Page No.
Date :

Assignment PEP 8 in PYTHON.

Name : Siddhi Lalit Dargi
Class : FYIT Roll NO - 17.

What is PEP ?

→ The PEP is an abbreviation form of Python Enterprise Proposal. Writing code with proper logic is a key factor of programming, but many other important factors can effect the code's quality. The developer's coding style makes the code much reliable, and every developer should keep in mind that Python strictly follows the way of order and format of the string. Adaptive a nice coding style makes the ~~de~~ code more readable. The code becomes easy for end-user.

PEP 8 is a document that provides various guidelines to write the readable in Python. PEP 8 described how the developer can write beautiful codes. It was officially written in 2001 by Guido Van Rossum, Barry Warsaw, and Nick Coghlan. The main aim of PEP is to enhance the readability and consistency of code.

- Why PEP 8 is important ?

→ PEP 8 enhances the readability of the Python code, but why is readability so important ? Let's understand this concept.

Creator of Python, Guido Van Rossum said, "code is much more often than it is written." The code can be written in a few minutes, a few hours, or a whole day but once we have written the code, we will never rewrite it again. But Sometimes, we need to read the code again and again.

At this point, we must have an idea of why we wrote the particular line in the ~~de~~ code. The

SIDDHI DARJI
FYIT RollNO-17

Page No.
Date :

Code should reflect the meaning of each line. That's why readability is so much important. we will ~~be~~ describe few important guidelines for writing effective code that can be read by others as well.

- Naming Convention

When we write the code, we need to assign name to many things such as variables, functions, classes, packages, and a lot more things. Selecting a proper name will save time and energy when we look back to the file after sometime, function, or class represen Developers should avoid choosing inappropriate names. The naming convention in Python is slightly messy, but there are certain conventions that we can follo easily. Let's see the following naming convention

⇒ Example:-

Single lowercase letter.

a = 10

Single upper case letter

A = 10

Lowercase

var = 10

Lower_case_with_underscores.

Number_of_apple = 5

UPPERCASE

VAR = 6

UPPER_CASE_WITH_UNDERSCORES.

NUM_of_CARS = 20

Capitalized Words (or camel Case)

Number of Books = 100

- Name Style

Below is the table that specifies some of the common naming style in Python. Consider the

SIDDHI DARJI
FYIT ROLLNO-17

Page No.
Date :

Following table:

TYPE	Naming Convention	Examples
Function	We should use the lowercase words or separates words by the underscore.	myfunction, my_function
Variable	We should use a lowercase letter, words, or Separate words to enhance the readability	a, var, variable_nam
Class	The first letter of class name should be capitalized; used camel case. Do not separate words with the underscore.	Myclass, Fom Model.
Method	We should use a lowercase letter, words, or separate words to enhance readability	class_metho method.
Constant	We should use a short upper-case letter, words, or Separate words to enhance the readability	MyCONSTAN CONSTANT, MY_CONSTAN
Module	We should use a lowercase letter, words, or separate words to enhance the readability.	Module_name py, module. py.
Package	We should use a lowercase letter, words, or separate words to ehance the readability. Do not separate words with the underscore.	package my package.

SIDDHI DARJI
FYIT ROLLNO-17

Page No.
Date:

Above are some common naming conventions that are useful to beautify the python code. For additional improvement, we should choose the name carefully.

Code Layout:-

The code layout defines how much the code is readable. In this section, we will learn how to use whitespace to improve code readability.

Indentation.

Unlike other programming languages, the indentation is used to define the code block in python. The indentations are the important part of the Python programming language and it determines the level of lines of code. Generally, we use the 4 space for indentation. Let's understand the following example.

⇒ Example :-

```
x = 5
if x == 5:
    print ('x is larger than 5')
```

In the above example, the indented print statement will get executed if the condition of if statement is true. This indentation defines the code block and tells us what statements execute when a function is called or condition trigger.

We can also use the tabs of provide the consecutive spaces to indicate the indentation, but whitespace are the most preferable. Python 2 allows the mixing of tabs and spaces but we

will get an error in Python 3.

- Indentation following Line Break

It is essential to use indentation when using line continuations to keep the line to fewer than 79 characters. It provides the flexibility to determining between two lines of code and a single line of code that extends two lines. Let's understand the following example.

⇒ E.g.

① # Correct Way

Aligned with opening delimiter.

obj = func_name(argument_one, argument_two,
argument_three, argument_four)

② We can use the following structure:

first line doesn't has any argument.
we add 4 spaces from the second line to discrimin-
def function_name(
argument_one, argument_two, argument_three,
argument_four):
print(argument_two)

# 4 space indentation to add a level.
foo = long_function_name(var_one, var_two, var_three,
var_four)

- Use docstring

Python provides the two types of document strings or docstring - single line and multiple lines. We use the triple quotes to define a single line or multiline

SIDDHI DARJI
FYIT ROLLNO-17

quotes. Basically, these are used to described the function or particular program. Let's understand the following example.

