

COMP 6710 - Final Project

Daniel-TK-Tom-FALL2024-SQA

Example of static analysis being used upon the commit of a file.(e.g. 'Running security scan...'). Any errors are stored in a log csv file in the repo named security_report.csv.

```
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana/mining# nano git.repo.miner.py

Use "fg" to return to nano.

[2]+  Stopped                  nano git.repo.miner.py
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana/mining# git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   git.repo.miner.py

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .git.repo.miner.py.swp
        SQA-PROJECT-LOGGER.log
        __pycache__/
        ../myLogger.py

no changes added to commit (use "git add" and/or "git commit -a")
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana/mining# git add .
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana/mining# git commit -m "Updated main to call logging methods."
Running security scan on Python Files...
[main] INFO     profile include tests: None
[main] INFO     profile exclude tests: None
[main] INFO     cli include tests: None
[main] INFO     cli exclude tests: None
[main] INFO     running on Python 3.8.10
[csv]  INFO     CSV output written to file: security_report.csv
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana/mining#
```

Logging has been implemented in git-repo-mining.py, where five methods were edited: deleteRepo, makeChunks, cloneRepo, dumpContentIntoFile, and getPythonCount. The log is stored in SQA-PROJECT-LOGGER.log and this is a screenshot after a run. The file itself encounters errors but the logging works.

```
1 2024-12-05 15:45:18,879:Application started.
2 2024-12-05 15:45:18,879:Execution completed successfully.
3 2024-12-05 15:45:18,880:Application ended.
4 2024-12-05 16:08:45,373:Application started.
5 2024-12-05 16:08:45,374:Starting repository deletion process...
6 2024-12-05 16:08:45,379:Application encountered an unexpected error: [Errno 2] No such file or directory: 'DELETE_CANDIDATES_GITHUB_V2.csv'
7 2024-12-05 16:08:45,380:Application ended.
```

This is the output from running fuzz.py. This file fuzzes five methods in the report.py file in the empirical folder. The results from execution are stored in fuzzing_results.log. This output can also be seen in the Codacy CI analysis on GitHub.

```
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana# python3 fuzz.py
[937817.3112830374, 915536.7031059556, 20305.65570328391, 931229.2098534512, 888584.6225226031]
CATEGORY:DATA_LOAD_COUNT, AVG_PROP_VAL:738694.7004936662
-----
CATEGORY:DATA_LOAD_COUNT, MEDIAN_PROP_VAL:915536.7031059556
-----
[]
CATEGORY:DATA_LOAD_COUNT, AVG_PROP_VAL:495482.9782003331
-----
CATEGORY:DATA_LOAD_COUNT, MEDIAN_PROP_VAL:540785.853740216
-----
CATEGORY:MODEL_LOAD_COUNT, AVG_PROP_VAL:437750.56482684764
-----
CATEGORY:MODEL_LOAD_COUNT, MEDIAN_PROP_VAL:301995.2693607949
-----
CATEGORY:DATA_DOWNLOAD_COUNT, AVG_PROP_VAL:594605.3012864426
-----
CATEGORY:DATA_DOWNLOAD_COUNT, MEDIAN_PROP_VAL:700982.6476088495
-----
CATEGORY:MODEL_LABEL_COUNT, AVG_PROP_VAL:424824.44108143443
-----
CATEGORY:MODEL_LABEL_COUNT, MEDIAN_PROP_VAL:333847.9271399897
-----
CATEGORY:MODEL_OUTPUT_COUNT, AVG_PROP_VAL:640900.7642415547
-----
CATEGORY:MODEL_OUTPUT_COUNT, MEDIAN_PROP_VAL:641161.5832034552
-----
CATEGORY:DATA_PIPELINE_COUNT, AVG_PROP_VAL:227610.19555908305
-----
CATEGORY:DATA_PIPELINE_COUNT, MEDIAN_PROP_VAL:205084.45767265063
-----
CATEGORY:ENVIRONMENT_COUNT, AVG_PROP_VAL:595888.3051685148
-----
CATEGORY:ENVIRONMENT_COUNT, MEDIAN_PROP_VAL:609131.114557371
-----
CATEGORY:STATE_OBSERVE_COUNT, AVG_PROP_VAL:454204.8355826436
-----
CATEGORY:STATE_OBSERVE_COUNT, MEDIAN_PROP_VAL:376245.388129619
-----
CATEGORY:TOTAL_EVENT_COUNT, AVG_PROP_VAL:467883.24709307926
-----
CATEGORY:TOTAL_EVENT_COUNT, MEDIAN_PROP_VAL:405440.8708836888
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana#
```

Results from executing fuzz.py reported in fuzzing_results.log showcasing that the fuzzing method is working as expected and has detected bugs in the methods fuzzed.

```
root@DESKTOP-HNQR2A6:/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana# cat fuzzing_results.log
Bug in reportProp
Inputs: test_fuzz_reportProp.csv
Exception: Traceback (most recent call last):
  File "fuzz.py", line 46, in fuzz_reportProp
    reportProp(filename)
  File "/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana/empirical/report.py", line 35, in reportProp
    average_prop_metric = Average(prop_val_list)
  File "/mnt/c/Users/tom44/Desktop/Daniel-TK-Tom-FALL2024-SQA/MLForensics/MLForensics-farzana/empirical/report.py", line 20, in Average
    return sum(Mylist) / len(Mylist)
ZeroDivisionError: division by zero
```