
    - Email your solutions to [rma@ut.ee](mailto:rma@ut.ee)
    - Subject: **[Proj. Mng.] E1-8**

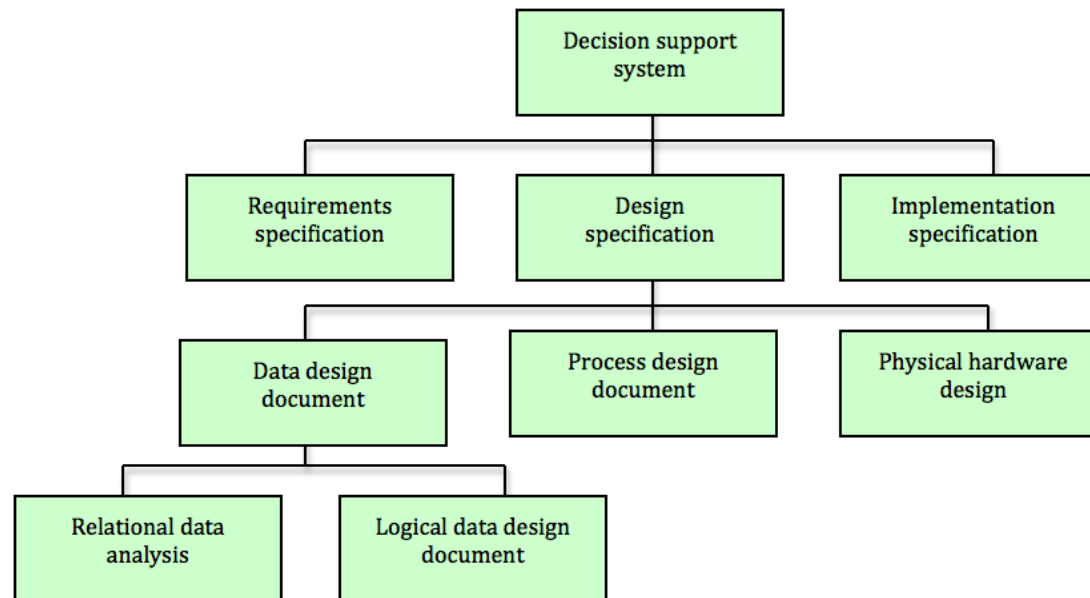
To change (increase/decrease) the exercise score  
solutions to **ALL** seven exercises **MUST** be  
submitted

# Exercise 1



# Exercise 1

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

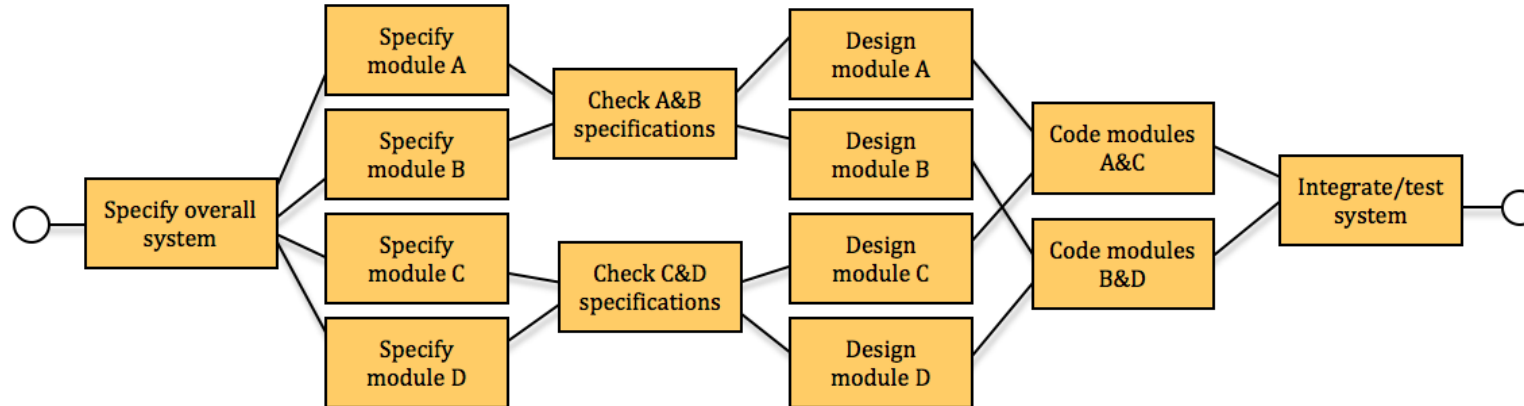


- **TASK:** Based on the Product Breakdown Structure draw a possible **Product Flow Diagram**

