EasyChair Preprint

№ 3376

Static Machine Working Perspective Analysis

Adan Khan Niazi

May 11, 2020

Static Machine Working perspective Analysis

Adan Khan Niazi

(Assistant SAP Manager)

(adankhanniazi4@gmail.com)

Abstract

Different machine use in various industries and making different type of product. Using technique of static analysis we see different factor which is direct effect on machine working hour. For analysis using SQL for fetching data and Crystal report using visualization of graph form and table form. Using analysis we increase maximum usage of time, in this purpose we are using SPEL Company data set

Keywords SQL queries, Static techniques, Utilization, Efficiency, Crystal Report

Introduction

Industry level machine [1-4] work and produced different product. Machine working 24 hour in different shift. Shift basically use in working hour of employee, its means shift are directly depend on employee working hour.

1 Shift = 8hr

2 Shift = 16hr

3 shift = 24hr

In one shift have 30 mint off time for worker, so machine also off at that time. Its means every shift have 7:30hr. Machine working hour in one day is 22:30hr. Its means 24hr/22:30hr in a day. This is one scenario which shows all calculation and another scenario is based on just 2 shift. Which is 12hr shift.

1 Shift = 12hr

2 Shift = 12hr

In this scenario working time of machine is 11:30hr in each shift and also labor working hour is 11:30hr. Now machine working hour in one day is 23hr. It means 24hr/23hr.We use SPEL company data for machine working and Efficiency and Utilization also find those parameters which effect on machine utilization and efficiency.

We use 2 term Machine Utilization and Machine Efficiency [5-8] which means by

- **How much time Utilize a Machine at available shift or time is called machine Utilization**
- **Given time of that machine how much time machine work properly is called machine Efficiency**

Literature Survey

Different industry have own method to find Utilization and Efficiency. It have different parameter and different criteria. But same method fallow using static analysis. It use static analysis techniques. Mostly industries have own data they use static technique like query writing for fetching data and pass out filter data and cleaning process through query, according our own requirements for machine utilization. Similarly SPEL Company have data and we fetch required data.

Static Analysis

FOR Static Analysis I use many technique use static analysis

- Query's
- Means
- Percentages
- Efficiency
- Graph

In data set I have categorize two different level

1. Unit Level
2. Location level

Unit level

Industry have many plants, and different location. In SPEL Company scenario have many UNIT. Each unit have differed location, means UNIT5RYK location is "Rahim Yar Khan" .Unit I have in data set is

1. UNIT1
2. UNIT2
3. UNIT3
4. UNIT4
5. UNIT5RYK

Unit1, 2, 3, 4 location is Lahore.

Now in each unit I have more categorize in own location.

1. DIE SHOP
2. EXTRUSION
3. FORMING
4. FPD
5. MACHINE SHOP
6. PC HALL
7. PRINTING HALL
8. RYK
9. SHAMPOO HALL

UNIT1

Firstly we analysis machine utilization in unit level. Each Unit have own graph and own parameters which are commonly use in each unit.

Utilization

How much time Utilize a Machine at available shift or time is called machine Utilization

Machine Code	Machine Name	MACHINE RUNNING TIME	PLANNED CLOSED
UNIT1			
	PC HALL		
M-0061	IBM001-ASB 650EXHS 1 (Unit1)	36.22	59.62
M-0062	IBM002-ASB 650EXHS 2 (Unit 1)	94.27	-2.47
M-0068	IBM003-ASB 650EXHS 3 (Unit 1)	73.59	21.61
M-0077	IBM004-ASB 650EXHS 4 (Unit 1)	78.71	6.35
M-0089	SP-01 PC Bottle Printing	32.51	27.52
M-0090	SP-02 PC Bottle Printing	16.18	60.43
	Average :	**55.25**	**28.84**
	Total:	**331.48**	**173.06**

Figure 1

This pic has shown Machine Running time and Planned closed in each machine.

UNIT1 describe 6 machine running in May month and running time average is 55.25 and total running time is 331.48 and planned closed time are 173.06

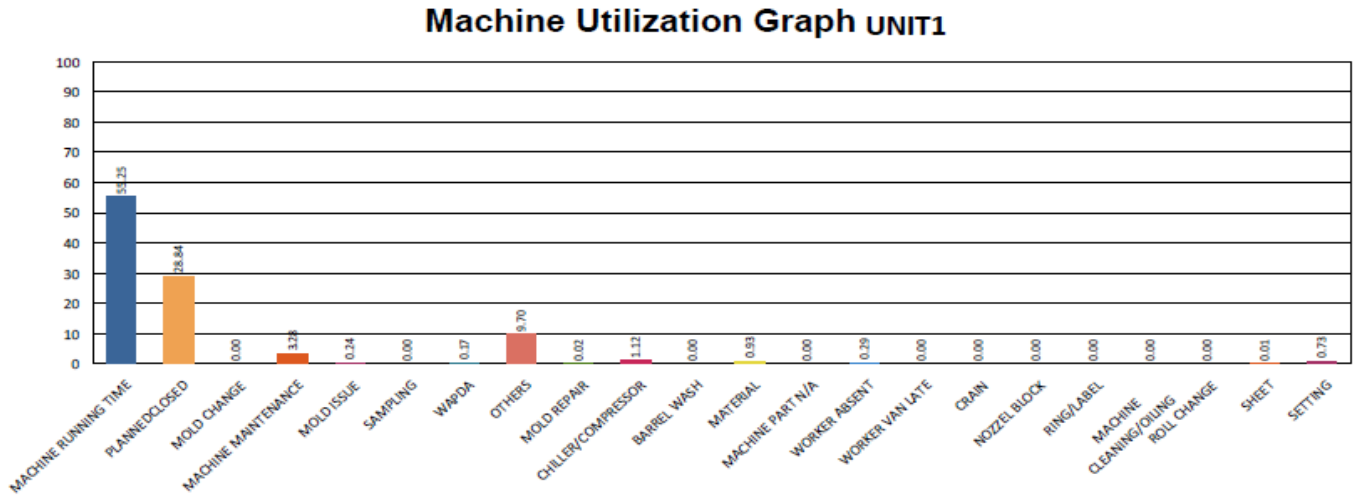

Figure 2

Unit 1 Efficiency

Given time of that machine how much time machine work properly is called machine Efficiency

