**Assignment No.03**

**Q.1. Find the product size estimation based on function point.**

**Ans.**

Estimation Based on Function Points Based on the:

• Number of input items (I): those items provided by the user that describe distinct application-oriented data (e.g., file names)

• Number of output items (O): those items provided to the user that generate distinct application-oriented data (e.g., reports)

• Number of user inquires (Q): interactive inputs requiring a response

• Number of files (F): master files in the system

• Number of external interfaces (E): interfaces to other systems.

Function point complexity weight:

|  |  |  |  |
| --- | --- | --- | --- |
| Measurement parameter | Simple | Average | Complex |
| Number of user inputs | 3 | 4 | 6 |
| Number of user outputs | 4 | 5 | 7 |
| Number of user queries | 3 | 4 | 6 |
| Number of files | 7 | 10 | 15 |
| Number of external interface | 5 | 7 | 10 |

* **Calculating function points:**

1. Calculate unjustified function points (UFP) as sum of function points for each component FP = (n × I) + (n × O) + (n × Q) + (n × F) + (n × E)
2. Compute technical complexity factor (TCF) Based on degree of influence (DI) of 14 technical factors (e.g., portability). Each factor may have a value between 0 (no influence) to 5 (strong influence): T CF = DI × .01 + 0.65 Possible value of DI = 0.0 thru DI = 5 × 14 = 70
3. T CF = (0.0.. 0.70) + 0.65 = a value in range 0.65 .. 1.35 3. Compute function points: FP = UFP × T CF

* Compute the initial estimation or efforts:

Based on person-month: E i = a ∗ (KLOC)^ b where a and b are constants and depend on the project type.

|  |  |  |
| --- | --- | --- |
| Project type | a | b |
| Organic | 3.2 | 1.05 |
| Semi-detached | 3.0 | 1.12 |
| Embeded | 2.8 | 1.20 |

* Example 1:

if a software product is organic and it is estimated to be 8,000 LOC, the initial effort is calculated as: Ei = 3.2 × 8 1.05 = 28 person-months

* Example 2:

if a software product is considered embedded and i s estimated to be 10,000 LOC, its nominal effort is as follows: Ei = 2.8 × 10 1.20 = 44 person-months

* **Duration estimation:**

Suppose the overall size of an organic software is estimated to be 20,000:

• Efforts: E = 3.2 × 20 1.05 = 74 person-months

• Duration: D = 2.5 × E 0.38 = 13 months

* **Cost estimation:**

To calculate costs, multiply efforts (person-months) by the average salary of the software developers

• The calculated efforts for the last example was E = 74 • Suppose the average monthly salary of each software developer is $6,000.00: Costs = C = 74 × 6, 000 = 440,000