

# **LAB 5**

## **IT 314 Software Engineering**

**Krish Gulabani    202001053**

---

## Static Analysis:

To perform the above analysis I have used python files from github repository and used pylint to do static analysis for the files.

Repository that i have used for static analysis:

<https://github.com/JayabharathP/The-Python-Mega-Course-Build-10-Real-World-Applications->

Pylint It's been around for 13 years, and over that time it has included features like coding standards, error detection and refactoring by detecting duplicated code. Out of the box Pylint is easy to set up, requiring a minimal amount of configuration, but it's fully customizable if you want it to be — by editing a file you can select which errors and conventions are most relevant to you. Most of the messages here will be self-explanatory.

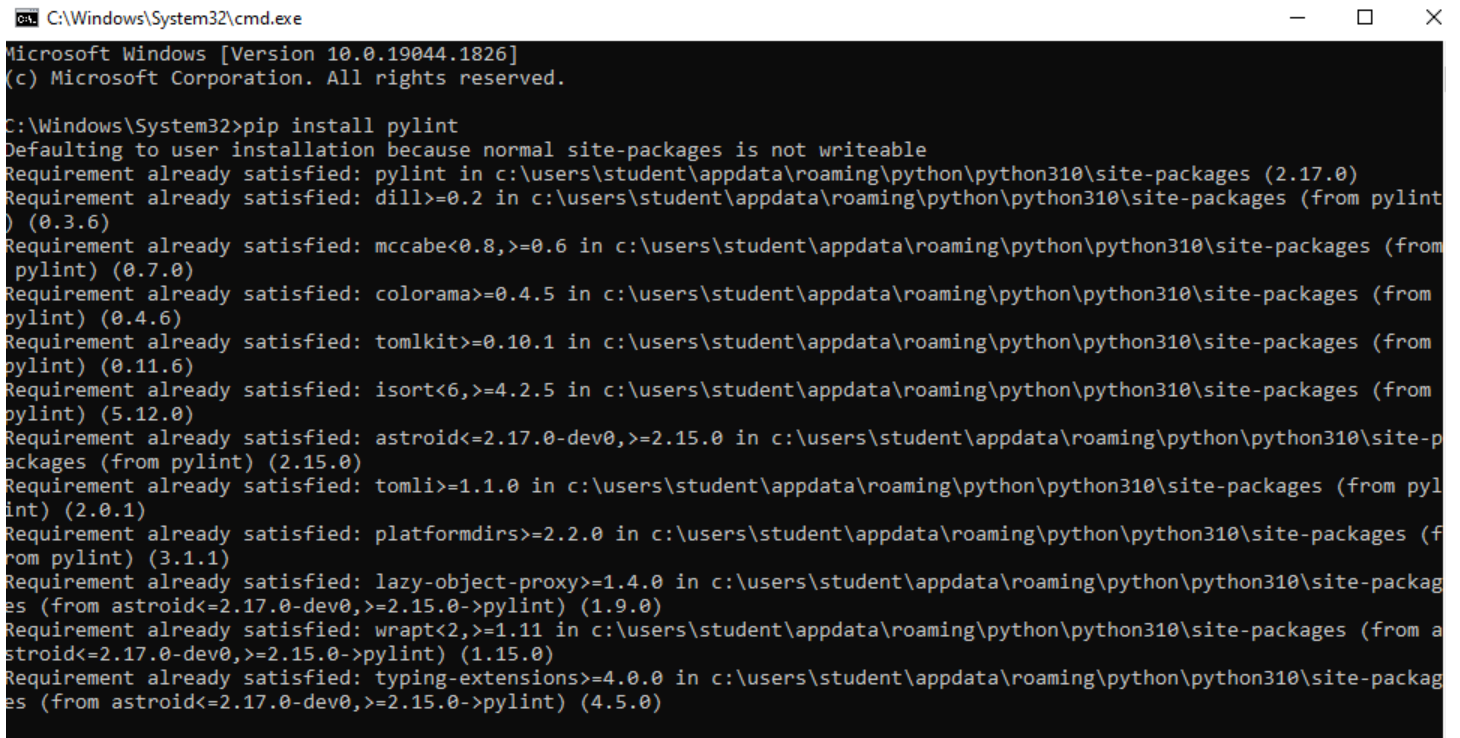
Pylint is a Python static code analysis tool that checks code for errors, potential bugs, and style issues. It examines code and generates reports based on a set of predefined rules that cover areas such as naming conventions, code formatting, and code complexity.