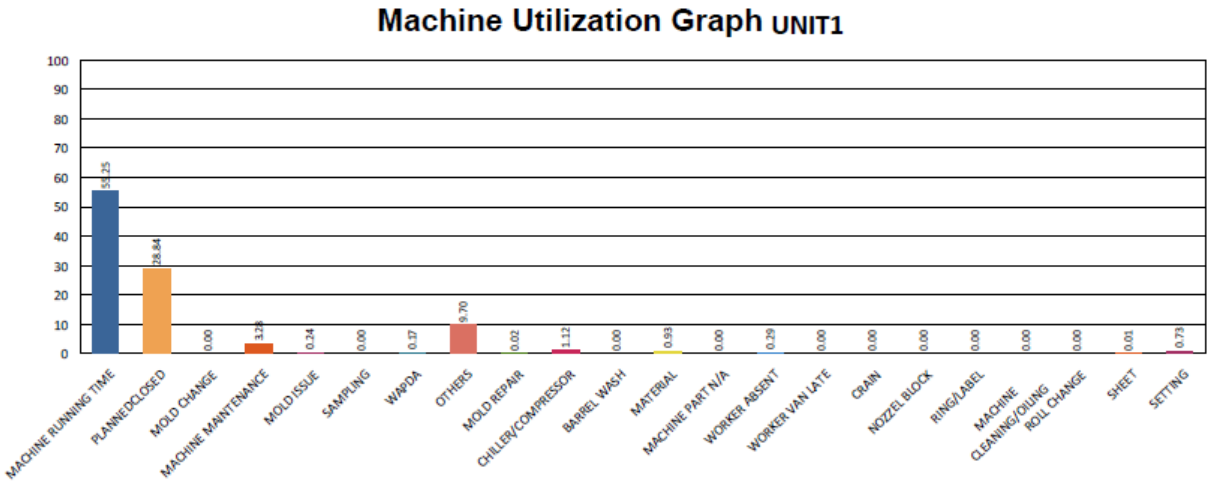

Figure 3

UNIT2

Unit 2 which is located by Lahore in Pandokey

Unit 2 Utilization

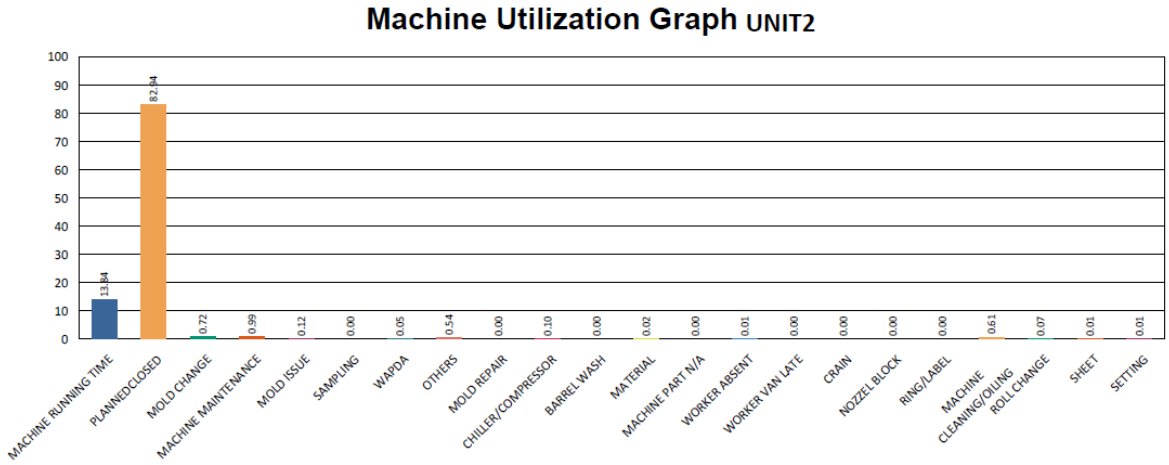

Figure 4

All factor are explain in graph. In those factor machine are not working and we define in graph of each factor, these factor shown in percentage form.

Machine Code	Machine Name	MACHINE RUNNING TIME	PLANNED CLOSED
UNIT2			
	EXTRUSION		
M-0040	E3-Gwell	24.75	70.42
M-0076	E4-Jwill	22.88	74.67
	Average :	23.82	72.55
	Total:	47.63	145.10
	FORMING		
M-0041	F1-Wonderpack	71.20	21.09
M-0050	HF1 Hengfeng	2.24	97.36
M-0051	LF01-Rulaan Polyprint	0.59	98.88
M-0052	LF02-Rulaan Polyprint	17.65	77.26
M-0066	HF2 Hengfeng	3.30	96.04
M-0074	HF3 Hengfeng	8.57	88.15
M-0107	LF03-Rulaan Polyprint	5.89	91.36
M-0109	HF4 Hengfeng	3.84	95.28
M-0119	HF5 Hengfeng	27.75	70.33
	Average :	15.67	81.75
	Total:	141.03	735.74
	PRINTING HALL		
M-0056	P003-Towin Light	12.78	80.57
M-0075	P009-Van Dam	6.17	82.87
M-0078	P010-Kammann Printing	5.78	94.03
M-0117	P012-Towin QJY-H9125	3.76	94.80
M-0118	P013-Towin QJY-H9125	4.31	93.89
	Average :	6.56	89.23
	Total:	32.80	446.16
	Grand Total :	221.46	1,326.99

Figure 5

Unit2 have 2 location 3 location use Extrusion, Forming, Printing Hall which have one average and total. The total running time is 221.46 and planned closed is 1326.99 which is month of May analysis.

Unit 2 Efficiency

1. MOLD CHANGE
2. MACHINE MAINTENANCE
3. MOLD ISSUE
4. SAMPLING
5. WAPDA
6. OTHERS
7. MOLD REPAIR
8. CHILLER COMPRESSOR
9. BARREL WASH
10. MATERIAL
11. MACHINE PART NA
12. WORKER ABSENT
13. WORKER VAN LATE
14. CRAIN
15. NOZZEL BLOCK
16. RING LABEL
17. MACHINE CLEANING OILING
18. ROLL CHANGE

