

A survey on the effectiveness of methods for evaluating the maintainability of SOFL specifications

1. What is your current occupation? [\[Single-choice item\]](#)

1) Developer/Maintainer; 2) SOFL Expert; 3) Student; 4) Teacher; 5) Product/Operations professional; 6) Software Engineer

TASK 1: Quality Evaluation of Maintainability Metrics

2. Please rate the following aspects of the Lines of Expressions (LOE) metric
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability
- c. This metric is theoretically and practically justifiable

3. Please rate the following aspects of the Number of Processes (NOP) metric
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability
- c. This metric is theoretically and practically justifiable

4. Please rate the following aspects of the Number of Control Data Flows (NOCDF) metric
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability
- c. This metric is theoretically and practically justifiable

5. Please rate the following aspects of the Cyclomatic Complexity (CC) metric
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability
- c. This metric is theoretically and practically justifiable

6. Please rate the following aspects of the Module Halstead Volume (MHV) metric
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability

c. This metric is theoretically and practically justifiable

7. Please rate the following aspects of the Number of Data Stores Used (NODSU) metric [\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability
- c. This metric is theoretically and practically justifiable

8. Please rate the following aspects of the Extensiveness of Comments (EOC) metric [\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability
- c. This metric is theoretically and practically justifiable

9. Please rate the following aspects of the Extensiveness of Blank Lines (EOBL) metric [\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The definition of this metric is clear and easy to understand
- b. This metric effectively captures an important aspect of maintainability
- c. This metric is theoretically and practically justifiable

10. Does the complete set of metrics collectively address the main facets of maintainability [\[Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

TASK 2: Validation of the rating result

11. Case1-Random Scenarios

Option	Subtotal
SYSTEM_ATM	2
SYSTEM_COURSE_REGISTRATION	2
NOTIFICATION_MANAGEMENT	2
SYSTEM_HOSPITAL_REGISTRATION	2
Manage_Patient_Registration_Decom	2
Manage_Doctor_Schedule_Decom	2

Manage_Registration_Decom	2
Manage_Current_Account_Decom	2
Manage_Savings_Account_Decom	2
Manage_Transfer_Decom	2

12. Case 1 — Please indicate your level of agreement with the following statements
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The tool-generated overall maintainability rating accurately reflects the maintainability of this module
- b. The LOE score produced by the tool is appropriate for this module
- c. The NOP score produced by the tool is appropriate for this module
- d. The NOCDF score produced by the tool is appropriate for this module
- e. The CC score produced by the tool is appropriate for this module
- f. The MHV score produced by the tool is appropriate for this module
- g. The NODSU score produced by the tool is appropriate for this module
- h. The EOC score produced by the tool is appropriate for this module
- i. The EOBL score produced by the tool is appropriate for this module

13. Case2-Random Scenarios

Option	Subtotal
SYSTEM_PUBLIC_TRANSPORT_TICKETING	2
Manage_User_Accounts_Decom	2
Manage_Routes_and_Timetables_Decom	2
Manage_Ticket_Operations_Decom	2
Manage_Payment_Decom	2
Manage_System_Maintenance_Decom	2
SYSTEM_STOCK_TRADING	2
Manage_User_Registration_Decom	2
Manage_Account_Decom	2
Manage_Foreign_Currency_Account	2

14. Case 2 — Please indicate your level of agreement with the following statements
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The tool-generated overall maintainability rating accurately reflects the maintainability of this module
- b. The LOE score produced by the tool is appropriate for this module
- c. The NOP score produced by the tool is appropriate for this module
- d. The NOCDF score produced by the tool is appropriate for this module
- e. The CC score produced by the tool is appropriate for this module
- f. The MHV score produced by the tool is appropriate for this module
- g. The NODSU score produced by the tool is appropriate for this module
- h. The EOC score produced by the tool is appropriate for this module
- i. The EOB� score produced by the tool is appropriate for this module

15. Case3-Random Scenarios

Option	Subtotal
Query_Market_Decom	2
Manage_Trading_Decom	2
Perform_Settlement_Decom	2
Monitor_Risk_Decom	2
SYSTEM_VENDING_MACHINE	2
Manage_Item_Inventory_Decom	2
Handle_User_Interaction_Decom	2
Record_Transaction_Decom	2
Monitor_System_Status_Decom	2
Change_Password_Decom	2

16. Case 3 — Please indicate your level of agreement with the following statements
[\[Matrix of Likert-type items\]](#)

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

- a. The tool-generated overall maintainability rating accurately reflects the maintainability of this module
- b. The LOE score produced by the tool is appropriate for this module
- c. The NOP score produced by the tool is appropriate for this module
- d. The NOCDF score produced by the tool is appropriate for this module
- e. The CC score produced by the tool is appropriate for this module
- f. The MHV score produced by the tool is appropriate for this module

- g. The NODSU score produced by the tool is appropriate for this module
- h. The EOC score produced by the tool is appropriate for this module
- i. The EOBL score produced by the tool is appropriate for this module

TASK 3: Metric Importance Ranking

17. Please rank the following metrics by their importance for maintainability assessment, from 1 (most important) to 8 (least important) [\[Ranking item\]](#)

[illegible]