Pylint is designed to help developers write better and more maintainable code. It checks for issues like unused variables, undefined variables, and unreachable code. It also provides suggestions for improving code readability and reducing code complexity.

Pylint is an incredibly useful tool for static code analysis. It provides a simple score out of 10, a detailed output on what to fix, and the ability to ignore things you do not believe in.

\$ pip install pylint

This will give confirmation it is installed.



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.1826]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>pip install pylint
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: pylint in c:\users\student\appdata\roaming\python\python310\site-packages (2.17.0)
Requirement already satisfied: dill>=0.2 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.3.6)
Requirement already satisfied: mccabe<0.8,>=0.6 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.7.0)
Requirement already satisfied: colorama>=0.4.5 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.4.6)
Requirement already satisfied: tomlkit>=0.10.1 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (0.11.6)
Requirement already satisfied: isort<6,>=4.2.5 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (5.12.0)
Requirement already satisfied: astroid<=2.17.0-dev0,>=2.15.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (2.15.0)
Requirement already satisfied: tomli>=1.1.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (2.0.1)
Requirement already satisfied: platformdirs>=2.2.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from pylint) (3.1.1)
Requirement already satisfied: lazy-object-proxy>=1.4.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0->pylint) (1.9.0)
Requirement already satisfied: wrapt<2,>=1.11 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0->pylint) (1.15.0)
Requirement already satisfied: typing-extensions>=4.0.0 in c:\users\student\appdata\roaming\python\python310\site-packages (from astroid<=2.17.0-dev0,>=2.15.0->pylint) (4.5.0)
```

\$ pylint src/ or py -m pylint file.py

Which will give us some output from the static code analysis followed by a score!

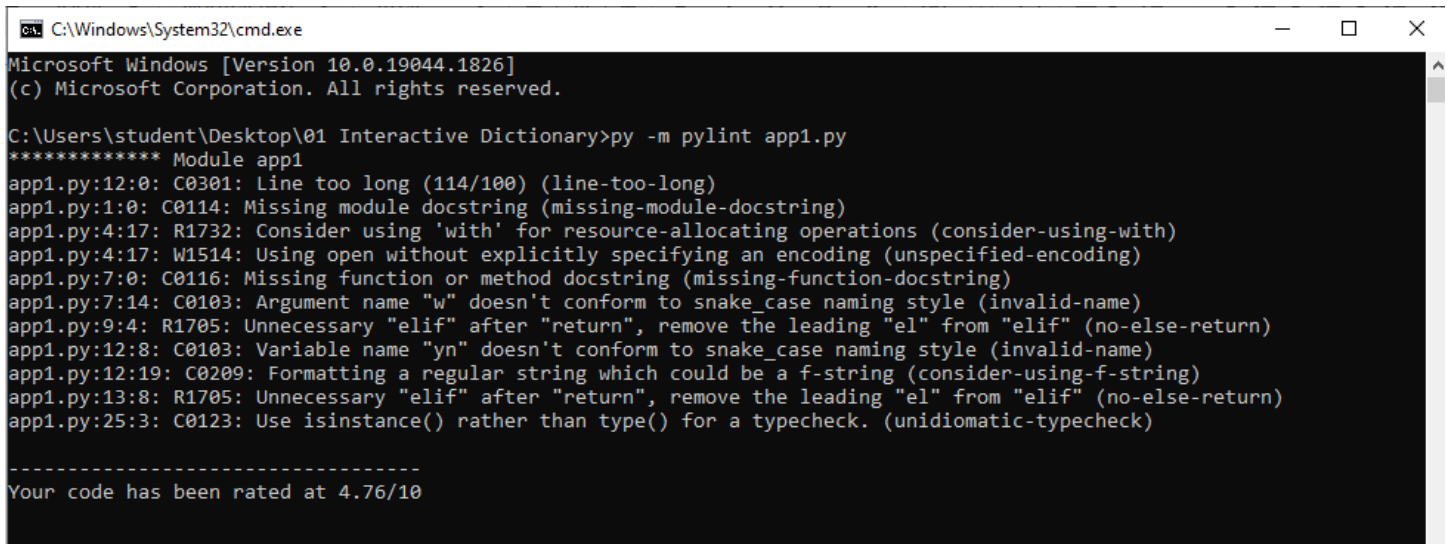
I have used a repository named

The-Python-Mega-Course-Build-10-Real-World-Applications- for stat analysis.

For 1st Code link:

<https://github.com/JayabharathP/The-Python-Mega-Course-Build-10-Real-World-Applications-/blob/master/01%20Interactive%20Dictionary/app1.py>

File1 -> app1



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.1826]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student\Desktop\01 Interactive Dictionary>py -m pylint app1.py
***** Module app1
app1.py:12:0: C0301: Line too long (114/100) (line-too-long)
app1.py:1:0: C0114: Missing module docstring (missing-module-docstring)
app1.py:4:17: R1732: Consider using 'with' for resource-allocating operations (consider-using-with)
app1.py:4:17: W1514: Using open without explicitly specifying an encoding (unspecified-encoding)
app1.py:7:0: C0116: Missing function or method docstring (missing-function-docstring)
app1.py:7:14: C0103: Argument name "w" doesn't conform to snake_case naming style (invalid-name)
app1.py:9:4: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
app1.py:12:8: C0103: Variable name "yn" doesn't conform to snake_case naming style (invalid-name)
app1.py:12:19: C0209: Formatting a regular string which could be a f-string (consider-using-f-string)
app1.py:13:8: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
app1.py:25:3: C0123: Use isinstance() rather than type() for a typecheck. (unidiomatic-typecheck)

-----
Your code has been rated at 4.76/10
```