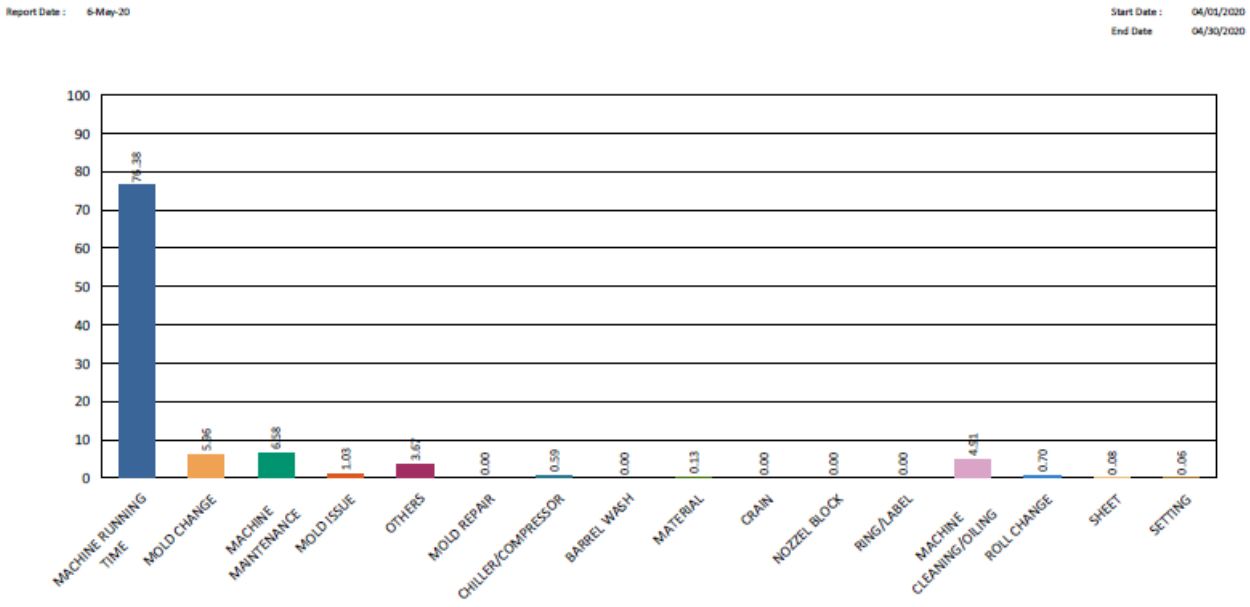

Figure 6

UNIT3

Unit 2 which machine is located by Lahore in Pandokey

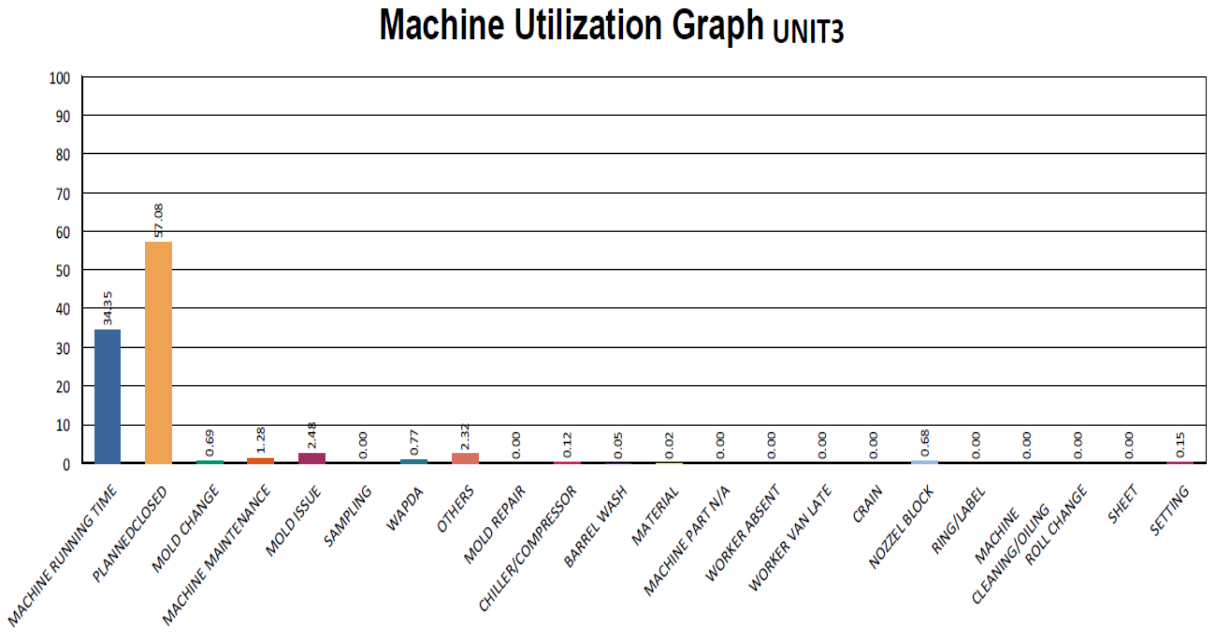

Figure 7

Mostly machine is closed which percentage is 57.06% and machine running time is 34.35% do we analysis mostly machine is closed due to different factor which is measure and shown in graph.

