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***Questions & State Machines***

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**Question #1**

{

while (x!=y)

If (x>y)

x=x-y;

else

y=y-x;

return x;

}

n1 =14

n2 = 4

n= n1 + n2 = 14 + 4 = 18

N = n1 log n1 +n2 log n2

=14 log 14 + 4 log 4

= 18.454

V = N log(n) = 18.454 log(18)

= 23.165

Physical lines = LOC = 10

Logical lines = L(SLOC) = 5

Coment lines = CL = 1

**Question #2**

Basic COCOMO estimation formula for organic software:  
  
Effort = 2.4 \* (40)1.05 = 115 PM   
Nominal development time = 2.5 \* (115)0.38 = 15 months   
  
Cost required to develop the product = 14 \* 6,000   
                                                  = Rs. 90,000/-

So it’s better to buy the pre build software.

**Question # 3**

The different parameters of a project that need to be estimated include—project size, effort required to complete the project, project duration, and cost. Accurate estimation of these parameters is important, since these not only help in quoting an appropriate project cost to the customer, but also form the basis for resource planning and scheduling.

• Empirical estimation techniques

• Heuristic techniques

• Analytical estimation techniques

In general, COCOMO II estimates project cost, derived directly from person-months effort, by assuming the cost is basically dependent on total physical size of all project files, expressed in thousands single lines of code (KSLOC). The estimation formulas have the form: Effort = 2.4 \* (KLOC)1.05 = x PM

There are similar COCOMO formulas for project duration (expressed in months) and average size of project team. Interestingly, project duration in COCOMO is approximately cube root of effort (in person-months).

In practice, COCOMO II parameters can be greatly different from its typical values. Many project managers used to negotiate project costs with trade-off triangle and trade-off matrix in terms of product functionality, quality, and schedule. If this is a case for you, you might be intrigued how COCOMO II adjustment parameters fit into this picture. The answer is that COCOMO II parameters can be viewed as two sets of parameters.

There are well-approbated COCOMO II tools on the market that calculate these parameters for you, asking questions about particular project in natural language, such as “How experienced is the development team?” or “How tough is the project schedule?” and, thus, hiding model details in the background.

COCOMO II captured earlier version of COCOMO such as COCOMO 81, Ada COCOMO, which are considered by now as outdated. The model simplifies inception phase cost estimates by reducing the total number of parameters to seven (from 15 in the original COCOMO model), and suggests to use functional points for inception phase, and SLOC for later, more accurate phases. In fact, COCOMO II reduces controversy of what project metrics to use – SLOC or functional points – making the new model more flexible.