C0301: A line is too long (over 100 characters).

C0114: The module is missing a docstring.

R1732: Suggests to use with statement when allocating resources.

W1514: Using open without specifying an explicit encoding.

C0116: A function or method is missing a docstring.

C0103: Argument and variable names do not conform to the snake\_case naming style.

R1705: Unnecessary elif statements after a return statement.

C0209: Suggests to use f-strings instead of regular strings for formatting.

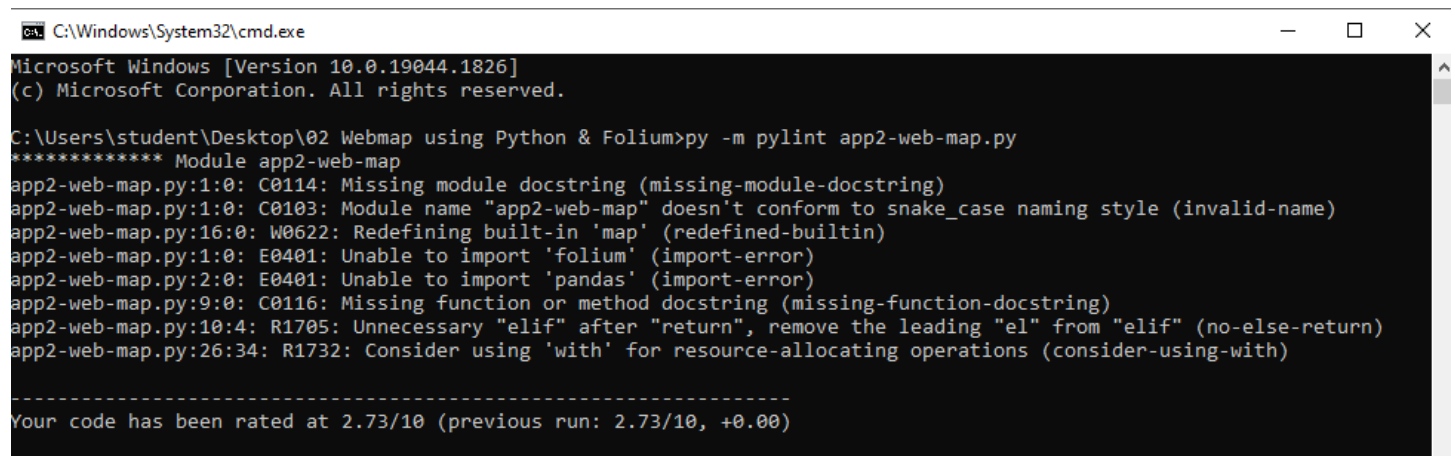
C0123: Suggests to use isinstance() instead of type() for typechecking.

The overall code quality is rated at 4.76/10.

For 2nd Code link:

<https://github.com/JayabharathP/The-Python-Mega-Course-Build-10-Real-World-Applications-/blob/master/02%20Webmap%20using%20Python%20%26%20Folium/app2-web-map.py>

File2 -> app2-web-map.py



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.1826]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student\Desktop\02 Webmap using Python & Folium>py -m pylint app2-web-map.py
***** Module app2-web-map
app2-web-map.py:1:0: C0114: Missing module docstring (missing-module-docstring)
app2-web-map.py:1:0: C0103: Module name "app2-web-map" doesn't conform to snake_case naming style (invalid-name)
app2-web-map.py:16:0: W0622: Redefining built-in 'map' (redefined-builtin)
app2-web-map.py:1:0: E0401: Unable to import 'folium' (import-error)
app2-web-map.py:2:0: E0401: Unable to import 'pandas' (import-error)
app2-web-map.py:9:0: C0116: Missing function or method docstring (missing-function-docstring)
app2-web-map.py:10:4: R1705: Unnecessary "elif" after "return", remove the leading "el" from "elif" (no-else-return)
app2-web-map.py:26:34: R1732: Consider using 'with' for resource-allocating operations (consider-using-with)

-----
Your code has been rated at 2.73/10 (previous run: 2.73/10, +0.00)
```

Missing module docstring

Module name does not conform to snake\_case naming style

Unable to import 'folium' module

Unable to import 'pandas' module

Missing function or method docstring

Unnecessary "elif" statement after "return"

Redefining built-in 'map' function

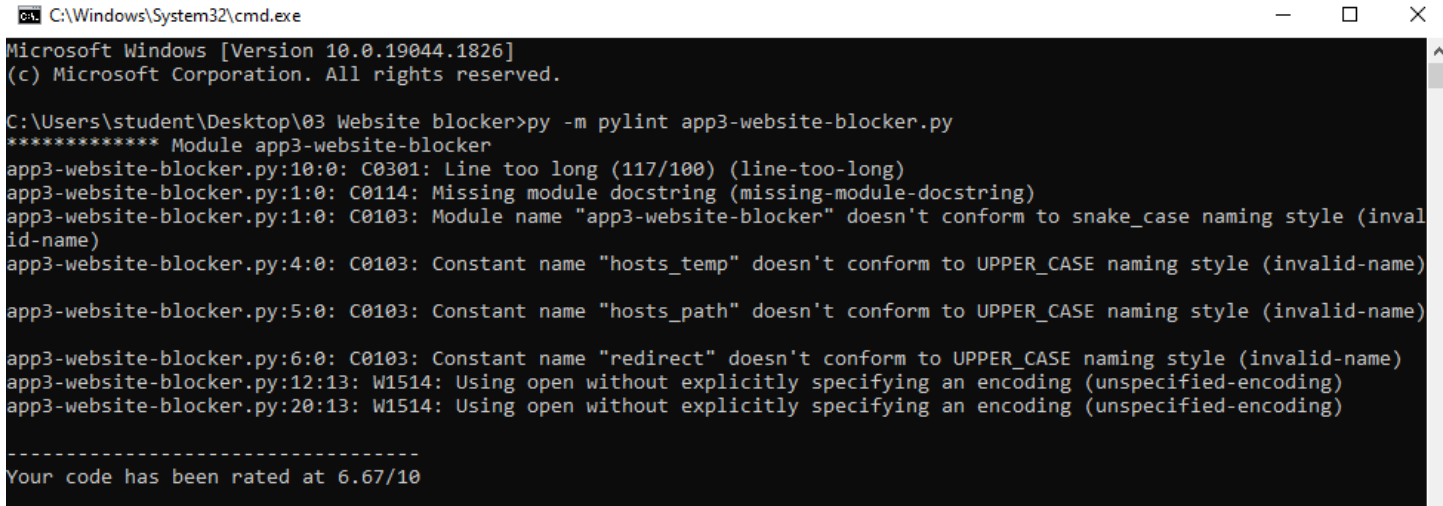
Consider using 'with' statement for resource-allocating operations.

Overall, the code has a low rating of 2.73/10 due to these issues.

For 3rd Code link:

<https://github.com/JayabharathP/The-Python-Mega-Course-Build-10-Real-World-Applications-/blob/master/03%20Website%20blocker/app3-website-blocker.py>

File3 -> app3-website-blocker



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.1826]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student\Desktop\03 Website blocker>py -m pylint app3-website-blocker.py
***** Module app3-website-blocker
app3-website-blocker.py:10:0: C0301: Line too long (117/100) (line-too-long)
app3-website-blocker.py:1:0: C0114: Missing module docstring (missing-module-docstring)
app3-website-blocker.py:1:0: C0103: Module name "app3-website-blocker" doesn't conform to snake_case naming style (invalid-name)
app3-website-blocker.py:4:0: C0103: Constant name "hosts_temp" doesn't conform to UPPER_CASE naming style (invalid-name)
