

---

# Software Engineering

## Code Metric

### GROUP - Club\_Elite

**IIT2018114 - Harsh Goyal**

**IIT2018144 - Aaditya Gadhave**

**IIT2018149 - Sourabh Gupta**

**IIT2018158 - Meet Singh Gambhir**

**IIT2018159 - Tushar Atrey**

**Instructor - Amit Kumar, Ashutosh Kumar**

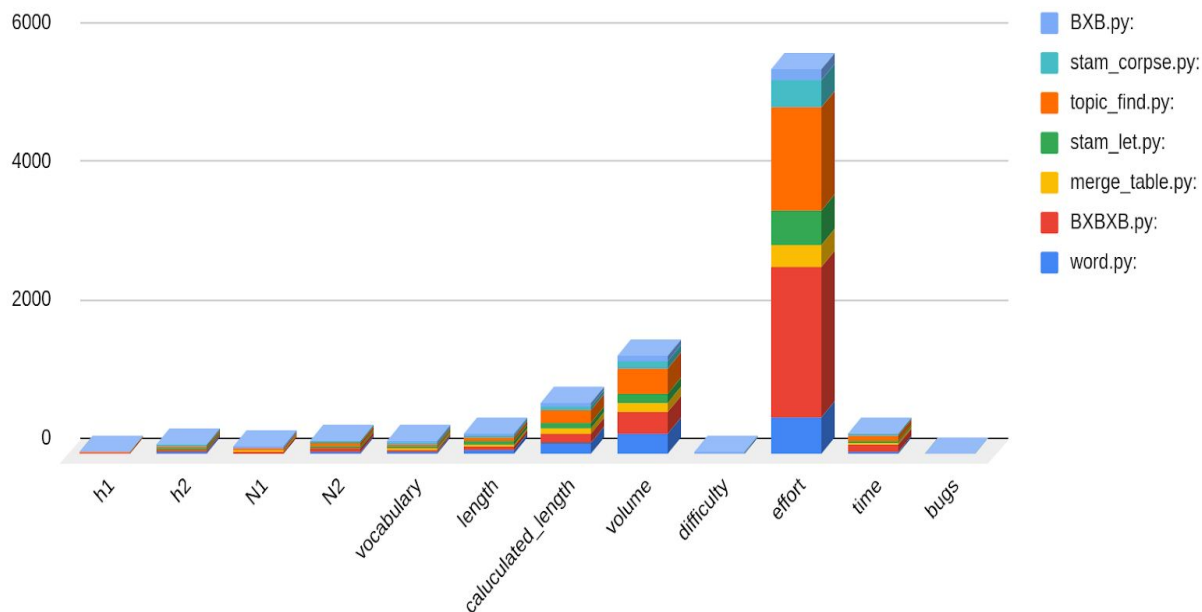
*IV Semester, Department of Information Technology,  
Indian Institute of Information Technology, Allahabad, Prayagraj.*

---

- Some features of each component of the software:

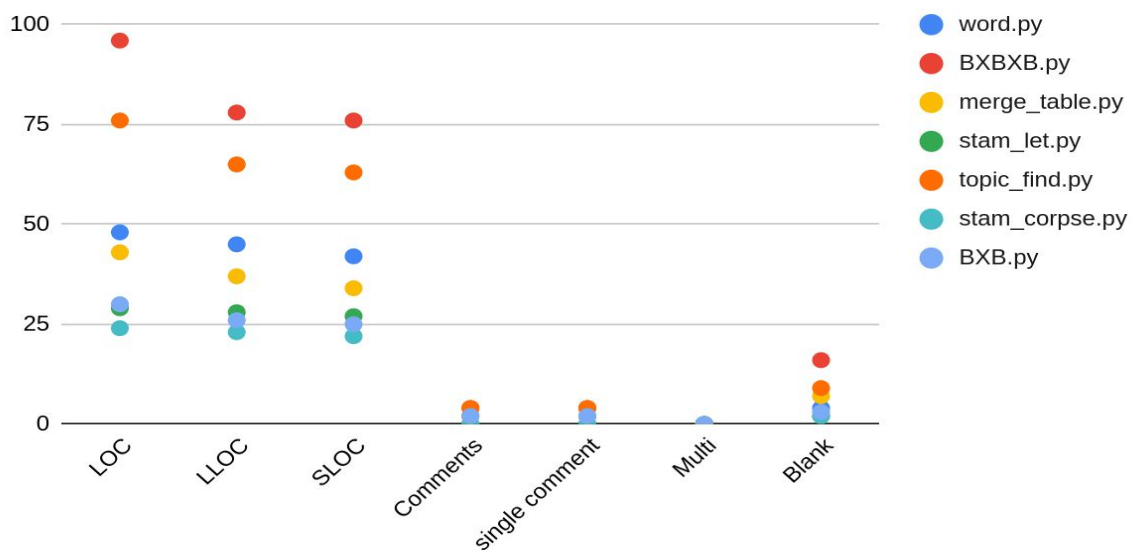
- Halstead Complexity Matrix

Halstead complexity metric

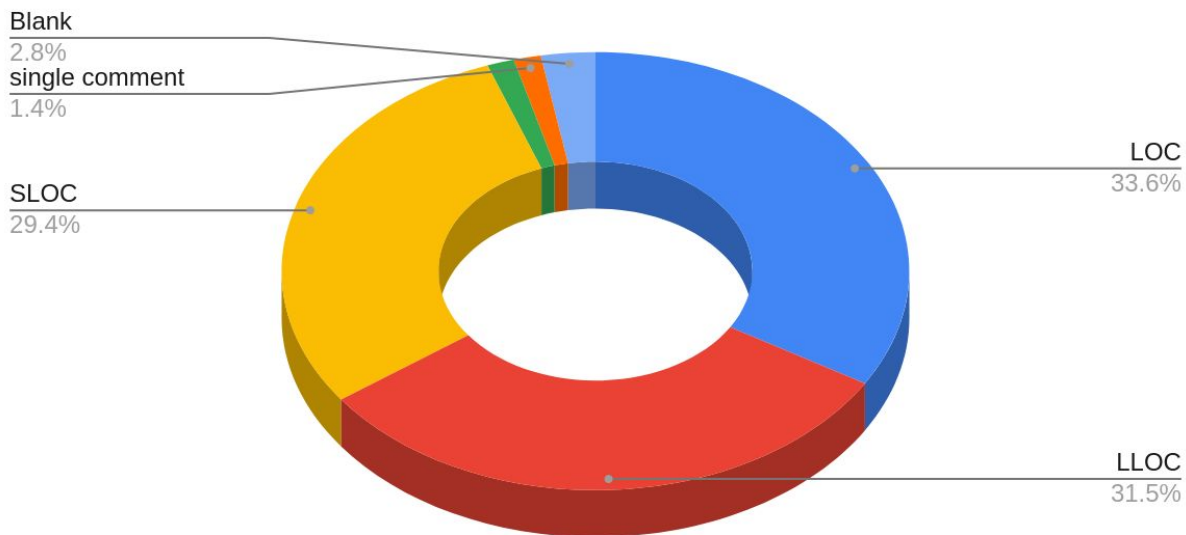


- Raw Analysis:

Raw Analysis



## Raw Analysis

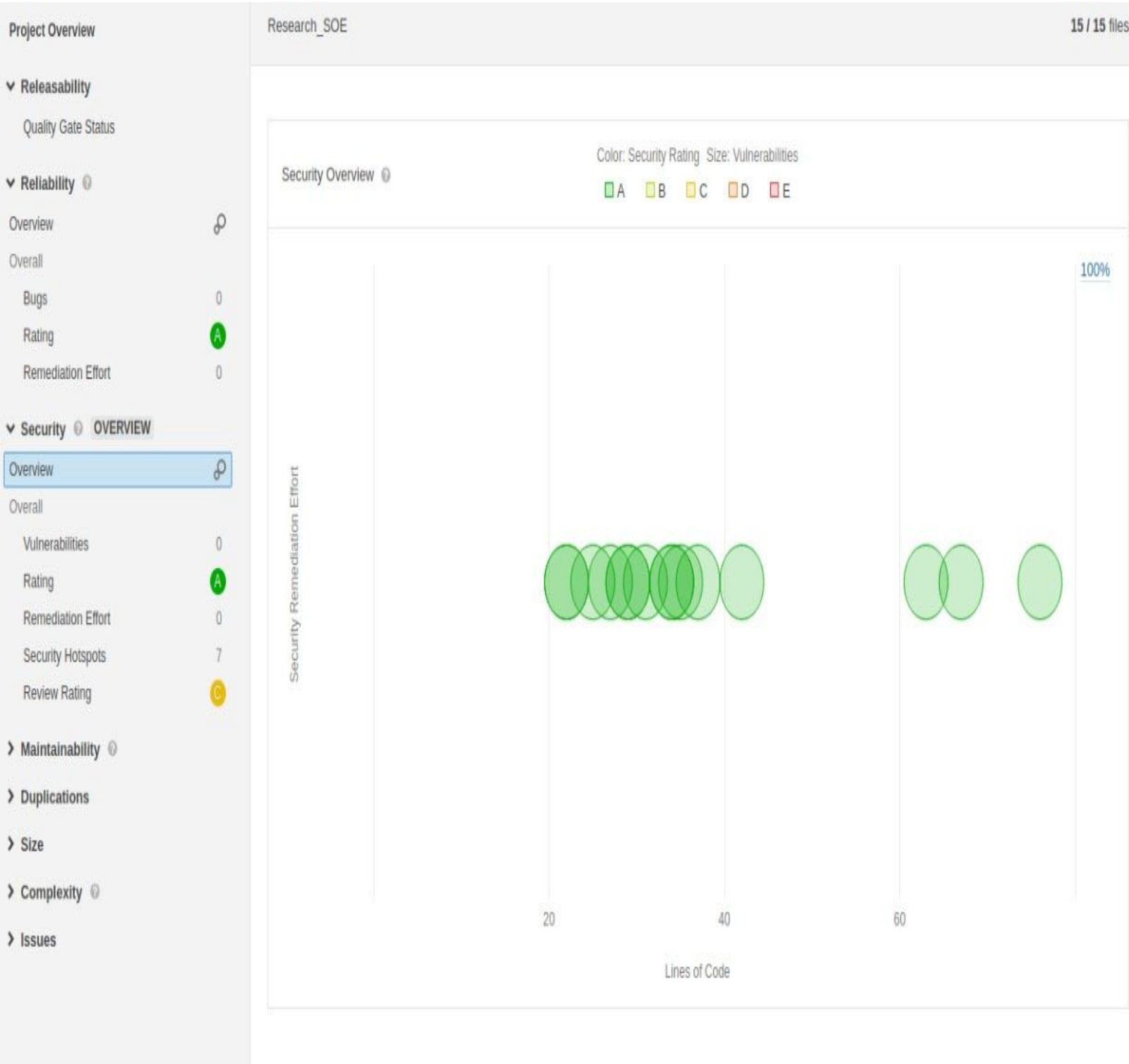


- Overview of different properties of the software:-

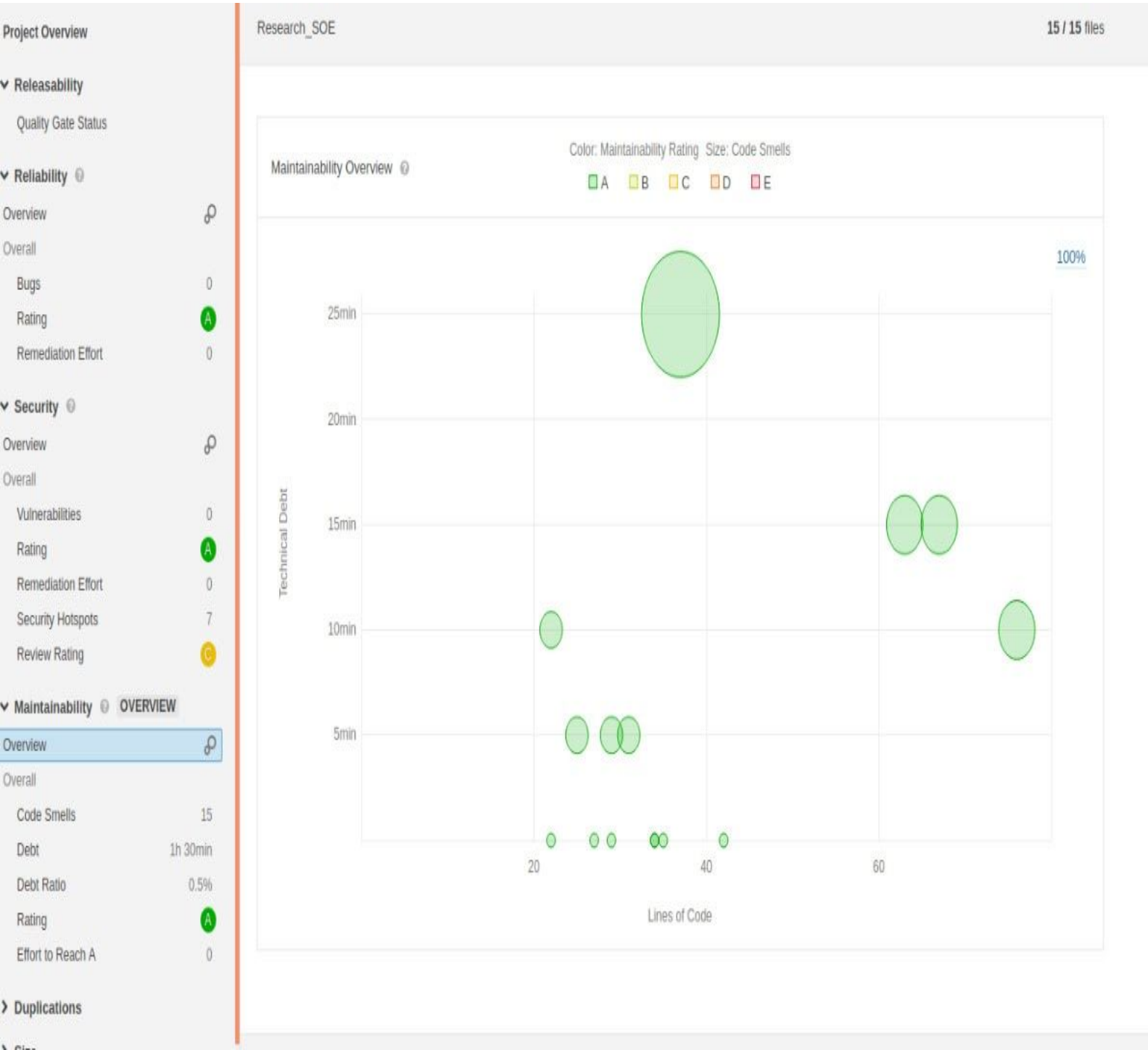
Module metrics		
File type metrics		
Project metrics		
file type	FILES	
.gitignore (Git)	2	
JSON	2	
JSP	1	
Markdown	2	
Python	15	
Shell Script	7	
Text	61	
Total	90	
Average	12.86	

