School of Library Archive and Information Studies

Module INST0031 - systems management

Network analysis exercises

With acknowledgement to Robin Beaumont and Nigel Hartland

The following exercises (in two sections) will give you practice in the techniques we have been looking at relating to network analysis and planning. You have the rest of the morning's class session to get as far as you can, but you should complete all the exercises in the first section before next week's class, when we will review the results. The exercises in the second section are optional, and you may undertake some, all, or none of them as you wish, but you may find them useful...

Section 1: Mandatory exercises

Exercise 1

Draw a network diagram for "sending a letter" including the following activities:

- Write letter
- Put in envelope
- Address letter
- Put stamp on letter
- Post letter

Exercise 2

Draw a Network diagram and determine the Critical Path and duration of the project (in days) for the following data.

Activity	Durations (Days)	Preceding Activity
A	1	-
B	4	A
C	2	A
D	3	A
E	3	B,C,D
F	3	E

Exercise 3

Draw a network diagram for "writing a research paper" including the following activities:

- Agree subject area with supervisor
- Review literature
- Prepare section headings
- Prepare first draft
- Initial discussion of first draft with supervisor
- Email first draft for per review
- Collate email review comments
- Prepare final draft
- Discuss final draft with supervisor
- Prepare final version
- Disseminate
- Review comments on final version
- Present findings

Exercise 4

Draw a Network diagram and determine the Critical Path and duration of the project (in days) for the following data.

Activity	Durations (Days)	Resources used	Preceding Activity
A	2	Designer A	-
B	1	Fitter A	A
C	2	Fitter B	A
D	2	Fitter C	B,C
E	3	Engineer A	D
F	4	Engineer B	D
G	2	Inspector	E,F

If Activity **C** was increased by 2 days what would happen to the duration of the project and why?

Could activity **E** be increased by 1 day and have no affect on the duration of the project?

If the cost per day is **£1000** what is the total cost of the project?

(if you have time, you might like to produce a **Gantt** chart of the data too)

Exercise 5

Draw a network diagram for "putting on a half day seminar".

Section 2: Optional exercises

Exercise 6

Draw the Network diagram and determine the Critical Path and duration of the project (in days).

Activity	Activity	Durations (Days)	Resources used	Preceding Activity
A	Cut material	1	Machine A	-
B	Drill material	3	Machine B	A
C	Cut material	2	Machine A	B
D	Shape material	3	Machine C	B
E	Cut material	1	Machine A	D
F	Polish material	4	Machine D	C,E

What is the most that activity **C** could be increased by to have no affect on the overall duration of the project? Could activity **B** be increased by 2 days and have no affect on the overall duration of the project? What level of slack is available on activity **D** ?

Exercise 7

Activity	Durations (Days)	Resources used	Preceding Activity
A	2	Machine A	-
B	3	Machine B	A
C	1	Machine C	A
D	4	Machine D	C
E	5	Machine A	D
F	2	Machine E	B
G	3	Machine C	B
H	5	Machine B	F,G
I	2	Machine A	H
J	3	Machine E	E,I

If the cost per day is **£2000**, what is the overall cost of the project? Could activity **E** be increased by 2 days and have no affect on the duration of the project? What is the most that activity **D** can be increased by to have no affect on the overall duration of the project ? (NB you might find it helpful here if you create a **Gantt** chart of the data)

Exercise 8

Draw a network diagram for your career development in the next five years... ☺