Costing of project using COCOMO Model

**Step 1:** Measure the size in terms of the amount of functionality in a system. Function points are computed by first calculating an unadjusted function point count (UFC).

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. no.** | **Function points** | **Number** | **Description** |
| 1 | User inputs | 6 | Login, Add/View/Delete Company, View Student List, Approve Students, Add/View/Delete job related post, View Assessment Score |
| 2 | User outputs | 4 | View Student List, View Assessment Score, View Top Candidate, Result declare (Email send) |
| 3 | User requests | 9 | Add/View/Delete Company, Approve Students, Add/View/Delete job related post, Add/View/Delete Job Post, Conduct Quiz (The Big-5 Personality Traits), Track Status of Placement |
| 4 | Internal Files | 1 | Database |
| 5 | External interfaces | 1 | Naive Bayes algorithm (for prediction/classification) |

**Step 2:** Multiply each number by a weight factor according to complexity of the parameter, associated with that number.

Complexity considered is average.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. no.** | **Function points** | **Number** | **Weight Factor** | **Multiplication** |
| 1 | User inputs | 6 | 4 | 24 |
| 2 | User outputs | 4 | 5 | 20 |
| 3 | User requests | 9 | 4 | 36 |
| 4 | Internal Files | 1 | 10 | 10 |
| 5 | External interfaces | 1 | 7 | 7 |

**Step 3:** Calculate the total UFP (Unadjusted function points) by adding the multiplication column in above table

UFP = 24+20+36+10+7

UFP = 97

**Step 4:** Calculate the total TCF (Technical Complexity Factor) by giving a value between 0 and 5

|  |  |  |
| --- | --- | --- |
| **Sr no.** | **Technical Complexity Factor** | **Value** |
| 1 | Data communication | 5 |
| 2 | Distributed Data Processing | 5 |
| 3 | Performance criteria | 4 |
| 4 | Heavily Utilized Hardware | 0 |
| 5 | High Transaction Rates | 3 |
| 6 | Online Data Entry | 3 |
| 7 | Online Updating | 2 |
| 8 | End user efficiency | 4 |
| 9 | Complex Computations | 5 |
| 10 | Reusability | 4 |
| 11 | Ease of Installation | 5 |
| 12 | Ease of Operation | 5 |
| 13 | Portability | 4 |
| 14 | Maintainability | 4 |

**Step 5:** Sum the resulting numbers to obtain DI (degree of influence) by adding the value column in above table

DI = 53

**Step 6:** TCF (Technical Complexity Factor) by given formula

TCF = 0.65+0.01\*DI

= 0.65+0.01\*53

= 1.18

**Step 7:** Calculate FP (Function Points) using the given formula

FP = UFP\*TCF

= 97\*1.18

= 114.46

**Step 8:** To find KLOC (Lines of code) using language factor and FP

Approximating codebase % for java = 45%

Approximating codebase % for html = 35%

Approximating codebase % for css = 19.5%

Approximating codebase % for js = 0.5%

Language factor for java = 24\*0.50

Language factor for HTML = 34\*0.35

Language factor for CSS = 25\*0.195

Language factor for js = 47\*0.05

LOC= Language factor \* FP

LOC\_JAVA = 24\*0.50\*114.46 => 1373.52

LOC\_HTML= 34\*0.35\*114.46 => 1362.07

LOC\_CSS = 25\*0.195\*114.46 => 557.99

LOC\_JS = 47\*0.05\*114.46 => 268.98

LOC= KLOC\_JAVA + KLOC\_HTML + KLOC\_CSS + KLOC\_JS

= 1373.52 + 1362.07 + 557.99 + 268.98

LOC = 3562.56

KLOC = LOC/1000

KLOC = 3.56

**Step 9:** To calculate the effort and nominal development time using given formula and constants

Effort = a1\*(KLOC)a2PM

Tdev =b1\*(Effort)b2Months

Development mode considered is Organic.

Values of the constants in the Organic Development mode:

a1=2.4 a2=1.05 b1=2.5 b2=0.38

Effort = 2.4\*(3.56) ^1.05

= 9.10 PM

Tdev =2.5\*(9.10) ^0.38

= 5.8 Months

**Step 10:** Calculate the cost required to develop product by multiplying development time and average salary of engineers

Average salary is 3000

Cost required to develop the product = 5.8 \* 3000

= 17400 RS

**Hence the total cost required to develop the product is ₹17,400/-**