



IT314: Software Engineering

Lab 5 - Static Analysis

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Static analysis of a git repository using the 'mypy' tool.

Git repository link:

<https://github.com/qxf2/wtfiswronghere>

Command for installing mypy tool: **python -m pip install mypy**

Command for finding the errors in the file: **python -m mypy
<FILE_PATH>**

1. First install the mypy tool:

```
C:\Users\student>python -m pip install mypy
Defaulting to user installation because normal site-packages is not writeable
Collecting mypy
  Downloading mypy-1.1.1-cp310-cp310-win_amd64.whl (8.9 MB)
    -----8.9/8.9 MB 467.4 kB/s eta 0:00:00
Collecting mypy_extensions>=1.0.0
  Downloading mypy_extensions-1.0.0-py3-none-any.whl (4.7 kB)
Requirement already satisfied: tomli>=1.1.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from mypy) (2.0.1)
Collecting typing_extensions>=3.10
  Downloading typing_extensions-4.5.0-py3-none-any.whl (27 kB)
Installing collected packages: typing_extensions, mypy_extensions, mypy
WARNING: The scripts dmypy.exe, mypyc.exe, mypyc.exe, stubgen.exe and stubtest.exe are installed in 'C:\Users\student\AppData\Roaming\Python\Python310\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed mypy-1.1.1 mypy_extensions-1.0.0 typing_extensions-4.5.0

[notice] A new release of pip available: 22.3.1 -> 23.0.1
[notice] To update, run: python.exe -m pip install --upgrade pip
```

2. Clone a git repository:

```
C:\Users\student>git clone https://github.com/qxf2/wtfiswronghere.git
Cloning into 'wtfiswronghere'...
remote: Enumerating objects: 146, done.
Receiving objects: 100% (146/146), 263.73 KiB | 193.00 KiB/s, done.

Resolving deltas: 100% (61/61), done.

C:\Users\student>
```

3. Run the command for finding errors:

01_challenge.py:

```
27         elif i%num1=0:
28             print(i,three_mul)
29         elif i%num2==0:
30             print(i,five_mul)
```

```
C:\Users\student\wtfiswronghere>python -m mypy 01_challenge/01_challenge.py
01_challenge\01_challenge.py:27: error: cannot assign to expression here. Maybe you meant '==' instead of '='? [syntax]
Found 1 error in 1 file (errors prevented further checking)
```

02_challenge.py:

```
def fizzbuzz(max_num):
    "This method implements FizzBuzz"
    # Google for 'range in python' to see what it does
    for i in range(1,max_num):
        # % or modulo division gives you the remainder
        if i%3==0 and i%5==0:
            print(i,"fizzbuzz")
        elif i%3==0:
            print(i,"fizz")
        elif i%5==0:
            print(i,"Buzz")

#---START OF SCRIPT
if __name__=='__main__':
    fizzbuzz()
```

```
C:\Users\student\wtfiswronghere>python -m mypy 02_challenge/02_challenge.py
02_challenge\02_challenge.py:26: error: Missing positional argument "max_num" in call to "fizzbuzz" [call-arg]
Found 1 error in 1 file (checked 1 source file)
```

03_challenge.py:

```
C:\Users\student\wtfiswronghere>python -m mypy 03_challenge/03_challenge.py
Success: no issues found in 1 source file
```

04_challenge.py:

```
23     for i in range(1,max_num):
24         # % or modulo division gives you the remainder
25         if i%num1==0 and i%num2==0:
26             print(i,three_mul+five_mul)
27         elif i%num1==0:
28             print(i,three_mul)
29         elif i%num2==0:
30             print(i,five_mul)
```

```
C:\Users\student\wtfiswronghere>python -m mypy 04_challenge/04_challenge.py
04_challenge\04_challenge.py:26: error: expected an indented block after 'if' statement on line 25 [syntax]
Found 1 error in 1 file (errors prevented further checking)
```

05_challenge.py:

```
20  with open('mifile.txt','r') as f:
21      print 'i have created'
22      num1 = int(f.readline())
23      num2=int(f.readline())
24      max_num = int(f.readline())
25
```

```
C:\Users\student\wtfiswronghere>python -m mypy 05_challenge/05_challenge.py
05_challenge\05_challenge.py:21: error: Missing parentheses in call to 'print'. Did you mean print(...)? [syntax]
Found 1 error in 1 file (errors prevented further checking)
```

06_challenge.py:

```
C:\Users\student\wtfiswronghere>python -m mypy 06_challenge/06_challenge.py
Success: no issues found in 1 source file
```

07_challenge.py:

```
C:\Users\student\wtfiswronghere>python -m mypy 07_challenge/07_challenge.py
Success: no issues found in 1 source file
```

08_challenge.py:

```
35  #---START OF SCRIPT
36  if __name__=='__main__':
37      "Initialize the fizzbuzz object"
38      fizzbuzz_obj = Fizz_Buzz()
39      fizzbuzz_obj.fizzbuzz(100)
40
```

```
C:\Users\student\wtfiswronghere>python -m mypy 08_challenge/08_challenge.py
08_challenge\08_challenge.py:39: error: Too many arguments for "fizzbuzz" [call-arg]
08_challenge\08_challenge.py:39: note: Looks like the first special argument in a method is not named "self", "cls", or "mcs", maybe it is missing?
Found 1 error in 1 file (checked 1 source file)
```

Analysis of this tool(mypy):

- In most of the files, this tool identifies syntax errors.
- It also identifies the errors of 'undefined' variables/elements.
- If a file contains any error, it displays it. Otherwise, it displays a success message.
- Hence, this tool can be used for debugging the code.