



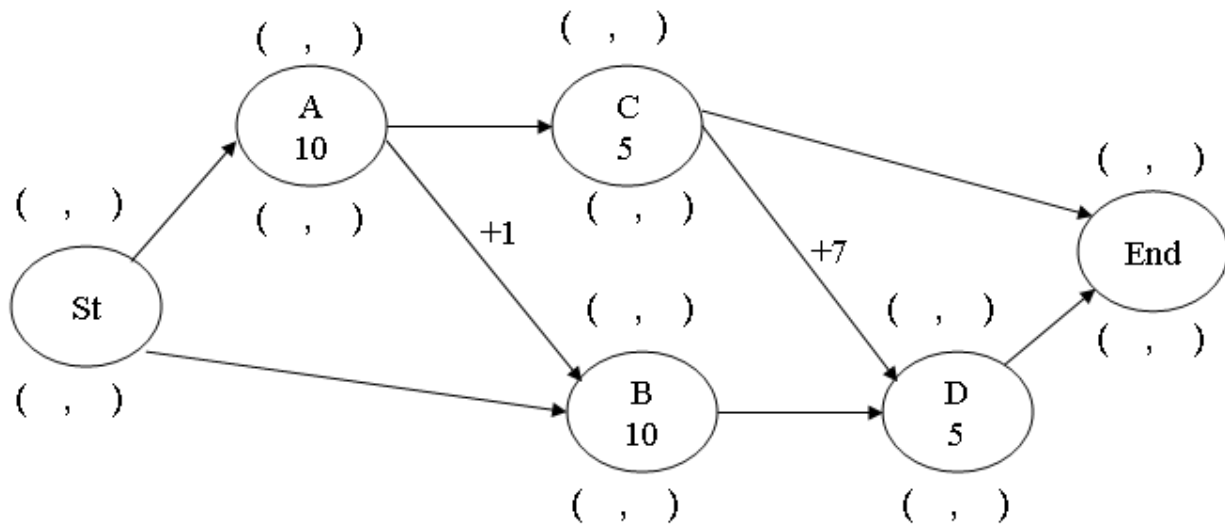
Université d'Ottawa · University of Ottawa

School of Electrical Engineering and Computer Science (EECS)

EMP 5117, Winter 2018

**Assignment 1**

**Q1 a)** In the network diagram below, activity durations and lag/lead times are given in months. Find the Critical Path, filling all the early and late start/finish times. **(15 marks)**



**b)** Use the table on the right and fast-track the above project as much as possible to find the shortest finishing time and the total extra cost. Assume idle staff cannot be assigned to other tasks, due to expertise limitations. **(15 marks)**

Activity	Maximum Crashing (months)	Cost per Month Crashed (\$)
A	0	N/A
B	3	1000
C	2	800
D	1	500

**Q2 (10 marks)**- When estimating size using Function Points, we multiply the *raw* estimate by a Complexity Adjustment Factor that is given by  $CAF = 0.65 + 0.01 \times N$ ; where  $N$  is the weighted sum of all the 14 environmental factors, to obtain the *adjusted* estimate. Prove that the  $CAF$  is essentially a  $\pm 35\%$  accuracy multiplier.

**Q3 (5 marks)**- Explain why throwing more resources at a project can only shorten the duration up to a certain threshold, and not more.

**Q4 (10 marks)**- In your project planning as a Project Manager for Madeup Inc., you have reached a stage where you need to estimate the size of the most important component of the software to be built. You use three approaches for estimating, each of which gives you a different result: beta distribution (6000 LOC), Blitz (4000 LOC), and Delphi (3000 LOC). Assuming you use the Incremental and Iterative Development Process, explain which estimate you will use and why?

**Q5 (5 marks)**- Can you think of any scenario where using a Waterfall life cycle can be justified for software development? Explain.

**Q6 (10 marks)**- Why does *late design breakage* lead to software that is more costly and less robust?

**Q7 - a)** Explain why at the beginning of a project, we should address the riskiest work first, as opposed to the easy work? **(5 marks)**

**b)** At which phase(s) of the project do we concentrate more on the riskiest components? **(3 marks)**

**c)** By which phase of the project should we know already whether or not we are able to deliver the risky components? **(2 marks)**

**Q8 (10 marks)**- A Basic Semiattached software project has been estimated, using COCOMO, to require 200 staff-days. What is the size of this software? Given adequate resources, how long will it take to complete the development of this software?

**Q9 (10 marks)**- What is *the ripple effect*? And what is its effect on project budget?