Assignment No 4.

CS656 Spring, 2016

Due Date: April 1, 2016

Download USC-COCOMOII software and manual, read the manual carefully and answer to the following questions: (Note: Insert the screenshots for your answer)

1. Suppose you have two 100 SLOC programs to develop. Both are nominal, except that one has very high complexity and the other very low. You are also have two teams of analysts and programmers, one with very high analyst and programmer capabilities and the other with very low. You have two staffing options:
   (a) Staff the very high complexity job with the very high capability personnel, and vice versa.
   (b) Staff the very high complexity job with the very low capability personnel, and vice versa.

   What is the total effort required to develop the two programs for two options?
   How do you think the two options would compare with respect to the likely morale and job satisfaction of the two teams?

2. A venture company at KAIST is planning to develop an inventory control system on their existing computer. They are considering five levels of sophistication of the inventory control program, and have estimated the required software size in SLOC and resulting life-cycle savings in reduced inventory costs as follows:

Level	A	B	C	D	E
Program Size (KSLOC)	20	40	60	80	100
Inventory Savings ($K)	600	1100	1500	1800	2000

Assuming that you use the COCOMO II model with all nominal scale factors and cost drivers, and a personnel cost of $6000 per PM.

Determine the level of inventory control program which maximize the best net savings for General Appliance. Is there a derivative which is equal to zero at this point?

3. KAIST is developing a computer program for student registration and class assignment. The following table represents the estimated number of students the program would be able to serve per hour, as a function of the size of the program in KSLOC:

Size (KSLOC)	5	10	15	20	25	30	35	40
Students/hour	40	100	200	800	1100	1200	1250	1260

Graph the production function relating students per hour served, as output to software development person-months as input, assuming COCOMO II with all nominal. Identify the investment, high payoff, and diminishing returns segments of the production function.

4. Consider the TPS example discussed in the class with $V_T = 2$ and $C(N) = 180 + 10N$. For the case S=1000, P=200, and T=20, derive an equation for N_{max} in terms of the microprocessor overhead factor M. Determine N_{max} for M=200, 100, 50, 25.