app3-website-blocker.py:5:0: C0103: Constant name "hosts_path" doesn't conform to UPPER_CASE naming style (invalid-name)
app3-website-blocker.py:6:0: C0103: Constant name "redirect" doesn't conform to UPPER_CASE naming style (invalid-name)
app3-website-blocker.py:12:13: W1514: Using open without explicitly specifying an encoding (unspecified-encoding)
app3-website-blocker.py:20:13: W1514: Using open without explicitly specifying an encoding (unspecified-encoding)

-----
Your code has been rated at 6.67/10
```

C0301: The code has a line that exceeds 100 characters, which might reduce readability.

C0114: The module doesn't have a docstring, which makes it difficult to understand its purpose and usage.

C0103: The module name and constant names don't conform to snake\_case and UPPER\_CASE naming style, respectively, as per PEP8 guidelines.

W1514: The code uses the open() function without explicitly specifying an encoding, which might cause issues with non-ASCII characters.

The code's overall rating is 6.67/10, which is decent but not excellent.



For 4th Code link:

<https://github.com/JayabharathP/The-Python-Mega-Course-Build-10-Real-World-Applications-/blob/master/05%20Desktop%20Database%20application/backend.py>

File4 -> backend

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.1826]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student\Desktop\05 Desktop Database application>py -m pylint backend.py
***** Module backend
backend.py:6:0: C0301: Line too long (128/100) (line-too-long)
backend.py:29:0: C0301: Line too long (109/100) (line-too-long)
backend.py:44:0: C0301: Line too long (107/100) (line-too-long)
backend.py:1:0: C0114: Missing module docstring (missing-module-docstring)
backend.py:3:0: C0116: Missing function or method docstring (missing-function-docstring)
backend.py:10:0: C0116: Missing function or method docstring (missing-function-docstring)
backend.py:18:0: C0116: Missing function or method docstring (missing-function-docstring)
backend.py:26:0: C0116: Missing function or method docstring (missing-function-docstring)
backend.py:34:0: C0116: Missing function or method docstring (missing-function-docstring)
backend.py:34:11: C0103: Argument name "id" doesn't conform to snake_case naming style (invalid-name)
backend.py:34:11: W0622: Redefining built-in 'id' (redefined-builtin)
backend.py:41:0: C0116: Missing function or method docstring (missing-function-docstring)
backend.py:41:11: C0103: Argument name "id" doesn't conform to snake_case naming style (invalid-name)
backend.py:41:11: W0622: Redefining built-in 'id' (redefined-builtin)

