



IMPROVEMENT QUALITY OF SOFTWARE USING FUNCTION POINT AND TEST POINT

Amol Kadam¹, Dr. Shashank Joshi², Sachin Wakurdekar³
¹Research Scholar, ²Dean & Professor, ³Assistant Professor
Bharati Vidyapeeth University, College of Engineering, Pune

Abstract

In this paper we focused on reliability of software and also give the suggestions to improve the quality of software. Because of testing is a vital activity to confirm code quality. Code testing is changing into additional and additional necessary because it may be a wide used activity to confirm code quality. Testing is presently an essential enhance code improvement life cycle. Check execution gets to be relate degree movement in the indispensable way of venture advancement. Throughout the code testing section, several testing-efforts, adore the person power, the amount of dead check cases, and also the processor time, square measure consumed. Code quality gets to be extra and extra important in current focused markets. Testing may be a wide utilized quality certification action.

Index Terms: Function Point Analysis, Test Point Analysis, SRGM, Threshold Value.

I. INTRODUCTION

Testing is an essential action to ensure programming framework quality. Monstrous associations will have numerous advancement bunches with their item being checked by overlade test bunches. check group supervisors ought to have the capacity to appropriately set up their calendars Associate in Nursing assets and appraisals for the required check execution exertion will be an additional rule for check decision, since exertion could be prohibitive in take after. a fair check execution exertion estimation methodology will benefit every analyser chiefs and programming framework comes. There is estimation model Associate in

nursing an ability based for the most part approach for check execution exertion.

The testing section is a very important and dearly-won a part of software system development[1]. A few examination studies expect that the utilization rate of testing assets all through the testing segment is consistent, or don't even consider such testing-exertion. Testing exertion may be a higher introduction pointer for programming framework reliability displaying than timetable time as a consequence of the constancy development bend depends intensely on the time conveyance of the testing exertion. The testing effort is often pictured because the range of computer hardware hours, the quantity of dead checks cases, etc. typically the testing time are often pictured by the quantity of tests rather than the execution time.

Check estimation comprises of the estimation of exertion and cost for a chose level of testing, exploitation various ways, instruments, and methods. The wrong estimation of testing exertion for the most part results in Associate in Nursing deficient amount of testing, which, thus, will bring about disappointments of programming framework frameworks once they were sent in associations. Estimation is that the most imperative movement in programming framework testing, Associate in Nursing an inescapable one, on the other hand it is generally performed quickly, with those responsible for it simply seeking after the least difficult[2].

Testing is coordinated toward inputs and program components wherever mistakes square measure extra surely. The fundamental focus of testing is on discovering abandons, and deserts can be regularly discovered rich speedier by

entirely unexpected testing qualities. It is important to adjust the connections between exertion, timetable and quality that sort the 3 vital parts of the celebrated internationally enchantment triangle. It is wide acknowledged that just evaluating one in everything about perspectives while not considering the others can prompt fabulous estimations[3]. Traditional estimation models square measure built up bolstered direct or non-straight multivariate examination that consolidate mounted data components and stuck yields.

II. OBJECTIVES OF RESERCH WORK

- ✓ To improve performance & reduce maintenance cost.
- ✓ Estimate Software Cost.
- ✓ Check the efficiency of development activities
- ✓ Quality and Testability of the test object
- ✓ Interdisciplinary Research Project
- ✓ Industrial Consultancy
- ✓ Academic Research Activities

III. MOTIVATION

Testing section is extremely necessary in reassuring the standard of the code testing method to observe faults within the totality and value of developed pc code. While testing might not guarantee a bug free code and high irresponsibleness. Optimum quantity of code additionally has to be lined to form certain that the code is of excellent quality. To observe extra faults throughout the testing section, new automatic check tools or strategies to make checks & dispense with repetitive experiments could likewise be used. As time advances, they will watch additional flaws, that diminishes the costs of amending issues all through the operational segment. These methodologies have enhanced code testing & efficiency as of late, allowing task administrators to improve code flightiness.

IV. METHODOLOGY

We have to use Threshold value for the compare the results

- Threshold value:

The threshold value is interpreted based on previous projects experience and historical

information. While considering the threshold value, benchmarks designed by industries also taken into grant. From the team experience and various processes involved the threshold is monitored and updated

FPA (Functional Point Analysis)

Capacity Point Analysis was created first by Allan J. Albrecht in the mid 1970s. It was an endeavor to overcome troubles connected with lines of code as a measure of programming size, and to help with adding to a system to foresee exertion connected with programming improvement. FPA is utilized to quantify the dimension of the system by estimating the intricacy of system functionalities:

FPA has the following components:

Calculate Size of Project: In this method, calculate the line of the code, blank lines & comment lines of the project. If the code line is greater than thershold range then software advice splitting of the class.

