Department of Computer Engineering

Academic Term: First Term 2023-24

Class: T.E /Computer Sem – V / Software Engineering

Practical No:	4
Title:	Calculating Function Points
Date of Performance:	
Roll No:	9607
Team Members:	Sanika Patankar, Lisa Gonsalves, Eden Evelyn Charles

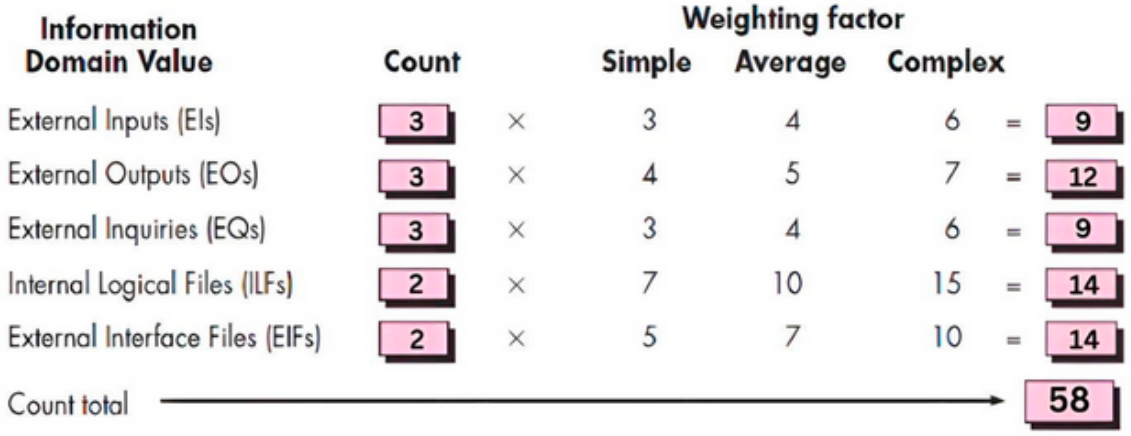
Rubrics for Evaluation:

Sr. No.	Performance Indicator	Excellent	Good	Below Average	Total Score
1	On time Completion & Submission (01)	01 (On Time)	NA	00 (Not On Time)	
2	Theory Understanding (02)	02 (Correct)	NA	01 (Tried)	
3	Content Quality (03)	01 (All used)	02 (Partial)	03 (Rarely allowed)	
4	Post Lab Questions (04)	04 (Done Well)	03 (Partially Correct)	02 (Submitted)	

Signature of the Teacher:

Lisa Gonsalves
9607
TE COMPS B

SE EXP 4: Calculating function points of the Project



Information Domain Value	Count		Weighting factor: Simple	Average	Complex		
External Inputs (EIs)	3	×	3	4	6	=	9
External Outputs (EOs)	3	×	4	5	7	=	12
External Inquiries (EQs)	3	×	3	4	6	=	9
Internal Logical Files (ILFs)	2	×	7	10	15	=	14
External Interface Files (EIFs)	2	×	5	7	10	=	14
Count total							58

Example:

Scale = 3
User Input = 50
User Output = 40
User Inquiries = 35
User Files = 6
External Interface = 4

Step 1:
As complexity adjustment factor = average
F = 14 * Scale
F = 14 * 3
F = 42

Step 2:
CAF (Component Assessment Factor) = 0.65 + (0.01 * F)
CAF (Component Assessment Factor) = 0.65 + (0.01 * 42)
CAF (Component Assessment Factor) = 1.07

Step 3:
As weighing factor are average

Function Unit	Low	Average	High
EI	3	4	6
EO	4	5	2

EQ	3	4	6
ILF	7	10	15
EIF	5	7	10

Total Count = [50 * 4] + [40 * 5] + [35 * 4] + [6 * 10] + [4 * 7] = 628

Step 4:
FP = 628 * (0.65 + (0.01 * 42)) = 671.96
The Function Point is 671.96

For Period Management System

Scale = 2
User Input = 18
User Output = 3
User Inquiries = 3
User Files = 2
External Interface = 10

Step 1:
As complexity adjustment factor = average
F = 14 * Scale
F = 14 * 2
F = 28

Step 2:
CAF (Component Assessment Factor) = 0.65 + (0.01 * F)
CAF (Component Assessment Factor) = 0.65 + (0.01 * 28)
CAF (Component Assessment Factor) = 0.93