-----
Your code has been rated at 6.59/10
```

Errors:

Line 1: Missing module docstring: It is recommended to include a module docstring to provide an overview of the module's purpose.

Line 3, 10, 18, 26, 34, 41: Missing function or method docstring: It is recommended to include docstrings for functions and methods to explain their purpose, arguments, and return values.

Line 34: Argument name "id" doesn't conform to snake\_case naming style: In Python, function and variable names should follow the snake\_case naming convention, where words are separated by underscores.

Line 34: Redefining built-in 'id': The variable name 'id' is a built-in function in Python. It is not recommended to use built-in function names as variable names as it can lead to confusion.

Warnings:

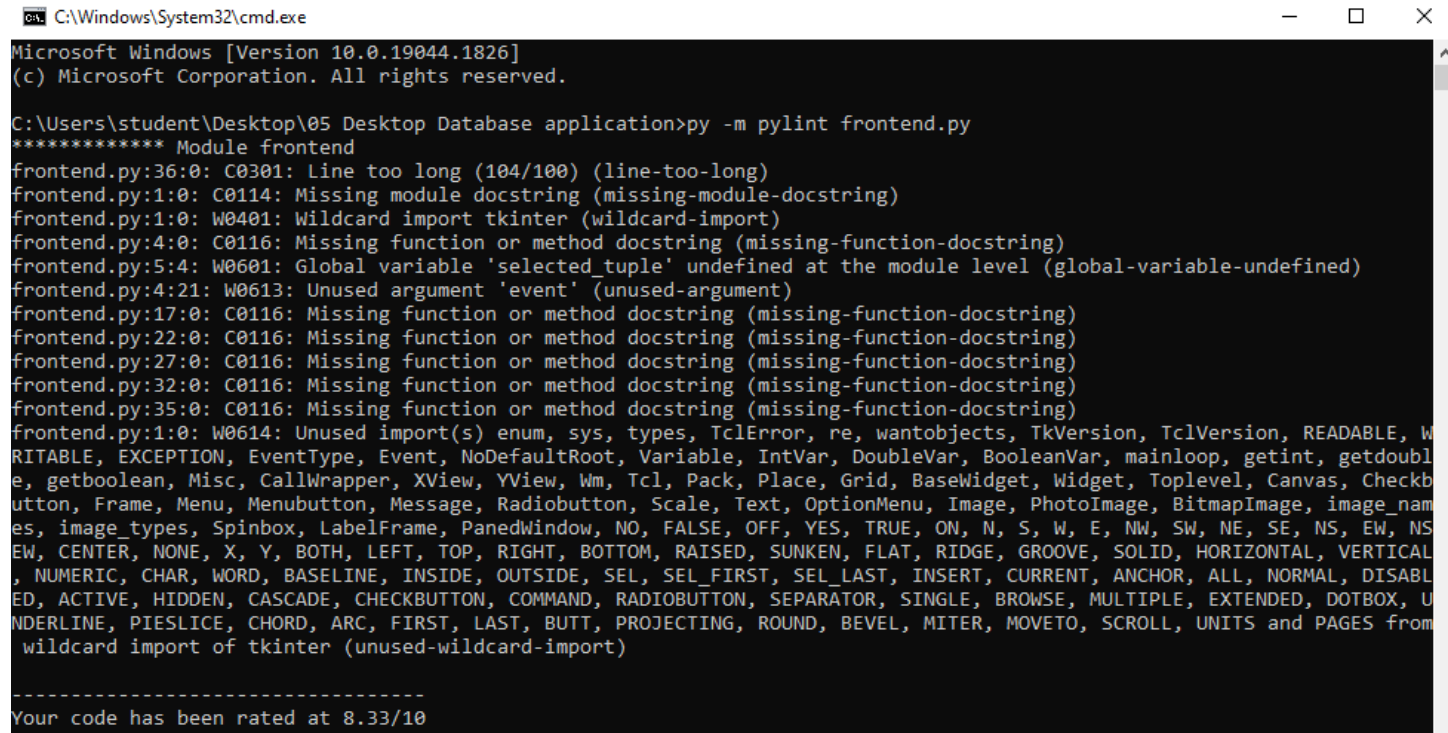
Line 6, 29, 44: Line too long: It is recommended to keep the line length under 100 characters to improve the code's readability.

The overall score is 6.59 out of 10, indicating that the code requires some improvements to adhere to Python coding standards.

For 5th Code link:

<https://github.com/JayabharathP/The-Python-Mega-Course-Build-10-Real-World-Applications-/blob/master/05%20Desktop%20Database%20application/frontend.py>

File5 -> frontend



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.1826]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student\Desktop\05 Desktop Database application>py -m pylint frontend.py
***** Module frontend
frontend.py:36:0: C0301: Line too long (104/100) (line-too-long)
frontend.py:1:0: C0114: Missing module docstring (missing-module-docstring)
frontend.py:1:0: W0401: Wildcard import tkinter (wildcard-import)
frontend.py:4:0: C0116: Missing function or method docstring (missing-function-docstring)
frontend.py:5:4: W0601: Global variable 'selected_tuple' undefined at the module level (global-variable-undefined)
frontend.py:4:21: W0613: Unused argument 'event' (unused-argument)
frontend.py:17:0: C0116: Missing function or method docstring (missing-function-docstring)
