



**BHASKARACHARYA NATIONAL INSTITUTE FOR SPACE
APPLICATIONS AND GEO-INFORMATICS**

WEEKLY PROGRESS REPORT (20/02/2023 – 26/02/2023)

WEEK 5

PROJECT NAME

MALWARE DETECTION USING ML

PROJECT DESCRIPTION :

**DESIGN AND IMPLEMENT ML MODEL TO
DETECT MALWARE IN SYSTEM**

GROUP MEMBER :

**PRATHAM PATEL, Shubham Patel, Shashank Sharma,
Yash Soni**

GROUP ID :

12

GROUP GUIDE :

HARSH KIRATSATA

GROUP COORDINATOR :

SIDHDHARTH PATEL

COLLEGE GUIDE NAME :

**MAYANK PATEL, RITIKA LADHA, KINJAL
CHAUDHARI**

COLLEGE GUIDE No. :

+91 9033280445,8866438698, 9723173567

COLLEGE GUIDE EMAIL :

**mayank.patel@adaniuni.ac.in,
ritika.ladha@adaniuni.ac.in,
kinjal.chaudhari@adaniuni.ac.in**

COLLEGE NAME :

**ADANI INSTITUTE OF INFRASTRUCTURE AND
ENGINEERING**

20/02/2023 TILL 26/02/2023 (7 DAYS)

Vectorization and data cleaning

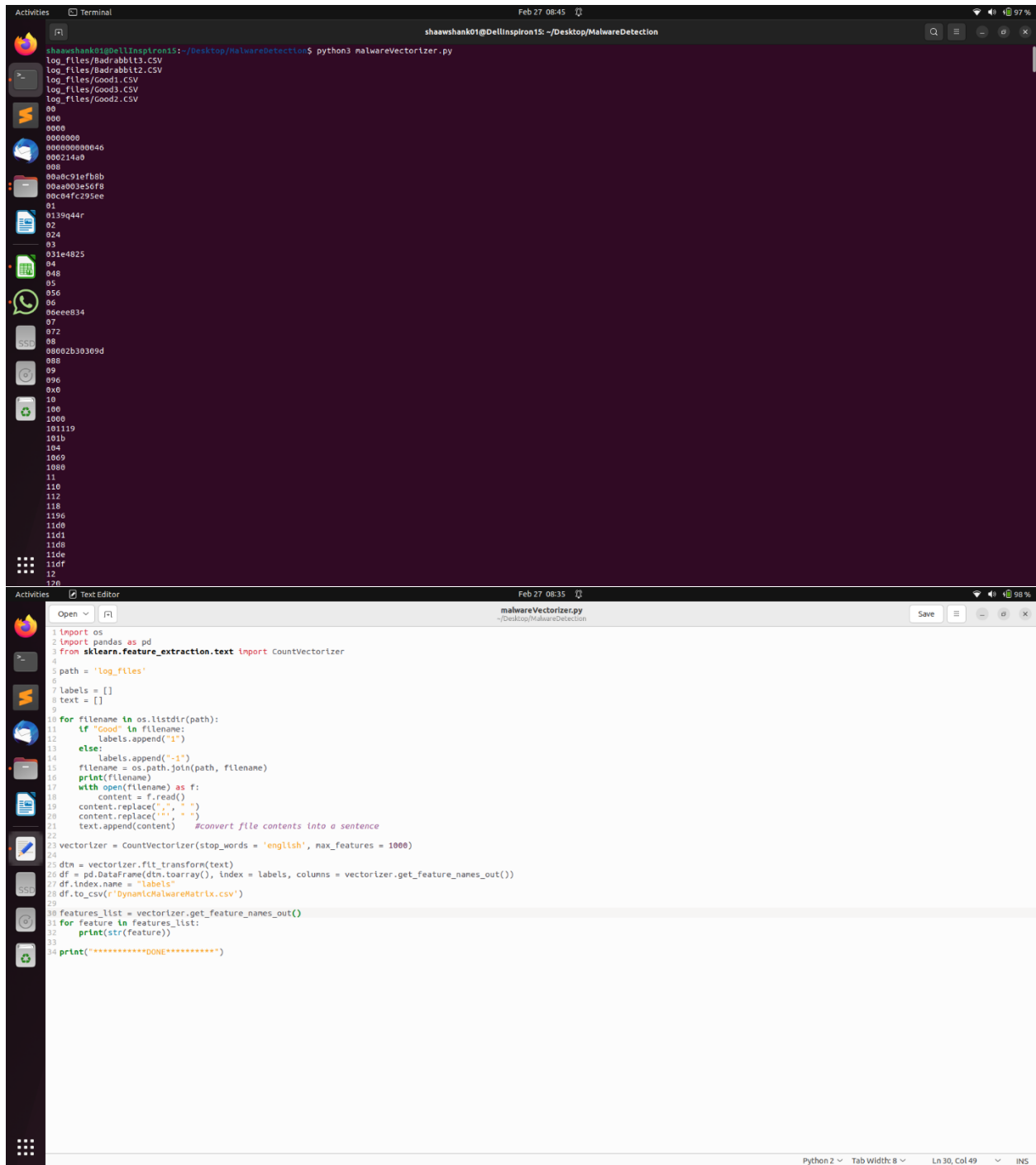
20/02/2023	Explored the malware data set (dummy).
21/02/2023	Explored the non-malware data set.
22/02/2023	Data Preprocessing of the files and log files.
23/02/2023	Learning theory of vectorization and code walkthrough.
24/02/2023	Implementing vectorization code on dataset.
25/02/2023	Noting the insights for feature selection (Holiday)(Saturday).
26/02/2023	Holiday (Sunday).