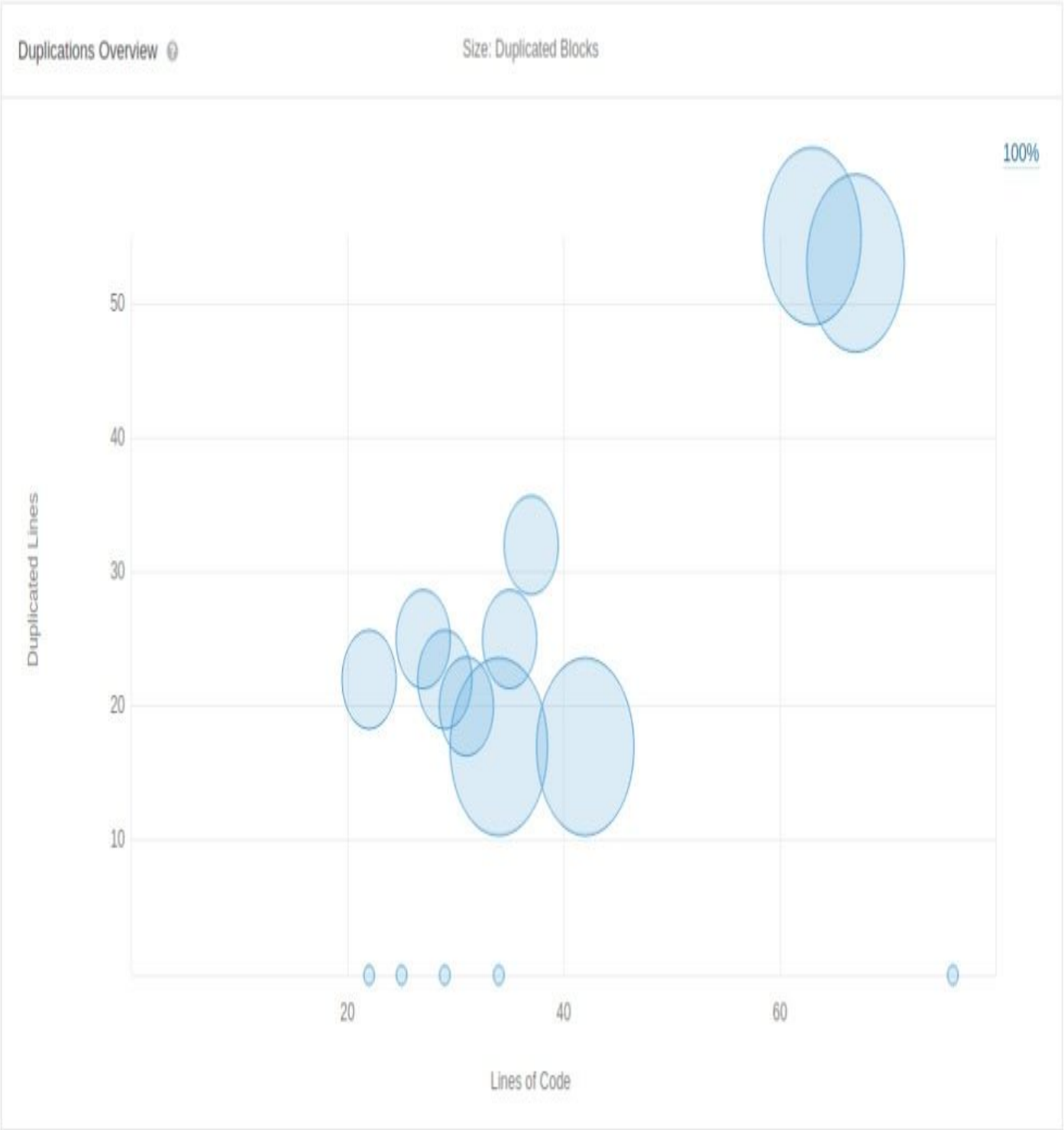
Module metrics		
File type metrics		
Project metrics		
file type	LOC	NCLOC
.gitignore (GitIgnore)	4	4
JSON	77	77
JSP	4	4
Markdown	22	22
Python	622	573
Shell Script	51	51
Text	34,243	
Total	35,023	731
Average	5,003.29	121.83

