

```
In [3]: 'C:/Users/User/Desktop/Java/Project/TFIDF.py' = 'C:/Users/User/Desktop/Java/Project'
```

RF Accuracy: 0.9371019108280255

RF Classification Report

	precision	recall	f1-score	support
CWE15	0.91	0.97	0.94	167
CWE23	0.92	0.96	0.94	339
CWE36	0.98	1.00	0.99	48
CWE78	1.00	1.00	1.00	39
CWE89	1.00	1.00	1.00	21
CWE80	1.00	1.00	1.00	37
CWE113	0.90	0.93	0.92	82
CWE129	1.00	1.00	1.00	214
Non-Vuln	0.91	0.83	0.87	309
accuracy			0.94	1256
macro avg	0.96	0.96	0.96	1256
weighted avg	0.94	0.94	0.94	1256

RF Confusion Metrix

```
[[162  0  0  0  0  0  0  0  5]
 [  0 325  0  0  0  0  0  0 14]
 [  0  0 48  0  0  0  0  0  0]
 [  0  0  0 39  0  0  0  0  0]
 [  0  0  0  0 21  0  0  0  0]
 [  0  0  0  0  0 37  0  0  0]
 [  1  0  0  0  0  0  0 76  0  5]
 [  0  0  1  0  0  0  0 213  0]
 [ 16 29  0  0  0  0  8  0 256]]
```

SVM Accuracy: 0.928343949044586

SVM Classification Report

	precision	recall	f1-score	support
CWE15	0.90	0.95	0.92	167
CWE23	0.94	0.93	0.94	339
CWE36	1.00	0.94	0.97	48
CWE78	0.95	1.00	0.97	39
CWE89	0.95	1.00	0.98	21
CWE80	1.00	1.00	1.00	37
CWE113	0.96	0.88	0.92	82
CWE129	0.99	0.98	0.98	214
Non-Vuln	0.86	0.87	0.86	309
accuracy			0.93	1256
macro avg	0.95	0.95	0.95	1256
weighted avg	0.93	0.93	0.93	1256

SVM Confusion Metrix

```
[[158  0  0  0  0  0  0  0  9]
 [  2 316  0  0  0  0  0  0 21]
 [  0  0 45  0  0  0  0  0  3]
 [  0  0  0 39  0  0  0  0  0]]
```

```

[ 0  0  0  0 21  0  0  0  0]
[ 0  0  0  0  0 37  0  0  0]
[ 0  0  0  0  0  0 72  3  7]
[ 0  0  0  0  0  0  0 210  4]
[ 15 20  0  2  1  0  3  0 268]]

```

NB Accuracy: 0.8160828025477707

NB Classification Report

	precision	recall	f1-score	support
CWE15	0.67	0.99	0.80	167
CWE23	0.74	0.97	0.84	339
CWE36	0.84	1.00	0.91	48
CWE78	1.00	0.97	0.99	39
CWE89	0.88	1.00	0.93	21
CWE80	0.97	1.00	0.99	37
CWE113	0.88	0.98	0.92	82
CWE129	1.00	0.94	0.97	214
Non-Vuln	0.90	0.34	0.49	309
accuracy			0.82	1256
macro avg	0.88	0.91	0.87	1256
weighted avg	0.85	0.82	0.79	1256

NB Confusion Metrix

```

[[166  1  0  0  0  0  0  0  0]
 [  2 330  0  0  0  0  1  0  6]
 [  0  0 48  0  0  0  0  0  0]
 [  0  0  0 38  0  0  0  0  1]
 [  0  0  0  0 21  0  0  0  0]
 [  0  0  0  0  0 37  0  0  0]
 [  0  0  0  0  0  0 80  0  2]
 [  0  0  7  0  3  1  0 201  2]
 [ 79 114  2  0  0  0 10  0 104]]

```

LR Accuracy: 0.9116242038216561

LR Classification Report

	precision	recall	f1-score	support
CWE15	0.84	0.92	0.88	167
CWE23	0.90	0.93	0.92	339
CWE36	1.00	0.96	0.98	48
CWE78	0.91	1.00	0.95	39
CWE89	1.00	1.00	1.00	21
CWE80	1.00	1.00	1.00	37
CWE113	0.97	0.88	0.92	82
CWE129	1.00	0.99	0.99	214
Non-Vuln	0.86	0.80	0.83	309
accuracy			0.91	1256
macro avg	0.94	0.94	0.94	1256
weighted avg	0.91	0.91	0.91	1256

LR Confusion Metrix

```

[[154  0  0  0  0  0  0  0 13]
 [  0 316  0  0  0  0  0  0 23]
 [  1  0 46  0  0  0  0  0  1]

```

```

[ 0  0  0 39  0  0  0  0  0]
[ 0  0  0  0 21  0  0  0  0]
[ 0  0  0  0  0 37  0  0  0]
[ 6  1  0  0  0  0 72  1  2]
[ 0  1  0  0  0  0  0 212  1]
[ 22 33  0  4  0  0  2  0 248]]

```

KNN Accuracy: 0.8980891719745223

KNN Classification Report

	precision	recall	f1-score	support
CWE15	0.82	0.91	0.86	167
CWE23	0.91	0.93	0.92	339
CWE36	0.83	0.92	0.87	48
CWE78	0.91	1.00	0.95	39
CWE89	0.88	1.00	0.93	21
CWE80	1.00	1.00	1.00	37
CWE113	0.94	0.77	0.85	82
CWE129	0.99	0.96	0.97	214
Non-Vuln	0.87	0.81	0.84	309
accuracy			0.90	1256
macro avg	0.90	0.92	0.91	1256
weighted avg	0.90	0.90	0.90	1256

KNN Confusion Metrix

```

[[152  3  0  0  0  0  2  0 10]
 [ 6 316  0  0  0  0  0  0 17]
 [ 1  0 44  0  0  0  0  0  3]
 [ 0  0  0 39  0  0  0  0  0]
 [ 0  0  0  0 21  0  0  0  0]
 [ 0  0  0  0  0 37  0  0  0]
 [ 6  0  4  0  0  0 63  1  8]
 [ 1  5  1  0  0  0  1 205  1]
 [ 19 25  4  4  3  0  1  2 251]]

```

In [4]: