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| **Practical No:** | **4** |
| **Title:** | **Software Requirement Specification** |
| **Date of Performance:** | 24/08/2023 |
| **Roll No:** | 9593 |
| **Team Members:** |  |

Rubrics for Evaluation:

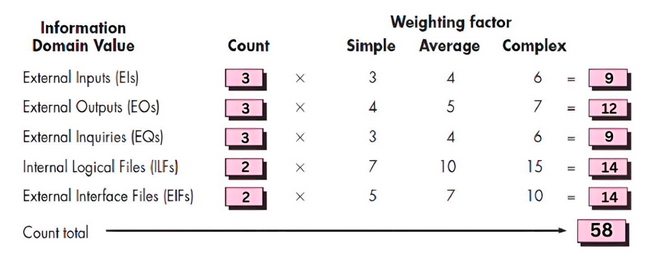
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| **Sr. No** | **Performance Indicator** | **Excellent** | **Good** | **Below Average** | **Total Score** |
| 1 | On time Completion & Submission (01) | 01 (On  Time ) | NA | 00 (Not on Time) |  |
| 2 | Theory Understanding(02) | 02(Correct  ) | NA | 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) |  |

Eden Evelyn Charles

9593

TE COMPS B

SE EXP 4: Calculating function points of the Project

Scale Factor (Scale = 4): The scale factor represents various system characteristics such as complexity, performance, and other environmental factors.  a scale factor of 4 indicates a moderate level of complexity.

User Inputs (User Input = 1, Weight = 6):  weight = 6 to this category because there is a single user input -To  upload  a crop leaf image. This input is considered simple.

User Outputs (User Output = 3, Weight = 4): weight = 4 to this category because there are three user outputs - disease detection, confidence level, and medication recommendations. These outputs are straightforward but have moderate complexity due to the variety of information presented.

User Inquiries (User Inquiries = 3, Weight = 3): weight =  3 to this category because there are three types of user inquiries - printing diagnosis, providing weather and best agricultural practices information, and analysis. These inquiries are relatively straightforward.

User Files (User Files = 1, Weight = 15): weight = 15 to this category because there is a single user file - customer data storage on cloud . These files are complex due to their nature, and handling them requires significant effort.

External Interfaces (External Interface = 3, Weight = 5): weight = 5 to this category because there are three external interfaces. These interfaces are moderately complex.

Component Assessment Factor (CAF):

CAF = (6 \* 1) + (4 \* 3) + (3 \* 3) + (1 \* 15) + (3 \* 5) = 6 + 12 + 9 + 45 + 15 = 57

Applying CAF to the formula for calculating Function Points (FP):

Function point = count total\* (0.65 + ( 0.01 \* F ))

F = 14 \* scale = 14\*4 = 56

FP = Total \* (0.65 + (0.01 \* F))

FP = 57 \* (0.65 + (0.01 \* 56))

FP = 57 \* (0.65 + 0.56)

FP = 57 \* 1.21

FP = 68.97 (rounded to two decimal places)

                     Scale

User Input = 1                 6

(Crop Leaf Image is the only input uploaded by User on the Website)

User Output = 3              4

 (1.Disease Detection 2.Confidence 3.Medication)

User Inquiries = 3           3

(Print diagnosis , Give Weather and best agri practices info and Analysis)

User Files = 1                 15

 (Customer data storage , cloud , dataset)

External Interface =  3     5

Total Count = 6\*1 + 4\*3 + 3\*3 + 1\*15 + 3\*5 = 57

FP = 57 \* (0.65 +(0.01\*56) ) = 68.97

The Function Point for Crop Disease Detection Website is 68.97

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.