Calculate Number of Object in Class: It counts total number of object in class, For the code inputted to the system and after clicking on calculate number of object of class calculate number of attributes and object of the class.

Calculate Number of Methods and Events: In this phase calculate the number of methods and events of the class. If this thershold range is not matched then suggest the advice for the class[5].

TPA (Test Point Analysis)

Test point analysis is the mechanism for the test evaluation and calculate cost of the software.

TPA has the following components:

Size: It is nothing but dimension of information system which has undergone the testing.

Test strategy or Team Structure: Choice of system elements plus superiority properties to be examined along with test coverage. It is nothing but team members of the system that are responsible for developing the software.

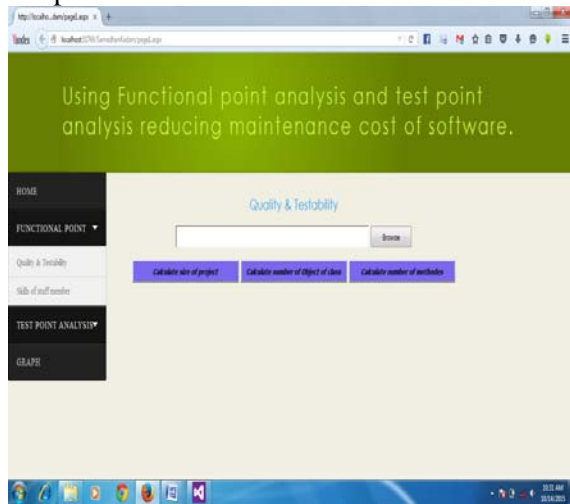
Environmental Factor: That includes infrastructure, electricity, maintenances and other miscellaneous.

Processing and Productivity: In this phase calculate the cost of the project. Addition of team structure cost and environmental cost of the system. Productivity is associated to the time interim required to understand single test point, as previously decided by means of size and test strategy[6].

V. RESULTS AND ANALYSIS

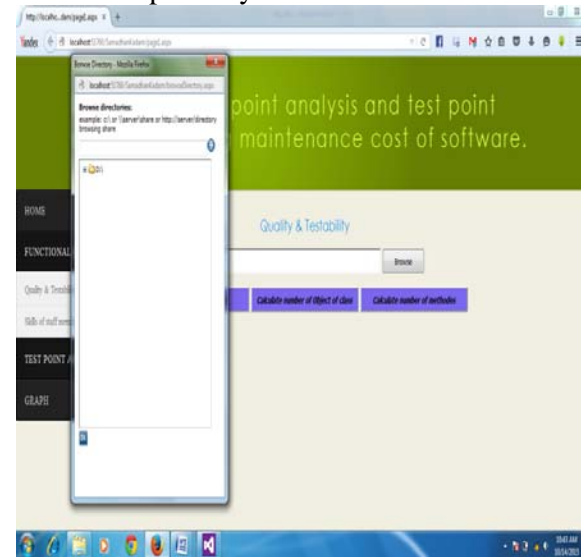
Screen No 1: Home Screen

Description: This is home screen of the research work. In that screen we can see the different tabs like Home, Functional Point, Test Point & Graph.



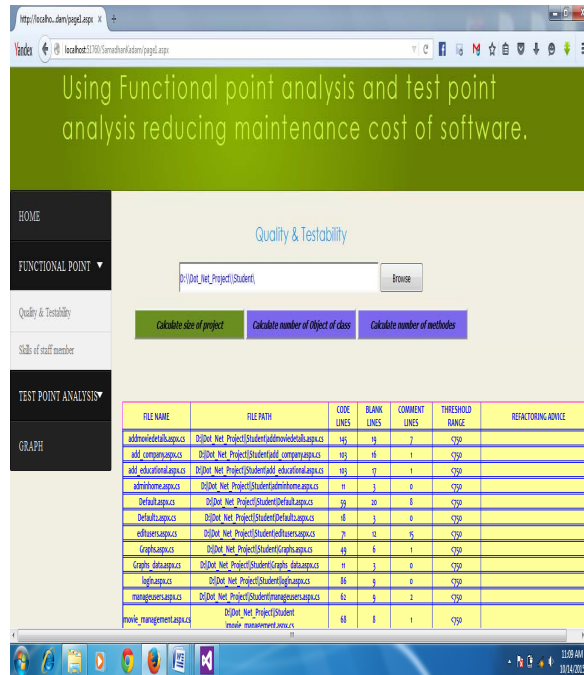
Screen No 2: Quality & Testability

Description: In this there are three buttons for analysis of the project code. First provide input for the system using browse button to select particular project folder. User selects the “browse” option to set the path for the project code that input as system.