* Example :-

⇒ def add (a, b):
"""This is simple add method"""
"""This is a simple add program to add the two numbers

• Should a Line Break Before or After a Binary Operator

⇒ The lines break before or after a binary operation is a traditional approach. But it affects the readability extensively because the operators are scattered accross the different screens, and each operator is kept away from its operand and on to the previous line. Let's understand the following example :-

* # Wrong :
# operators sit far away from their operands
marks = (english_marks + math_marks +
(Science_marks - biology_marks) +
physics_marks.

As we can see in the above example, it seems quite messy to read. We can solve such types of problems by using the following Structure.

Example :-
# Correct :
# easy to match operators with operands
Total_marks = (English_marks
+ math_marks
+ (Science_marks - biology_marks)
+ physics_marks

SIDDHI DARJI
FYIT ROLLNO-17

Page No.
Date :

Python allows us to break line before or after a binary operator, as long as the convention is consistent locally.

- Importing module:

⇒ We should import the modules in the seperates line as follows.

⇒ import pygame
import os
import sys

Wrong.

import sys, os

We can also use the following approach.

from subprocess import Popen, PIPE

The import statement should be written at the top of the file or just after any module comment. Absolute imports are the recommended because they are more readable and tend to be better behaved.

import mypkg.sibling
from mypkg import sibling
from mypkg.sibling import example.

However, we can use the explicit relative imports instead of absolutes imports, especially dealing with complex packages.

SIDDHI DARJI
FYIT ROLLNO-17.

- Blank Lines

→ Blank lines can be improved the readability of python code. If many lines of code bunched together the code will become harder to read. We can remove this by using the many blank vertical lines, and the reader might need to scroll more than necessary. follow the below instructions to add vertical whitespace.

- Top-level function and classes with two lines- Put the extra vertical space around them so that it can be understandable:

```
Class FirstClass:
Pass.
class SecondClass:
pass
def main_function():
return None.
```

- Single blank line inside classes - The functions that we define in the class is related to one another: let's see the following examples -

→
```
class FirstClass:
def method_one(self):
return None.

def Second_two(self):
return None.
```

- Use bank lines inside the function - Sometimes, we need to write a complicated function has ~~need to~~ consists of several steps before the return statement

SIDDHI DARJI
FYIT ROLLNO-17

Page No.
Date :

So we can add the blank line between each step. Let's understand the following example.

```
def cal_variance(n_list):
    list_sum = 0
    for n in n_list:
        list_sum = list_sum + n
    mean = list_sum / len(n_list)

    Square_sum = 0
    for n in n_list:
        Square_sum = Square_sum + n ** 2
    mean_squares = Square_sum / len(n_list)

    return mean_squares - mean ** 2
```

The above way can remove the whitespaces to improve the readability of code.

: Put the closing Braces

→ We can break lines inside parentheses, brackets using the line continuations. PEP 8 allows us to use closing braces in implies line continuations. Let's understand the following example.

o line up the closing brace with the first non-whitespace.

```
→ list_numbers = [
    5, 4, 1,
    4, 6, 3,
    7, 8, 9
    ]
```

SIDDHI DARJI
FYIT Roll NO-17

Page No
Date

- Line up the closing braces with the first character of line.

=> list_numbers = [
5, 4, 1,
4, 6, 3,
7, 8, 9
]

Both methods are suitable to use, but consistency is key, so choose any one and continue with it.

- Comments:-

=> Comments are the integral part of the any programming language. These are the best way to explain the code when we documented our code with the proper comments anyone can able to understand the code. But we should remember the following points.

=> • Start with the capital latter, and write complete sentence.
• Update the comment in case of a change in code.
• limit the line length of comments and docstrings to 72 characters.

- Block Comment:

=> Block comments are the good choice for the small section of code. such comments are useful when we write several line codes to perform a single action such as iterating a loop. They help us to understand the purpose of the code.

PEP 8 provides the following rules to write comment block

SIDDHI DARJI
FYIT ROLLNO-17

Page No.
Date :

- Indent block comment should be at the same level
- Start each line with the # followed by a single space.
- Separate line using the single #.

Let's see the following code.

```
for i in range (0,5):
    # loop will iteriate over i five times and print out the value of i
    # new line character.
    print (i, '\n')
```

We can use more than paragraph for the technical code. Let's understand the following example.

- Inline Comments.

⇒ Inline comments are used to explain the singles statement in a piece of code. We can quickly get the idea of why we wrote that particular line of code. PEP 8 specifies the following rules for the inline comments.

- Start comments with the # and single space.
- Use inline comments carefully.
- We should separate the inline comments on the same line as the statement they refer.

Following is the example of inline comments.

⇒
```
a = 10 # The a is variable that holds integer value.
```

Sometimes, we can use the ~~me~~ naming convention to replace the inline comment.

SIDDHI DARJI
FYIT ROLLNO-17

Page No.
Date :

⇒ x = 'Peter Decosta' # This is a student name.

We can use the following naming convention.

⇒ Student_name = 'Peter Decosta'

Inline comments are essential but block comments make the code more readable.

- Avoid Unnecessary Adding Whitespaces.

⇒ In some cases, use of whitespaces can make the code much harder to read. Too much whitespaces can make code overly sparse and difficult to understand. we should avoid adding whitespaces at the end of a line. This is known as trailing whitespaces.

Let's see the following example.

Example - 1

```
# Recommended
list1 = [1, 2, 3]
# Not recommended
list1 = [1, 2, 3, ]
```

Example - 3

```
x = 5
y = 6
# Recommended
print(x, y)

# Not recommended
print(x,y)
```

SIDDHI DARJI
FYIT ROLLNO-17.

Page No.
Date :

- Programming Recommendation.

=> As we know that, there are several methods to perform similar tasks in Python. In this section, we will see some of the suggestions of PEP 8 to improve the consistency.

- Avoid comparing Boolean values using the equivalence operator

① # Not recommended.
bool_value = 10>5.
if bool_value == True:
return '10 is bigger than 5'

② We shouldn't use the equivalence operator == to compare the Boolean values. It can only take the True or false. let's see following example.

# Recommended
if my_bool:
return '10 is bigger than 5'.

This approach is simple that's why PEP 8 encourages it.

- Empty sequences are false in if statements.

=> If we want to check whether a given list is empty, we might need to check the length of list, so we need to avoid the following approach.

SIDDHI DARJI
FYIT ROLLNO-17

Page No.
Date

① # Not recommended
list1 = []
if not len (list1):
print ('List is empty!')

However, if there is any empty list, set, or tuple, We can use the following way to check.

② # Recommended
list1 = []
if not list1:
print ("List is empty!")

The second method is more appropriate, that's why PEP 8 encourages it.

Don't use not is in if statement

⇒ There are two options to check whether a variable has a defined value. The first option is with x is not None, as in the following example.

① # Recommended
if x is not None:
return 'x exists!'

② A second option is to evaluate x is None and if statement based on not the outcome.

# Not recommended
if not x is None:
return 'x exists!'

- Both options are correct but the first one is simple, so PEP 8 encourages it.

SIDDHI DARJI
E41T Roll NO-17

Page No.
Date :

- Conclusion :-

⇒ We have discussed the PEP 8 guidelines to make the code remove ambiguity and enhance readability when sharing the code with potential employees or collaborators. We have discussed what PEP 8 complaint. Moreover, we have a brief introduction to the naming conventions. ~~If you want more,~~

- PEP 8 - the style Guide for Python code:

⇒ This document gives coding conventions for the python code comprising the standard library in the main Python distributions. Please see the companion informational PEP describing style guidelines for the C code in the C implementation of Python 1.

This document and PEP257 (Docstring Conventions) were adapted from Guido's original Python style Guide essay, with some additions from Barry's style guide 2.

This style guide evolves over time as additional conventions are identified and past conventions are rendered obsolete by changes in the language itself.

Many projects have their own coding style guidelines. In the event of any conflicts, such project-specific guides take precedence for that project.

SIDDHI DARJI
FYIT Roll No - 17

Page No
Date :

- A Foolish Consistency is the Hobgoblin of Little Minds.

⇒ One of Guido's key insights is that code is read much more often than it is written. The guidelines provided here are intended to improve the readability of code and make it consistent across the wide spectrum of Python code. As PEP 20 says, "Readability Counts".

A Style guide is about consistency. Consistency with this style guide is important. Consistency with in one module or function is the most important.

However, know when to be inconsistent - Sometimes style guide recommendations just aren't applicable. When in doubt, use your best judgment. Look at other examples and decide what looks best. And don't hesitate to ask!

In particular: do not break backwards compatibility just to comply with this PEP!

Some other good reasons to ignore a particular guideline:

1. When applying the guideline would make the code less readable, even for someone who is used to reading code that follows this PEP.

SIDDHI DARJI
FYIT ROLLNO - 17.

Page No.
Date :

2) To be consistent with surroding code that also breaks it (maybe for historic reasons) - although this is also an opportunity to clean up someone else's mess (in true XP style).

3) Because the code in question predates the introduction of the guideline and there is no other reason to be modifying that code.

4) When the code needs to remain compatible with older versions of python that don't support the feature recommended by the style guide.

—x—