Step 3:
As weighing factor are average

Function Unit	Low	Average	High
EI	3	4	6
EO	4	5	2
EQ	3	4	6
ILF	7	10	15
EIF	5	7	10

Total Count = [18 * 3] + [3 * 4] + [3 * 3] + [2 * 7] + [10 * 5] = 139

Step 4:

FP = 139 * (0.65 + (0.01 * 28)) = 129.27
The Function Point for an period management app is 129.27

POSTLABS:

a) Critically evaluate the Function Point Analysis method as a technique for software sizing and estimation, discussing its strengths and weaknesses.
Strengths:

1. **Functionality-Centric:** Focuses on quantifying the functionality delivered by software.
2. **Technology-Independent:** Applicable to software developed in various technologies.
3. **Objective Measurement:** Provides an objective and standardized way to measure software size.
4. **Considers User Experience:** Includes both user input and output functionalities.
5. **Supports Benchmarking:** Allows organizations to build historical benchmarks for better estimation.
6. **Useful for Contract Negotiations:** Aids in defining project scope and cost in contract negotiations.
7. **Quality Control:** Encourages the delivery of high-quality software.

Weaknesses:

1. **Complexity:** Can be complex and time-consuming, especially for large systems.
2. **Expertise Required:** Requires skilled and certified professionals, which can be costly.
3. **Subjectivity in Complexity Weights:** Assigning complexity weights can be somewhat subjective.
4. **Difficulty in Early Stages:** Challenging to apply without detailed requirements.
5. **Doesn't Consider Non-Functional Requirements:** Primarily focuses on functional requirements.
6. **Dependent on User Expertise:** Heavily relies on user input and domain knowledge.
7. **May Overlook Modern Development Practices:** May not fully accommodate agile methodologies and frequent changes.

b) Apply the Function Point Analysis technique to a given software project and determine the function points based on complexity and functionalities.

1. **External Inputs (EI):**
    - User Registration (Low Complexity)
    - Upload Image for Analysis (Medium Complexity)
    - View Disease Analysis Result (Low Complexity)
2. **External Outputs (EO):**
    - Display Disease Information (Low Complexity)
    - Generate Disease Report (Medium Complexity)
3. **External Inquiries (EQ):**
    - Search for Disease Information (Low Complexity)

4. **Internal Logical Files (ILF):**
    - User Profile Data (Low Complexity)
    - Disease Database (Medium Complexity)
5. **External Interface Files (EIF):**
    - Image Upload (Medium Complexity)

Complexity Weighting:

- Low Complexity: 3 Function Points (FPs)
- Medium Complexity: 4 FPs

Function Points Calculation:

- EI: 10 FPs (2 Low + 1 Medium)
- EO: 10 FPs (2 Low + 1 Medium)
- EQ: 3 FPs (1 Low)
- ILF: 7 FPs (1 Low + 1 Medium)
- EIF: 4 FPs (1 Medium)

Total Function Points: 34 Function Points

c) Propose strategies to manage and mitigate uncertainties in function point estimation and how they can impact project planning and resource allocation.
Strategies for Managing Uncertainties in FPE:

1. **Iterative Estimation:** Refine estimates as the project progresses and more information becomes available.
2. **Use Historical Data:** Reference past project data and benchmarks for estimation.
3. **Expert Input:** Involve experienced FPE professionals for accurate assessments.
4. **Sensitivity Analysis:** Vary input parameters to understand the range of possible estimates.
5. **Scenario Planning:** Create multiple estimation scenarios for risk assessment and planning.
6. **Buffering:** Add contingency buffers to estimates to account for uncertainties.
7. **Risk Identification:** Identify and categorize potential risks associated with uncertainties.

Impact on Project Planning and Resource Allocation:

1. **Project Schedule:** Uncertainties can lead to variations in project duration, requiring flexible schedules.
2. **Resource Allocation:** Accuracy of resource allocation is impacted, requiring efficient resource management.
3. **Budget Management:** Budget deviations may occur, necessitating financial oversight.
4. **Scope Management:** Changes in project scope due to uncertainties affect resource allocation.
5. **Risk Management:** Uncertainties are tied to project risks, requiring proactive risk management.

6. **Stakeholder Expectations:** Communication with stakeholders is crucial for setting realistic expectations.
7. **Resource Flexibility:** Be prepared to reallocate resources to address changing project dynamics.
8. **Continuous Monitoring:** Regularly update FPE throughout the project lifecycle.
9. **Documentation:** Document estimation assumptions, uncertainties, and rationale.
10. **Lessons Learned:** Conduct post-project reviews to improve future FPE and project outcomes.