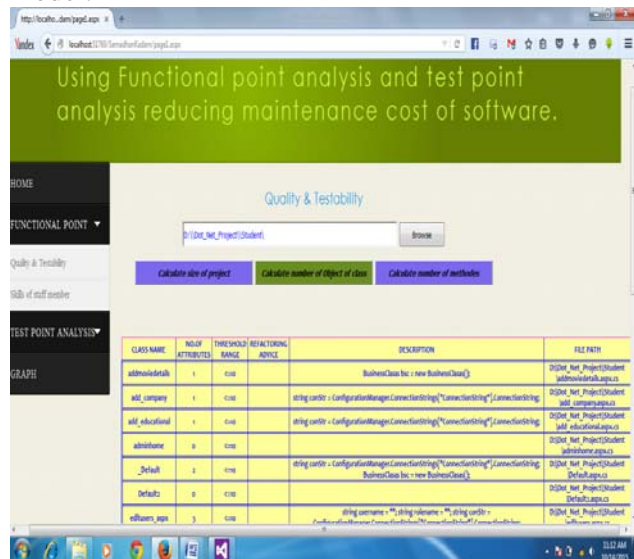
Screen No 3: Calculate Size of Project

Description: In this screen analysis all coding files of the project and calculate size of the project. Display the details about the code files. In details display File Name, File Path, Code Lines, Blank Lines, Comment Lines, Threshold Range and Advice. If line of code increases more than 750 lines then suggest the split the class.



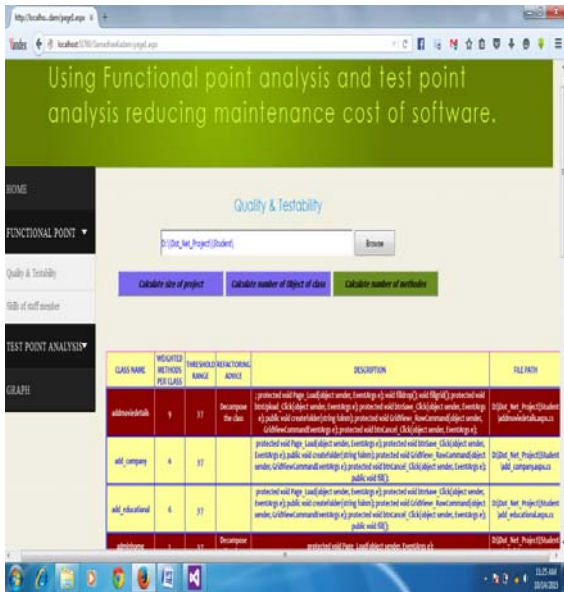
Screen No 4: Calculate Number of Object Class.

Description: In this screen calculate how many objects of each class in the project. Objects more than 10 in each class then provide suggestion to the user as the class requires decomposition in order to better manage the complexity of the model.



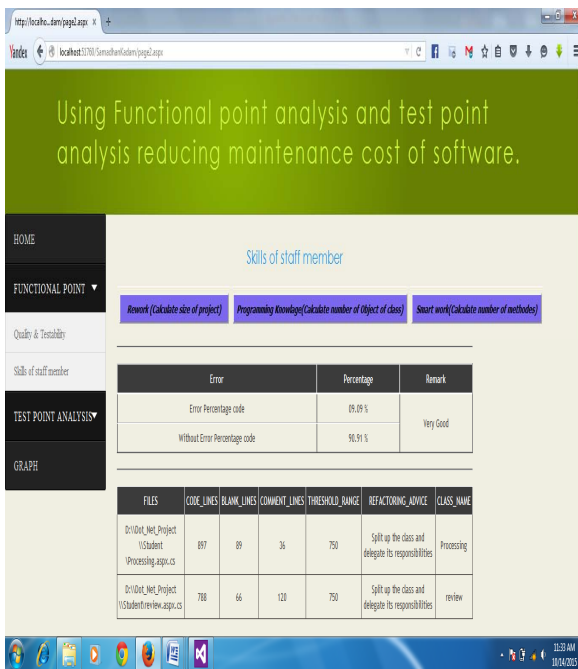
Screen No 5: Calculate Number of Methods and Events.