# 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



# 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

# Exercise 4





## 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

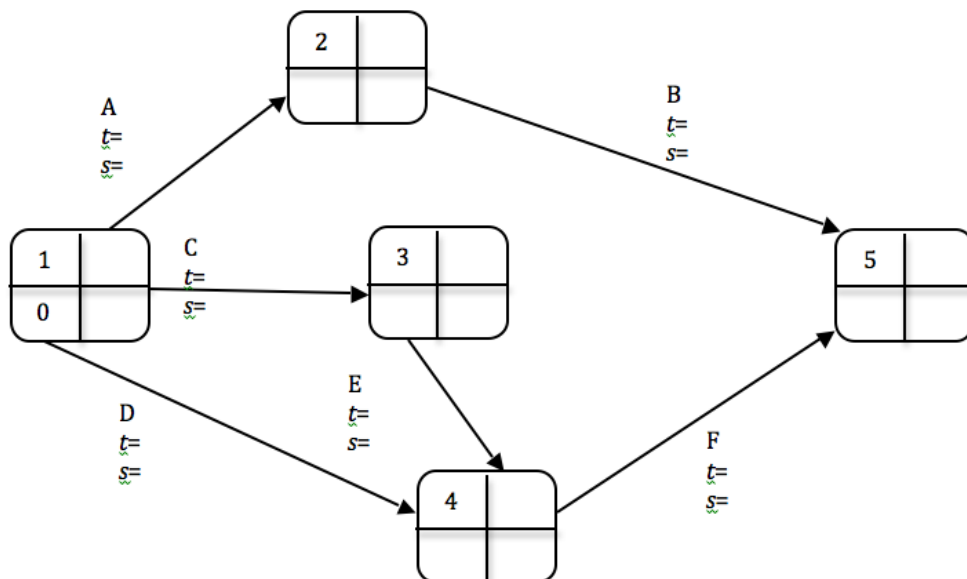
# Exercise 5



# 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*

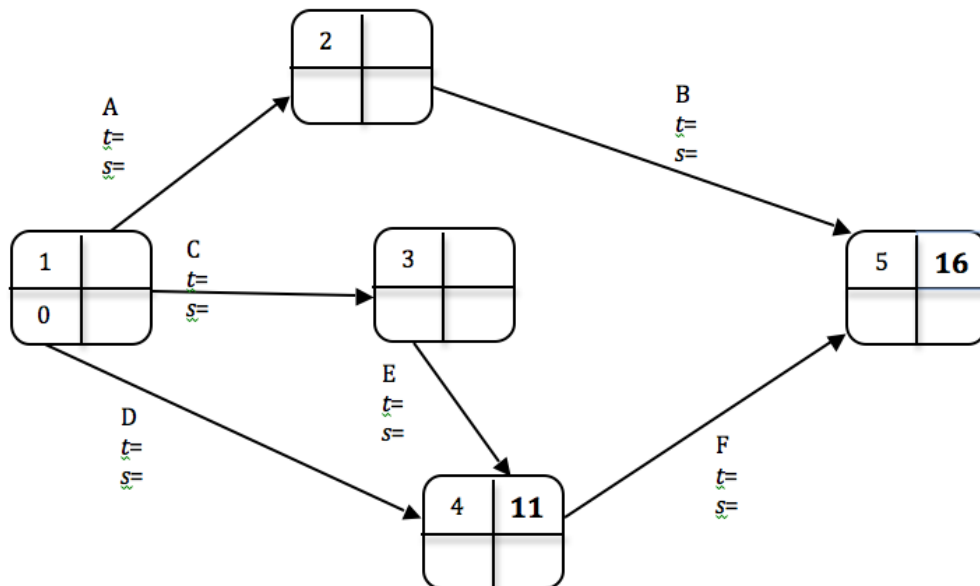
**T3:** Calculate the *standard deviation* for each project *event* (node)



