



## **NORTH SOUTH UNIVERSITY**

Department of Electrical and Computer Engineering (ECE)

### **COCOMO Effort estimation, Budgeting, Two Time line charts**

**Course:** CSE327 (Software Engineering)

**Section:** 5

**Group:** 3

**Project Topic:** Fitness Center Management System

#### **Submitted To:**

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## **COCOMO Effort Estimation:**

Given Project Characteristics:

SLOC (Source Lines of Code) = 200,000 (as assumed)

Project Type: Semi-detached

Coefficient for Semi-detached projects: 3.0

Using the COCOMO equations with the provided coefficient:

### **1. Calculate Effort (PM):**

Effort (PM) = Coefficient \* Effort Factor \* (SLOC / 1000) ^ P

For a Semi-detached project, the coefficient is 3.0, the effort factor is 1.05, and P is 1.12 (since our project is intermediate).

$PM = 3.0 * (200,000 / 1000) ^ 1.12$

$PM \approx 1133.11$  person-months

### **2. Calculate Development Time (DM):**

Development Time (DM) = 2.50 \* (PM) ^ T

For a Semi-detached project, T is 0.35.

$DM = 2.50 * (1133.11) ^ 0.35$

$DM \approx 29.30$  months

### **3. Calculate Required Number of People (ST):**

Required Number of People (ST) = PM / DM

$= 1133.11 / 29.30$

$ST \approx 38.67$  people (round up to the nearest whole number)

So, based on the COCOMO model and the updated coefficient for the Semi-detached project type, my project might require approximately 1133.11 person-months of effort, take around 29.30 months to complete, and necessitate a team of approximately 38 people (rounding up)

## **Constructive Cost Model:**

Project Type	: Organic
Coefficient <sub>&lt;Effect Factor&gt;</sub>	: 2.4 {P=1.05; T=0.38}
SLOC	: 10000 lines
Person month, PM	: $(2.4 * 10^{1.05}) = 26.928$
Dev.Time, DM	: $(2.5 * 26.928^{0.038}) = 8.73 = 9 \text{ months} = 1584 \text{ Workings hours Required}$
People ST	: $PM/DM = 3.08 = 4 \text{ people}$

## **Budgeting:**

Developer salary in 9 months:

Pre developer Salary per working hour = 500tk Total Development Salary =  $500 * 1584 = 7,92,000 \text{ Tk}$

## **Requirements Analysis:**

Time needed: 1.5 months = 264 hours

Requirement analysis Person's Hourly wage = 350 tk

Total Req. Analysis Cost:  $264 * 350 = 92,400 \text{ tk}$

Transportation Cost Estimated: 20,000 tk

Training and Hardware Expense Estimate: 1,00,000 tk

Rent Expense:

Room per month = 10,000 tk

Total Room rent = 90,000 tk

Total Utilities in 8 months: 20,000 tk

**Maintenance (Till 6 months after the delivery):**

Expense per hour : 1000 tk

Estimated time needed : 60 Hours

Total Estimated maintenance cost =  $60 \times 1000 = 60,000$  tk

**Total Estimated Expense:**

$7,92,000 + 92,400 + 20,000 + 1,00,000 + 90,000 + 20,000 + 60,000 = 11,74,400$  tk

**Profit:**

20% of total Estimated Expense:  $1174400 \text{ tk} \times 20\% = 2,34,880$  tk

**Project Budget:  $11,74,400 + 2,34,880 = 14,09,280$  tk**

# Timeline Chart

