Name : Harsh Prajapati
ID : 202001145

Aim : Use a static analysis tool to catch the error which can be detected without running the code.

File : EX_1.py

```
10
11
12    #Example_3
13    mixed = ({"Name": "Saitama": "job":"Hero"} , [4 ,5 , 12], (1.23 ,2.13 , 3.12), {True , "Ashia"})
14    print(mixed)
15
16    #tuple packing unpacking
17    #Example_5 tuple packing
18    to_do = "buy coffee" , "read a book" ,"finish homework"
19    print(to_do)
20    print(type(to_do))
```

Pylint output :

```
C:\Users\student\Desktop\PYTHON_2>python -m pylint EX_1.py
************* Module EX_1
EX_1.py:13:28: E0001: Parsing failed: 'invalid syntax (<unknown>, line 13)' (syntax-error)
```

Explanation :
As we can see in the python code that this is invalid syntax as we can't declare the dictionary like this and this error can be found by just examining the code so pyint does the same and detect the error.

EX_2.py

```
1     #changing the tuples
2     #example_11  ------changing t5he tuples elements
3     from contextlib import nullcontext
4
5
6     numbers = (4 , 2 , 3 ,[ 5 ,6 ,7 ,8])
7     numbers[1] = 10 #type error
8
9     #print(numbers)
10    numbers[3][2] = 111
11    print(numbers)
12
```

Pylint output:

```
C:\Users\student\Desktop\PYTHON_2>python -m pylint EX_2.py
************* Module EX_2
EX_2.py:1:0: C0114: Missing module docstring (missing-module-docstring)
EX_2.py:1:0: C0103: Module name "EX_2" doesn't conform to snake_case naming style (invalid-name)
EX_2.py:7:0: E1137: 'numbers' does not support item assignment (unsupported-assignment-operation)
EX_2.py:3:0: W0611: Unused nullcontext imported from contextlib (unused-import)

------------------------------------
Your code has been rated at 3.85/10
```

Explanation :

Since in the initial segment of the file there is observable error so pylint indicates that error like snake_case error and docstring error in the first two lines. And also in the seventh line we cant assign the value like that.

EX_3.py

```
1   ### tuple methods
2   #Example_16  ---count()
3   colors = ("green" , "blue" , "violet" , "lawngreen" , "green")
4   print(colors.count("green"))
5   print(colors.count("red"))
6
```

Pylint output:

```
C:\Users\student\Desktop\PYTHON_2>python -m pylint EX_3.py
************* Module EX_3
EX_3.py:1:0: C0114: Missing module docstring (missing-module-docstring)
EX_3.py:1:0: C0103: Module name "EX_3" doesn't conform to snake_case naming style (invalid-name)

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

Explanation :

Similar error like the above so the prompt is expected.

Speedtest.py

```
27   while True:
28       x, y, z = lis3dh.acceleration
29
30       if button_A.value:
31           led.value = True
32       else:
33           led.value = False
34
35       print("Temperature:", circuit_playground_temperature.temperature)
36       print("Acceleration:", x, y, z)
37
```

Pylint output

```
C:\Users\student\Desktop\PYTHON_2>python -m pylint sppedtest.py
************* Module sppedtest.py
sppedtest.py:1:0: F0001: No module named sppedtest.py (fatal)

C:\Users\student\Desktop\PYTHON_2>python -m pylint speedtest.py
************* Module speedtest
speedtest.py:32:1: E0001: Parsing failed: 'inconsistent use of tabs and spaces in indentation (<unknown>, line 32)' (syntax-error)

C:\Users\student\Desktop\PYTHON_2>
```

Explanation :

Since the there are spaces not tab in the else condition in the python code so by human eye we can not catch this error but the static analysis tool catch that and show that I have use space instead of tab.

Test.py

I made a erroneous file and let the pylint correct that

```
1    import pandas as pd
2
3
4    tt = (1,2,2,3.,4)
5
6    tes = ["harsh",45 false]
7
8
```

Pylint output :

```
C:\Users\student\Desktop\PYTHON_2>python -m pylint test.py
************* Module test
test.py:6:16: E0001: Parsing failed: 'invalid syntax. Perhaps you forgot a comma? (<unknown>, line 6)' (syntax-error)

C:\Users\student\Desktop\PYTHON_2>
```

Suggest that put a comma between 45 and false

Updated test.py

```
1    import pandas as pd
2
3
4    tt = (1,2,2,3.,4)
5    💡
6    tes = ["harsh",45,false]
7    ^
8
```

Pylint output:

```
C:\Users\student\Desktop\PYTHON_2>python -m pylint test.py
************* Module test
test.py:7:0: C0305: Trailing newlines (trailing-newlines)
test.py:1:0: C0114: Missing module docstring (missing-module-docstring)
test.py:6:18: E0602: Undefined variable 'false' (undefined-variable)
test.py:1:0: W0611: Unused pandas imported as pd (unused-import)


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

Suggested that i have undefined false variable and also unused panda library and also I put a useless space in the 7th line

After much updation in the file

```
1    #import pandas as pd
2    """
3    Test.py file
4    """
5
6    tt = (1,2,2,3.,4)
7
8    tes = ["harsh",45,'false']
9
```

Output of the pylint:

```
C:\Users\student\Desktop\PYTHON_2>
C:\Users\student\Desktop\PYTHON_2>python -m pylint test.py
************* Module test
test.py:1:0: C0114: Missing module docstring (missing-module-docstring)
test.py:1:0: W0611: Unused pandas imported as pd (unused-import)


------------------------------------------------------------------
Your code has been rated at 3.33/10 (previous run: 0.00/10, +3.33)


C:\Users\student\Desktop\PYTHON_2>python -m pylint test.py
************* Module test
test.py:1:0: C0114: Missing module docstring (missing-module-docstring)


------------------------------------------------------------------
Your code has been rated at 5.00/10 (previous run: 3.33/10, +1.67)


C:\Users\student\Desktop\PYTHON_2>python -m pylint test.py


------------------------------------------------------------------
Your code has been rated at 10.00/10 (previous run: 5.00/10, +5.00)
```

Suggestion and explanation :
As suggested by the pylint I kept updating the file and finally got the zero error that can be detected by without running the file.