# 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

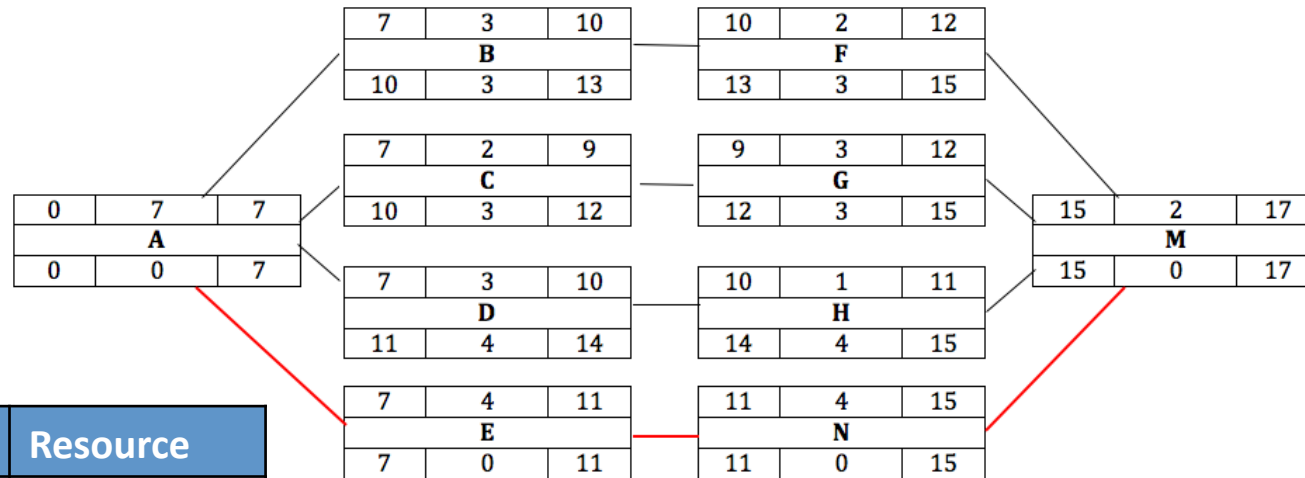
**T5:** Convert **z values** to probabilities

- 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

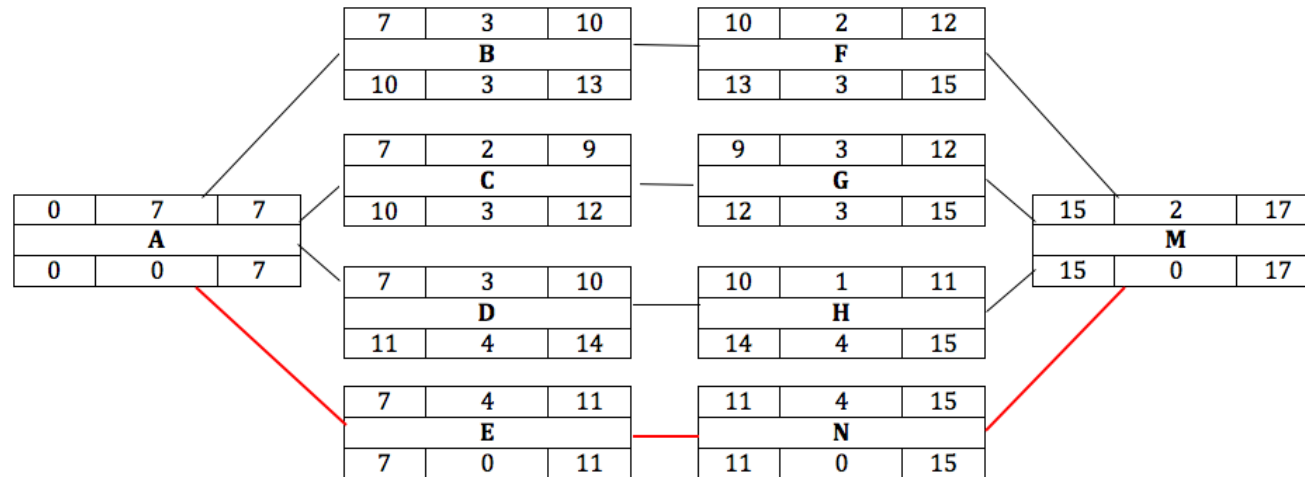


Activity	Weeks	Resource
A	7	Analyst
B	3	Designer
C	2	Designer
D	3	Designer
E	4	Designer
F	2	Developer
G	3	Developer
H	1	Developer
N	4	Developer
M	2	Analyst

- 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?



# 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





# 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