WEEK 6 (PLAN)	In the next week we are planning to clean the real world obtained data and we will try to implement vectorization
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REFERENCE :

- <https://towardsdatascience.com/what-is-vectorization-in-machine-learning-6c7be3e4440a>
- <https://www.geeksforgeeks.org/data-cleansing-introduction/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7249657/>
- <https://www.geeksforgeeks.org/bag-of-words-bow-model-in-nlp/>
- https://www.youtube.com/watch?v=e3Fqkq5DC_4

Screenshots:



The first screenshot shows a terminal window with the command `python3 malwareVectorizer.py` executed. The output displays a list of log files and their corresponding labels (0 to 120). The second screenshot shows the `malwareVectorizer.py` script in a text editor. The script uses `CountVectorizer` to process log files and output a CSV file named `DynamicMalwareMatrix.csv`.

```
shaawshank01@bellinspiron15: ~/Desktop/MalwareDetection$ python3 malwareVectorizer.py
log_files/Badrabbit3.csv
log_files/Badrabbit2.csv
log_files/Good1.csv
log_files/Good3.csv
log_files/Good2.csv
00
000
0000
0000000
0000000000046
000214a0
000
00a0c91efb8b
00aa003e56f8
00c04fc295ee
01
0139q44r
02
024
03
031e4825
04
048
05
056
06
06eee834
07
072
08
08002b30305d
09
09
096
0x0
10
100
1000
101119
101b
104
1069
1080
11
110
112
118
1196
11d0
11d1
11d8
11de
11df
12
120
```

```
1 import os
2 import pandas as pd
3 from sklearn.feature_extraction.text import CountVectorizer
4
5 path = 'log_files'
6
7 labels = []
8 text = []
9
10 for filename in os.listdir(path):
11     if "Good" in filename:
12         labels.append("1")
13     else:
14         labels.append("-1")
15     filename = os.path.join(path, filename)
16     print(filename)
17     with open(filename) as f:
18         content = f.read()
19     content.replace("\n", " ")
20     content.replace(" ", " ")
21     text.append(content) #convert file contents into a sentence
22
23 vectorizer = CountVectorizer(stop_words = 'english', max_features = 1000)
24
25 dtn = vectorizer.fit_transform(text)
26 df = pd.DataFrame(dtn.toarray(), index = labels, columns = vectorizer.get_feature_names_out())
27 df.index.name = "Labels"
28 df.to_csv(r'DynamicMalwareMatrix.csv')
29
30 features_list = vectorizer.get_feature_names_out()
31 for feature in features_list:
32     print(str(feature))
33
34 print("*****DONE*****")
```

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LibreOffice Calc

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A1 f. Σ = Time of Day

Time of Day	Process Name	PID	Operation	Path
3:00:05.3520831 PM	Explorer.EXE	2368	RegOpenKey	HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\UserAssist\{CEBFF5CD-ACE2-4F4F-9178-992F41749EA}\Count{P:\href\EtagQ\qhgac\etqgba.nr}
3:00:05.3520854 PM	Explorer.EXE	2368	RegSetVal	HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\UserAssist\{CEBFF5CD-ACE2-4F4F-9178-992F41749EA}\Count{P:\href\EtagQ\qhgac\etqgba.nr}
3:00:05.3521007 PM	Explorer.EXE	2368	RegOpenKey	HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\UserAssist\{CEBFF5CD-ACE2-4F4F-9178-992F41749EA}\Count{P:\href\EtagQ\qhgac\etqgba.nr}
3:00:05.3575081 PM	SearchIndexer.exe	2700	FileSystemControl	C:\
3:00:05.3575170 PM	SearchIndexer.exe	2700	FileSystemControl	C:\
3:00:05.3575237 PM	SearchIndexer.exe	2700	FileSystemControl	C:\
3:00:05.4159094 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159280 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159281 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159325 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159370 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159413 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159485 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159510 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159538 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4159566 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
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3:00:05.4160018 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
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3:00:05.4160158 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
3:00:05.4160183 PM	vmtoolsd.exe	1488	RegOpenKey	HKLM\System\CurrentControlSet\Services\Fairplay\Instances
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A1 f. Σ = Time of Day

Time of Day	Process Name	PID	Operation	Path
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2:46:16.6887101 PM	SearchIndexer.exe	2816	FileSystemControl	C:\
2:46:16.6893153 PM	SearchIndexer.exe	2816	FileSystemControl	C:\
2:46:16.6893121 PM	SearchIndexer.exe	2816	FileSystemControl	C:\
2:46:16.6893280 PM	SearchIndexer.exe	2816	FileSystemControl	C:\
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2:46:16.7388010 PM	svchost.exe	700	RegOpenKey	HKCR\CLSID\{B8C3F05E-D68B-11D0-A075-0004F68820}\Progid
2:46:16.7388062 PM	svchost.exe	700	RegOpenKey	HKCR\CLSID\{B8C3F05E-D68B-11D0-A075-0004F68820}\(Default)
2:46:16.7388108 PM	svchost.exe	700	RegOpenKey	HKCR\CLSID\{B8C3F05E-D68B-11D0-A075-0004F68820}\(Default)
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2:46:16.7393567 PM	svchost.exe	700	RegOpenKey	HKLM\SAM\SAM\DOMAINS\Account\Users\0000003E
2:46:16.7393584 PM	svchost.exe	700	RegOpenKey	HKLM\SAM\SAM\DOMAINS\Account\Users\0000003E

Sheet 1 of 1 Default English (India) Average: Sum: 0 100%