• Security Rating of Software

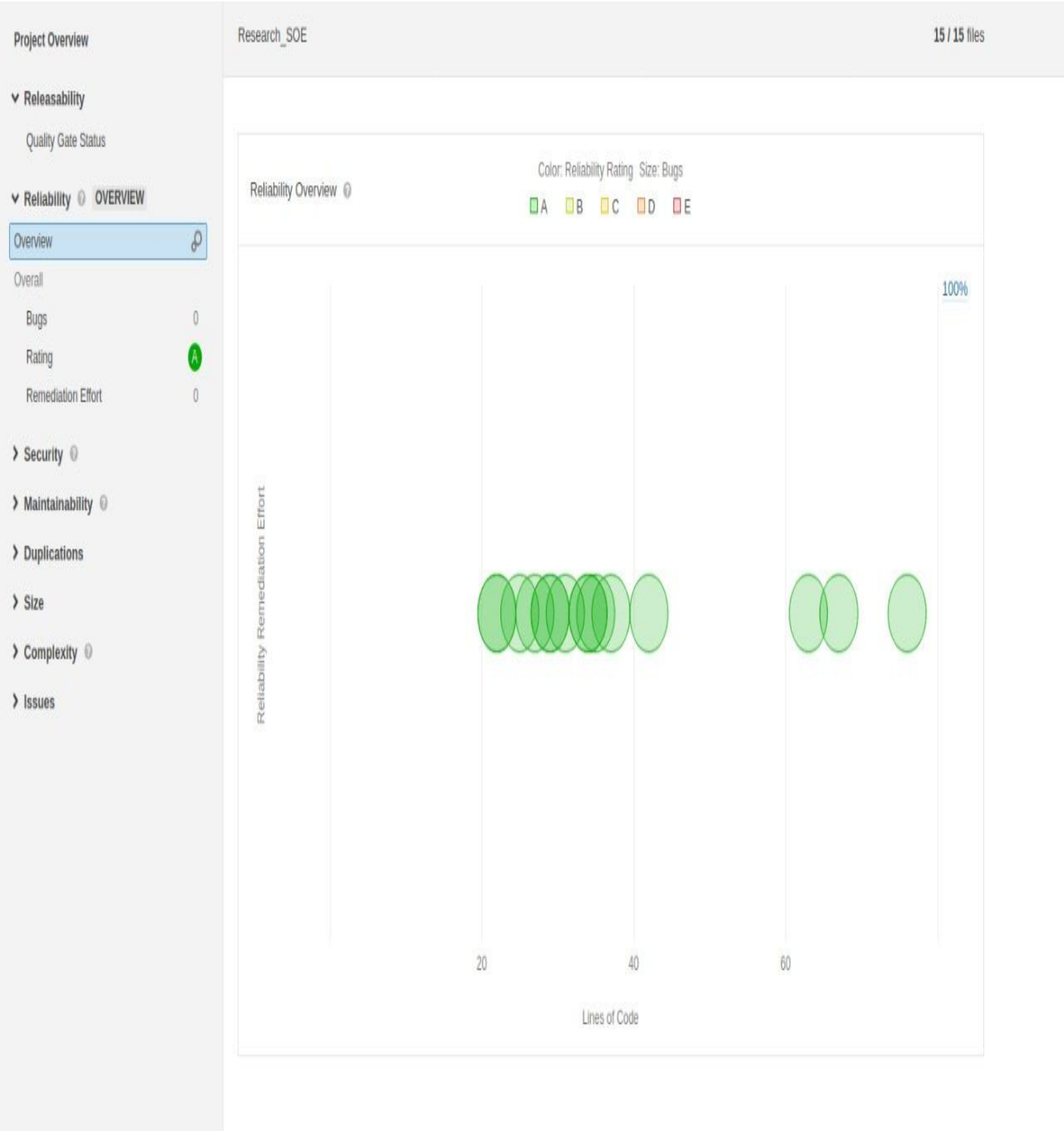


● Maintainability Of Software





● Reliability Of Software



## ➤ Different versions of software :-

1. **Lines of Source code** - Indicates the exact number of source code lines that are present in your source file, including blank lines.

### Lines of code (LOC)



## ● Technical Debt w.r.t time:-

### Technical Debt

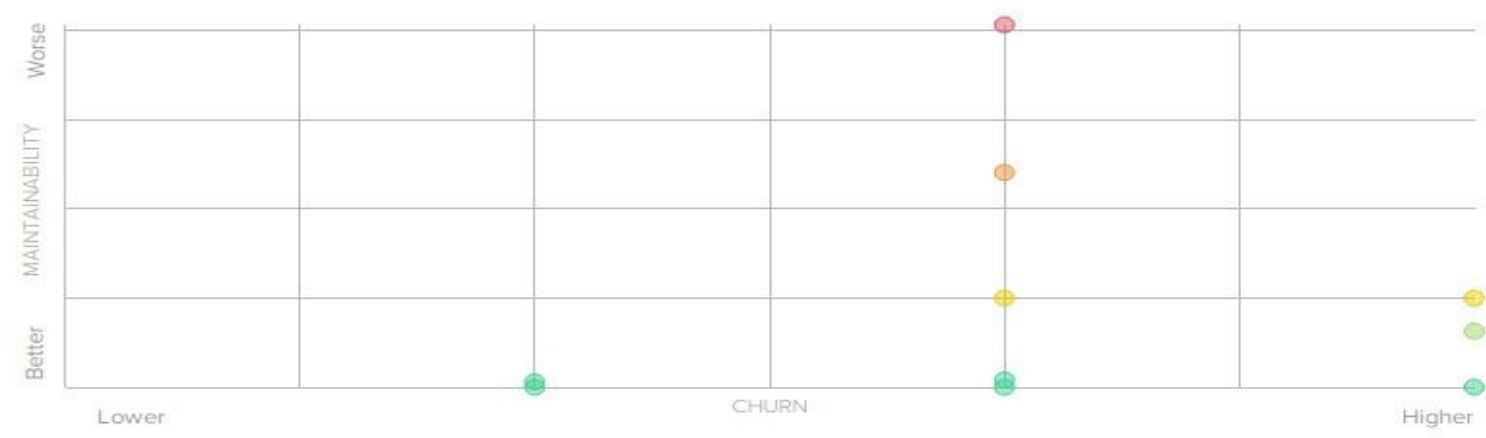




- For the Final Version :-

## Churn vs. maintainability

Maintainability issues cause bigger problems in files that are changed (churn) frequently.



- Properties of the Content:-
  - Complexity

Search this file...

	filename	sloc	comments	ratio_comment_to_code	mccabe	language
1	BXB.py	25	2	0.08	7	Python
3	BXBXB.py	76	4	0.05	28	Python
4	merge_table.py	34	2	0.06	8	Python
5	stam_corpse.py	22	0	0.0	6	Python
6	stam_let.py	27	0	0.0	6	Python
7	topic_find.py	63	4	0.06	19	Python
8	word.py	42	2	0.05	10	Python

- **Cyclomatic Complexity:**

Research\_SOE / Sample Data

View as

Tree

↑

↓




to select files

←

→

to navigate
7 files

Cyclomatic Complexity 89

 BXB.py	6
 BXBXB.py	24
 merge_table.py	8
 stam_corpse.py	10
 stam_jet.py	11
 topic_find.py	21
 word.py	9

7 of 7 shown

- **Issues**

Research\_SOE | Sample Data

View as

Tree

↑

↓

to select files

←

→

to navigate

7 files

Issues 5

BXB.py

1

BXBXB.py

2

merge\_table.py

0

stam\_corpse.py

0

stam\_let.py

0

topic\_find.py

2

word.py

0

7 of 7 shown

- **Cognitive Complexity:**

Research\_SOE / Sample Data

View as Tree ↑ ↓ to select files ← → to navigate 7 files

Cognitive Complexity 176

BXB.py	14
BXBXB.py	70
merge_table.py	10
stam_corpse.py	15
stam_let.py	15
topic_find.py	31
word.py	21

