**Department of Computer Engineering**

**Academic Term: First Term 2023-24**

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

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|---|---|
| **Practical No:** | **4** |
| **Title:** | **Calculating function points of the Project** |
| **Date of Performance:** | **14th August 2023** |
| **Roll No:** | **9572** |
| **Team Members:** | **Crystal Fernandes** |

## 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) | 03(All used) | 02 (Partial) | 01 (rarely followed) | |
| 4 | Post Lab Questions (04) | 04(done well) | 3 (Partially Correct) | 2(submitted) | |

**Signature of the Teacher:**

**Department of Computer Engineering**

**Academic Term: First Term 2022-23**

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**Signature of the Teacher:**

**PROJECT TITLE- NGOFINDER APPLICATION**

**Volunteer Registration Information (User Input = 1, Weight = 6):**
Number of user inputs: 1 (for personal details, location, skills, etc.)
Weight for this category: 6 (moderate complexity)

**NGO Registration Information (User Input = 1, Weight = 6):**
Number of user inputs: 1 (for organizational details, mission, etc.)
Weight for this category: 6 (moderate complexity)

**Volunteer Preferences (User Input = 1, Weight = 6):**
Number of user inputs: 1 (for preferences)
Weight for this category: 6 (moderate complexity)

**Volunteer Availability (User Input = 1, Weight = 6):**
Number of user inputs: 1 (for availability)
Weight for this category: 6 (moderate complexity)

**NGO Event Details (User Input = 1, Weight = 6):**
Number of user inputs: 1 (for event details)
Weight for this category: 6 (moderate complexity)

**Existing Data (User Input = 0, Weight = 0):**
Number of user inputs: 0 (no explicit user inputs)
Weight for this category: 0 (no effort required)

**Volunteer-NGO Match (User Output = 1, Weight = 4):**
Number of user outputs: 1 (for volunteer-NGO matching)
Weight for this category: 4 (moderate complexity)

**Event Schedule (User Output = 1, Weight = 4):**
Number of user outputs: 1 (for event scheduling)
Weight for this category: 4 (moderate complexity)

**Volunteer Notifications (User Output = 1, Weight = 4):**
Number of user outputs: 1 (for volunteer notifications)
Weight for this category: 4 (moderate complexity)

**NGO Notifications (User Output = 1, Weight = 4):**
Number of user outputs: 1 (for NGO notifications)
Weight for this category: 4 (moderate complexity)

**Volunteer Ratings and Feedback (User Output = 1, Weight = 4):**
Number of user outputs: 1 (for volunteer ratings and feedback)
Weight for this category: 4 (moderate complexity)

**Admin Reports (User Output = 0, Weight = 0):**
Number of user outputs: 0 (no explicit user outputs)

Weight for this category: 0 (no effort required)

**CalculatING the Component Assessment Factor (CAF):**
CAF = (User Input Weight * User Input Count) + (User Output Weight * User Output Count)
CAF = (6 * 6) + (4 * 6)
CAF = 36 + 24
CAF = 60

**Calculating the Function Points (FP):**
F = 14 * Scale Factor (provided as 4)
F = 14 * 4
F = 56

**CAF in the formula for calculating Function Points (FP):**
FP = Total Count * (0.65 + (0.01 * F))
FP = 60 * (0.65 + (0.01 * 56))
FP = 60 * (0.65 + 0.56)
FP = 60 * 1.21
**FP = 72.6 (rounded to one decimal place)**

The Function Point for NGO Finder Application is 72.6

**POSTLAB**

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

Strengths:

- Independence from Implementation Technology: Function Point Analysis (FPA) focuses on software functionality and user interactions rather than the underlying technology. This makes it technology-independent and suitable for various software development approaches.
- User-Centric: FPA emphasizes the user's perspective, which aligns with the user's needs and expectations. This user-centric approach improves communication between development teams and stakeholders.
- Standardized Measurement: FPA provides a standardized method for measuring software size, making it easier to compare and estimate projects consistently.
- Estimation Accuracy: When used correctly, FPA can result in reasonably accurate software size and effort estimates, which can aid in project planning and resource allocation.
- Risk Identification: The FPA process encourages thorough analysis of software requirements, helping to identify potential risks and issues early in the project lifecycle.

Weaknesses:

- Complexity: FPA can be complex and time-consuming, especially for large and complex software systems. It may require a skilled analyst to perform the assessment accurately.
- Subjectivity: FPA assessments can be subjective, as different analysts may assign different weights and counts to the same components. This subjectivity can lead to variability in estimates.
- Learning Curve: Training is required to become proficient in FPA, which can be a barrier for small teams or organizations with limited resources.
- Limited Scope: FPA focuses primarily on functional aspects of software and may not fully account for non-functional requirements or architectural complexities.
- Dependency on Documentation: FPA relies heavily on comprehensive and accurate documentation of software requirements. If requirements are poorly documented or change frequently, FPA estimates may become less reliable.

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

Function Point Analysis requires a detailed examination of the software project's functional and non-functional requirements, user interactions, and data flows. I have previously applied FPA to estimate function points for the "NGO Finder" application based on the provided requirements.

**c) Propose strategies to manage and mitigate uncertainties in function point estimation and how they can impact project planning and resource allocation:**

- Managing uncertainties in function point estimation is crucial for project planning and resource allocation. Here are some strategies to address uncertainties:
- Requirement Elicitation and Documentation: Invest time and effort in thorough requirement elicitation and documentation. Clear and complete requirements reduce uncertainty and improve estimation accuracy.
- Historical Data Analysis: Use historical data from previous projects to calibrate and validate FPA estimates. Analyzing past projects can reveal patterns and trends that help refine future estimates.
- Expert Review: Involve experienced FPA analysts who can provide expertise and guidance during the estimation process. Peer reviews can help identify errors and improve estimates.
- Sensitivity Analysis: Perform sensitivity analysis to assess the impact of varying assumptions and inputs on the final estimate. This helps identify critical factors affecting estimation uncertainty.
- Buffer Management: Include contingency reserves in project planning to account for estimation uncertainties. These buffers can be used to accommodate unexpected changes or challenges.
- Progressive Elaboration: Apply progressive elaboration by updating and refining estimates as the project progresses and more information becomes available. This approach adapts to changing circumstances.
- Communication and Transparency: Maintain open communication with stakeholders regarding estimation uncertainties. Transparent communication builds trust and allows for better decision-making.

- Scenario Planning: Develop different estimation scenarios based on optimistic, pessimistic, and most likely assumptions. This approach helps assess potential project outcomes under varying conditions.