Description: In this screen calculate how many methods and events in each class of the project. If method values don't match between range 3 to 7 then provide suggestion for splitting “Decompose the Class”.



Screen No 6: Skills of Staff Member.

Description: In this screen analysis the skill of developers. In that calculate the programming knowledge of the developer. Display information of developer skills in error, percentage and remark of that developers skills.



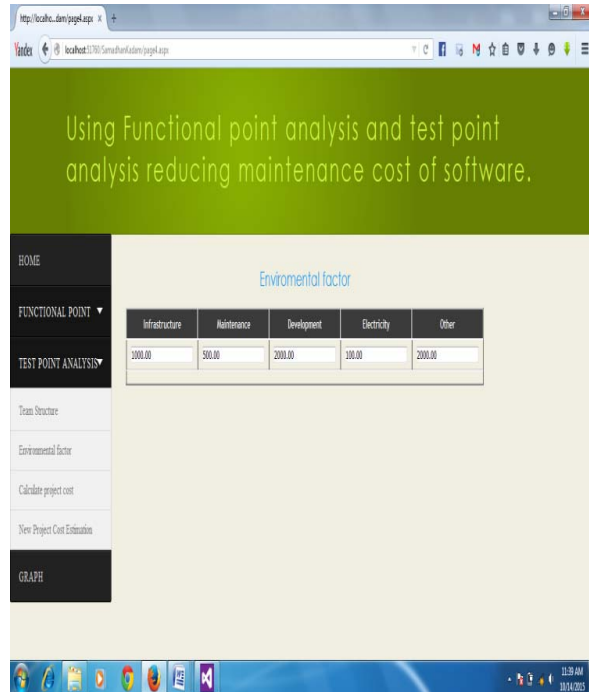
Screen No 7: Team Structure.

Description: In Test Point Analysis displays Team Structure, Environmental Factor & Calculate Project Cost and New Project Cost Estimation. In Team Structure provide the how many employees are required for completing project like how many Project Manager, Team Leader; Senior-Junior Developer and Trainee are required for complete project.



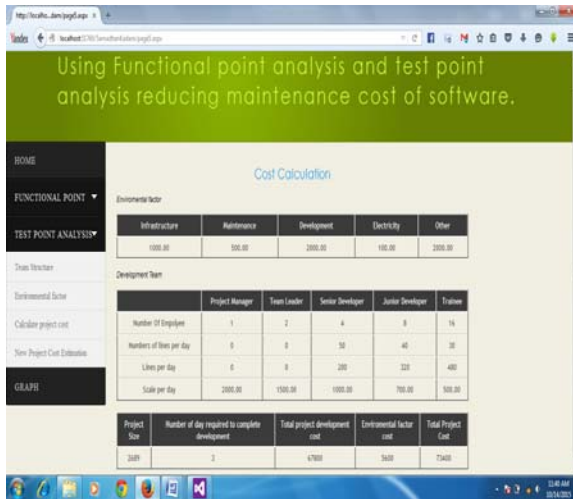
Screen No 8: Environmental Factor.

Description: In environmental factor provide values for infrastructure, electricity, development and other cost. Environmental factor is very important in calculating project cost.



Screen No 9: Calculate Project Calculation.

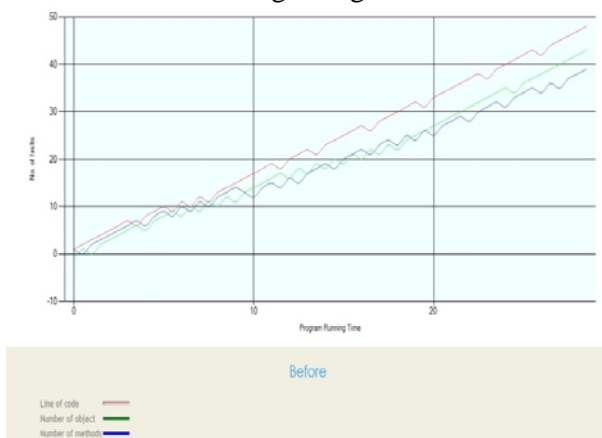
Description: This screen is the final screen of the research work. In that calculate the final cost of the project using team structure cost & environmental factor cost.



Screen No 10: New Project Cost Estimation
Description: This screen calculates new project cost estimation.