Machine Code	Machine Name	MACHINE RUNNING TIME	PLANNED CLOSED
UNIT3			
	FPD		
M-0110	M-19-FPD Leinfa 190 Ton	0.84	99.12
	Average :	**0.84**	**99.12**
	Total:	**0.84**	**99.12**
	SHAMPOO HALL TS		
M-0092	BIM01- FCS 420 Ton Bi-Injection	55.42	36.23
M-0093	BIM02- FCS 420 Ton Bi-Injection	55.85	32.09
M-0094	BIM03- FCS 420 Ton Bi-Injection	25.28	60.90
	Average :	**45.52**	**43.07**
	Total:	**136.55**	**129.22**
	Grand Total :	**137.39**	**228.34**

Figure 8

Same case UNIT3 have 2 location open, one is FPD and second is SHAMPOO HALL TS.

- FPD average running time is 0.84 and plans closed is 99.12
- SHAMPOO HALL TS average running time is 136.55 and plans closed is 129.22

Unit 4 Efficiency

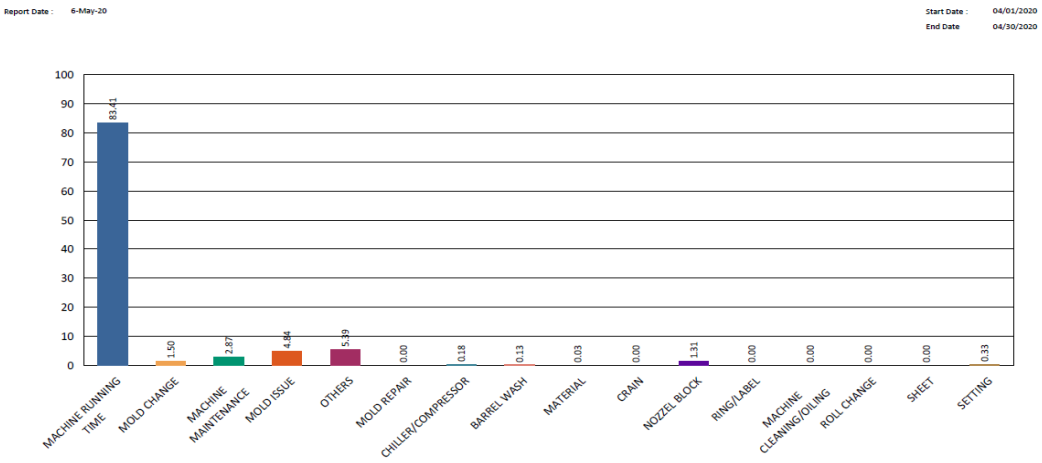

Figure 9

UNIT4

Unit 4 is closed because no order for sale is required. So that why unit3 is not work.