7 of 7 shown

- **Complexity w.r.t each File:-**

```

harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ ls *.py
BXB.py BXBXB.py merge_table.py stam_corpse.py stam_let.py topic_find.py word.py
harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ python3 -m mccabe BXB.py
Loop 9 3
Loop 24 5
harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ python3 -m mccabe BXBXB.py
Loop 9 3
Loop 25 6
Loop 46 3
Loop 63 6
Loop 78 9
harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ python3 -m mccabe merge_table.py
5:0: 'check' 3
Loop 23 2
Loop 28 2
Loop 35 2
Loop 39 3
harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ python3 -m mccabe stam_corpse.py
Loop 7 7
harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ python3 -m mccabe stam_let.py
Loop 11 7
harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ python3 -m mccabe topic_find.py
8:0: 'Sort_Tuple' 1
Loop 21 4
If 29 2
Loop 45 9
harsh@EclipseHunter:~/Desktop/Sem4/S0E/Research/Sample Data$ python3 -m mccabe word.py
Loop 7 2
Loop 11 8
Loop 47 2

```

- Grading from the trusted source radon :-
  - Maintainability Index

```
harsh@EclipseHunter:~/Desktop/Sem4/SOE/Research/Sample Data$ radon mi -s -m *.py
BxB.py - A (70.97)
BxBXB.py - A (51.18)
merge_table.py - A (64.06)
stam_corpse.py - A (54.46)
stam_let.py - A (51.93)
topic_find.py - A (53.91)
word.py - A (58.07)
harsh@EclipseHunter:~/Desktop/Sem4/SOE/Research/Sample Data$
```

- Churns with each file in consideration:-

CodeFactor

MASTER Research\_SOE

29 issues 0 pull requests 22 files 1 active branch Settings

GRADE	NAME	COMPLEXITY	CHURN	ISSUES
A	N-Gram\char.py		2	1
A	N-Gram\word.py		2	1
A	Sample Data\BxB.py		2	1
A	Sample Data\BxBXB.py		2	1
A	Sample Data\final.sh		1	1
A	Sample Data\merge.sh		1	1
A	Sample Data\merge_table.py	3	3	0
A	Sample Data\metadata.sh		1	1
A	Sample Data\ngram_topic.sh		2	1
A	Sample Data\stam_corpse.py		2	0
A	Sample Data\stam_let.py		2	0
A	Sample Data\topic.sh		2	1
A	Sample Data\topic_find.py	1	2	1
A	Sample Data\word.py		3	0
A	Topic\check.py	1	1	0
A	Topic\ngram_topic.sh		4	1
A	Topic\stam_corpse.py		1	0
A	Topic\stam_let.py		2	1
A	Topic\stamming.py		3	1
A	Topic\topic.sh		5	1

● Function classes and method from radon:-

○ Cyclomatic Complexity.

```
Average complexity: A (2.0)
harsh@EclipseHunter:~/Desktop/Sem4/SOE/Research/Sample Data$ radon cc *.py -a
merge table.py
  F 5:0 check - A
topic find.py
  F 8:0 Sort_Tuple - A

2 blocks (classes, functions, methods) analyzed.
Average complexity: A (2.0)
harsh@EclipseHunter:~/Desktop/Sem4/SOE/Research/Sample Data$
```

● Specification for topic finding code:-

Sample Data/topic\_find.py

TIME TO FIX: 5 minutes

View on GitHub

Ignore File

Size		Structure		Complexity		Duplication	
Lines of code:	76	Number of Methods:	1	Complexity:	1	Number of Clones:	7
Source lines of code:	63	sLoC / Method:	63.00	Complexity / Method:	1.00	Duplicated lines of code:	116
Commented lines of code:	4			Churn:	1		