Seminar 8:

Critical Path Method

Problem 1: (Hillier and Lieberman, 10.3-1.)

You and several friends are about to prepare a lasagna dinner. The tasks to be performed, their immediate predecessors, and their estimated durations are as follows:

Task	Task Description	Tasks that Must Precede	Time
A	Buy the mozzarella cheese		30 minutes
B	Slice the mozzarella		5 minutes
C	Beat 2 eggs		2 minutes
D	Mix eggs and ricotta cheese		3 minutes
E	Cut up onions and mushrooms		7 minutes
F	Cook the tomato sauce		25 minutes
G	Boil large quantity of water		15 minutes
H	Boil the lasagna noodles		10 minutes
I	Drain the lasagna noodles		2 minutes
J	Assemble all the ingredients		10 minutes
K	Preheat the oven		15 minutes
L	Bake the lasagna		30 minutes

a) Complete the table.

b) Construct the project network for preparing this dinner.

c) Use CPM to find minimal realization time and determine the critical path

d) Because of a phone call, you were interrupted for 6 minutes when you should have been cutting the onions and mushrooms. By how much will the dinner be delayed? If you use your food processor, which reduces the cutting time from 7 to 2 minutes, will the dinner still be delayed?

Problem 2:

The project is defined by the table:

Activity	duration	immediate predecessors
A	5	-
B	9	-
C	11	A, B
D	6	B
E	7	A
F	5	C,D
G	9	C, E

a) Construct the project network

b) Use CPM to find minimal realization time and determine the critical path

Problem 3: The project is defined by the table:

Activity	duration	immediate predecessors
A	4	-
B	1	-
C	3	B
D	3	A, B
E	1	B
F	5	B
G	4	C, D
H	4	C, D, F

a) Construct the project network

b) Use CPM to find minimal realization time and determine the critical path

c) Use Excel template http://www.vertex42.com/ExcelTemplates/critical-path-method.html for the construction of Gantt chart.