UNIT5RYK

This unit is located in Reham yar khan

Average :	58.69	35.97
Total:	1,584.73	971.18
Grand Total :	1,584.73	971.18

Figure 10

Unit5 RYK mostly work and its 58% work and 35% closed

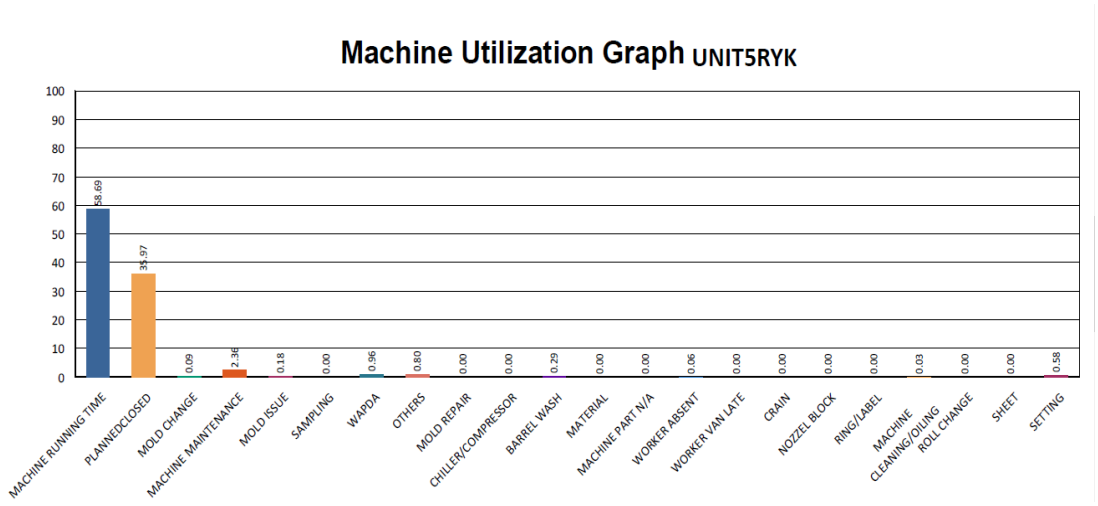

Figure 11

UNIT5RYK Efficiency

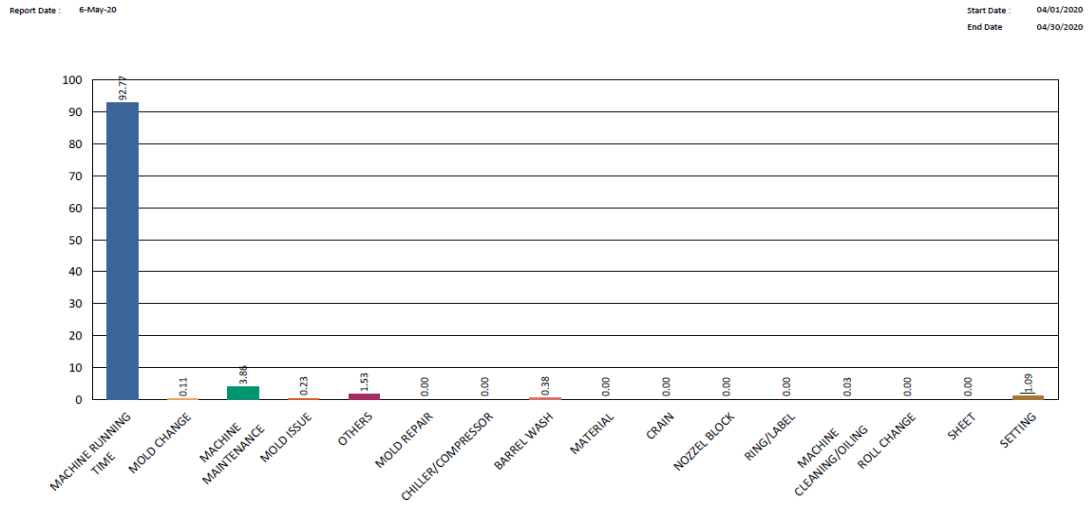

Figure 12

Conclusion

Using analysis of machine efficiency and utilization we find attributes which is directly effect in machines .Running time of machine can be increased if we overcome that factor which is direct hit, if machine running time is increased then it also increases our sales and our revenue increase, our production is increase.

References

[1]K. M. Ala-Mutka. A Survey of Automated Assessment Approaches for Programming Assignments. Computer science education, 15(2):83–102, 2005.

[2]M. Amelung, P. Forbrig, and D. Rösner. Towards generic and flflexible web services for e-assessment. In ITiCSE ’08: Proceedings of the 13the annual conference on Innovation and technology in computer science education, pages 219–224, New York, NY, USA, 2008. ACM.

[3]D. Bildhauer and J. Ebert. Querying Software Abstraction Graphs. In Working Session on Query Technologies and Applications for Program Comprehension (QTAPC 2008), collocated with ICPC 2008, 2008

[4]P. Ihantola, T. Ahoniemi, V. Karavirta, and O. Seppälä. Review of recent systems for automatic assessment of programming assignments. In Proceedings of the 10th Koli Calling International Conference on Computing Education Research, Koli Calling ’10, pages 86–93, New York, NY, USA, 2010. ACM.

[5]Fidel, R. (1984). The case study method: a case study. Library and Information Science Research, 6(3), 273-288.

[6]Yin, R. K. (1992). The case study method as a tool for doing evaluation. Current Sociology, 40(1), 121-137.

[7]Stake, R. E. (1978). The Case Study Method in Social Inquiry 1. Educational researcher, 7(2), 5- 8.

[8]Static Analysis Tool Exposition (SATE 2009) Workshop, Co-located with 11th semiannual Software Assurance Forum, Arlington, VA, 2009.