frontend.py:22:0: C0116: Missing function or method docstring (missing-function-docstring)
frontend.py:27:0: C0116: Missing function or method docstring (missing-function-docstring)
frontend.py:32:0: C0116: Missing function or method docstring (missing-function-docstring)
frontend.py:35:0: C0116: Missing function or method docstring (missing-function-docstring)
frontend.py:1:0: W0614: Unused import(s) enum, sys, types, TclError, re, wantobjects, TkVersion, TclVersion, READABLE, WRITABLE, EXCEPTION, EventType, Event, NoDefaultRoot, Variable, IntVar, DoubleVar, BooleanVar, mainloop, getint, getdouble, getboolean, Misc, CallWrapper, XView, YView, Wm, Tcl, Pack, Place, Grid, BaseWidget, Widget, Toplevel, Canvas, Checkbutton, Frame, Menu, Menubutton, Message, Radiobutton, Scale, Text, OptionMenu, Image, PhotoImage, BitmapImage, image_names, image_types, Spinbox, LabelFrame, PanedWindow, NO, FALSE, OFF, YES, TRUE, ON, N, S, W, E, NW, SW, NE, SE, NS, EW, NS_EW, CENTER, NONE, X, Y, BOTH, LEFT, TOP, RIGHT, BOTTOM, RAISED, SUNKEN, FLAT, RIDGE, GROOVE, SOLID, HORIZONTAL, VERTICAL, NUMERIC, CHAR, WORD, BASELINE, INSIDE, OUTSIDE, SEL, SEL_FIRST, SEL_LAST, INSERT, CURRENT, ANCHOR, ALL, NORMAL, DISABLED, ACTIVE, HIDDEN, CASCADE, CHECKBUTTON, COMMAND, RADIOBUTTON, SEPARATOR, SINGLE, BROWSE, MULTIPLE, EXTENDED, DOTBOX, UNDERLINE, PIESLICE, CHORD, ARC, FIRST, LAST, BUTT, PROJECTING, ROUND, BEVEL, MITER, MOVETO, SCROLL, UNITS and PAGES from wildcard import of tkinter (unused-wildcard-import)

-----
Your code has been rated at 8.33/10
```

The code analysis shows the following issues:

Missing module docstring (C0114)

Line too long (C0301)

Unused wildcard import of tkinter (W0401, W0614)

Missing function or method docstring (C0116)

Global variable 'selected\_tuple' undefined at the module level (W0601)

Unused argument 'event' (W0613)

The code receives a score of 8.33 out of 10, which means that it is mostly well-written, but with some minor issues that could be improved.