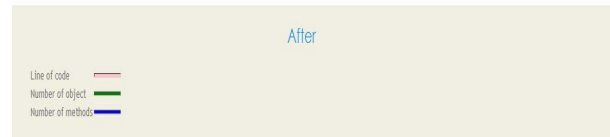
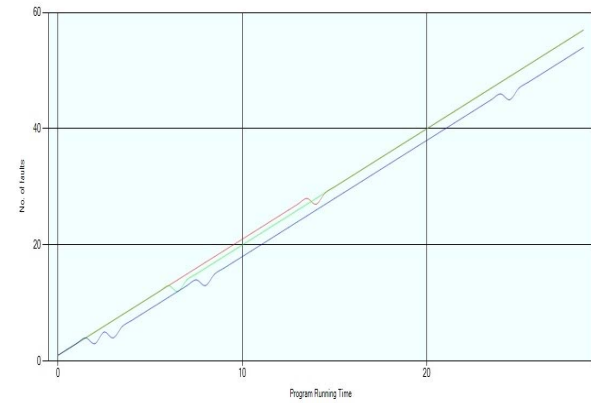


Screen No 11: Graph
Description: In graph section display graph of line of code, Object of Class and Number of Methods in inputted project code. This graph present the all lines before the threshold values that means don't changes in generated errors.



Screen No 11: Graph

Description: In graph section display graph of line of code, Object of Class and Number of Methods in inputted project code. This graph present the all lines after make changes in programs that achieve minimum threshold values.



VI. CONCLUSION

Through this work we have tried to improve the reliability of the software product from the context of internal programming structure. We have also taken the points such as function point analysis and test point analysis into consideration for the sake reduction in software maintenance cost. Functional Point analysis process model that is rely on imperfect dtesting and also comprises the faults that might be turn on for some set of input. We implement this reliability growth model along with quality metric analyzer. Quality metric analyzer estimates the quality metrics and also gives the details about the metrics. And by implementing these we test the given input software and attempt to make it more reliable.

Reliability is relative to the quality of software and hence maintaining reliability of software is the way to achieve the quality. Predicting future behaviour of the software from the previous failure data is the main concept behind the software reliability growth model.

REFERENCES

- [1] R.A.Khan, K.Mustafa and S.I.Ashon, "Operation Profile A Key Factor for Reliability Estimation", Universities press, Gautam Das and Gulti V.P., CIT, pp347-354, 2004.

- [2] A.Yadav, R.A.Khan, "Critical review on software reliability Models", IJRTE, vol2, no3,Nov2009
- [3] J.Peter Rooney, "Customer Satisfactions", Proceeding annual reliability & maintainability, 24-27, Jan 1994.
- [4] Alan Wood, "Software Reliability Growth Models",technical report-I, Sept 1996.
- [5] Jyoti Borade and Vikas Khalkar, "Software Project Effort and Cost Estimation Techniques", IJARCSE, vol-3, issue-8, 2013 Aug.
- [6] Pichai Jodpimai and Peraphon Sophatsathit, "Analysis of Effort Estimation Based on Models", IEEE 2009
- [7] Matthias Kerstner, "Software Test effort Estimation Methods", Feb 2011.
- [8] Veerapaneni Esther Jyothi , Kaitepalli Srikanth and K. Nageswara Rao "Effective implementation of agile practices – object oriented metrics tool to improve software quality" International Journal of Software Engineering & Applications (IJSEA), Vol.3, No.4, July 2012
- [9] P.K.Kapur, R.B.Garg & Kumar S. Contributions to hardware & software reliability, Singapur, WSP Ltd.,1999.
- [10]K.Pillai & V.S.Nair, "A model for software development feeorts & cost estimations", IEEE Trans. On SE, vol-23, issue-8, pp 485-497,1997
- [11]Martin L. Shooman, "Software reliability growth model based on Bohrbugs and Mandelbugs", IEEE 26th International Symposium on Software Reliability Engineering (ISSRE), 2-5 Nov. 2015
- [12]Chengyong Mao ; Qiuying Li, "A Testing-Coverage Software Reliability Growth Model Considering the Randomness of the Field Environment", IEEE International Conference on Software Quality, Reliability and Security Companion (QRS-C), 1-3 Aug. 2016
- [13]Ankur Choudhary ; Anurag Singh Baghel ; Om Prakash Sangwan, "Software reliability prediction modeling: A comparison of parametric and non-parametric modeling ", 6th International Conference on Cloud System and Big Data Engineering (Confluence), 14-15 Jan. 2016