PEP 8 STYLE GUIDE

GROUP No. 8

ANNE VERONICA	1
PRIYA GUPTA	20
SHUBH PATEL	60
BHAVANA PRAJAPATI	66
POOJA PRAMANIK	67
HEETA TALAVIYA	92
GLORY LITHIYAL	95
NITESH GUPTA	111
AMAN UPADHYAY	132
DEEPAK KESHRI	134
SURYASEN VISHWAKARMA	139

PEP8

PEP8 is a style guide for python code.

→ PEP stands for Python Enhancement Proposal, and they describe and document the way python language evolves.

→ It was written in 2001 by Guido van Rossum, Barry Warsaw, and Nick Coghlan.

→ A PEP is a document that describes new features proposed for Python and documents aspects of Python, like design and style, for the community.

→ They also provide a reference point (and a standard) for the pythonic way to write code

→ It also has a lot of programming recommendations and useful tips on various topics, which aim to improve readability and reliability of your code.

→ PEP8 features:-

I. Plugin architecture: Adding new checks is easy.

2. Parseable output: Jump to error location in your editor.

3. Small: Just one Python file, requires only stdlib. You can use just the pep8.py file for this purpose.

Naming Conventions

Naming Conventions:

1.Variable

2.Function

3.Class

4.Method

5.Constant

6.Module

7.Package

`

Variable: A variable is created the moment you first assign a value to it

```
#Wrong Way to Initialize or assigning a name to a variable
#Name Should not start with a number
#Name should be intuitive and not too common.

1variable=2 #Variable name started with a number (Wrong Way)
print(1variable)
```

```
  File "<ipython-input-1-d1860915d72c>", line 5
    1variable=2
     ^
SyntaxError: invalid syntax
```

```
#Wrong Way to Initialize or assigning a name to a variable
#Name Should not start with a number
#Name should be intuitive and not too common.

x='Bhavana' #Variable name is too common and not intuitive (Not a Good Way)
print(x)
```

```
Bhavana
```

```
#Wrong Way to Initialize or assigning a name to a variable
#Name Should not start with a number
#Name should be intuitive and not too common.

first_name='Bhavana' #Variable name is self-explanatory and has a readibility, and it is seperated using underscores
print(x)
```

```
Bhavana
```

Function: A function is a block of code which only runs when it is called.

```
#Wrong Way to Initialize or assigning a name to a function
#Name Should not start with a number
#Name should be intuitive and not too common.

def ^function(): #Function name should not be started with a Number or special characters
    print("Not a correct way to represent a function name")

^function()
```

```
  File "<ipython-input-5-5f84f1733e34>", line 5
    def ^function():
        ^
SyntaxError: invalid syntax
```

```
#Wrong Way to Initialize or assigning a name to a function
#Name Should not start with a number
#Name should be intuitive and not too common.

def x(): #Function name is too generic and it can create a confusion in enterprise programming
    print("Function Name is too generic, you can use it but it is not recommended as it is not self-explanatory and intuitive")

x()
```

```
Function Name is too generic, you can use it but it is not recommended as it is not self-explanatory and intuitive
```

```
#Wrong Way to Initialize or assigning a name to a function
#Name Should not start with a number
#Name should be intuitive and not too common.

def display_function(): #Function name is self explanatory
    print("Function Name is self explanatory, name can be more intuitive in case of proper functionality")

display_function()
```

```
Function Name is self explanatory, name can be more intuitive in case of proper functionality
```

Class: class definitions begin with a class keyword.

```
#Wrong Way to Initialize or assigning a name to a class
#Name Should not start with a number
#Name should be intuitive and not too common.

1class x:
def display_function(): #Function name is self explanatory
    print("Function Name is self explanatory, name can be more intuitive in case of proper functionality")

display_function()
```

```
  File "<ipython-input-9-0547726683a1>", line 5
    1class x:
     ^
SyntaxError: invalid syntax
```

```
class Employee:
    def accept(self):
     print("Enter Id:")
     self.Id=int(input())
     print("Enter Name:")
     self.name= str(input())
    def display(self):
        print("ID: %d \nName: %s"%(self.Id,self.name))

emp=Employee()
emp.accept()
emp.display()
```

```
Enter Id:
66
Enter Name:
bhavana
ID: 66
Name: bhavana
```

Method: A Python method is a label that you can call on an object; it is a piece of code to execute on that object.

```
#Wrong Way to Initialize or assigning a name to a method
#Name Should not start with a number
#Name should be intuitive and not too common.


1class Method:
    def display(self):
        print("This is method function. ")

c = Method()
c.display()
```

```
  File "<ipython-input-26-3e88b14da450>", line 6
    1class Method:
     ^
SyntaxError: invalid syntax
```

```
#Wrong Way to Initialize or assigning a name to a class
#Name Should not start with a number
#Name should be intuitive and not too common


class Product:
    def __init__(self):
        self.prod_id = input("Enter the Product ID: ")
        self.prod_name = input("Enter the Product Name: ")
        self.total_no = int(input("Enter the total no. of Items Purchase: "))
        self.unit_price=float(input("Enter the unit Price: "))
    def display(self):
        print("Total Price of %d units of Product %s is: %0.2f" %(self.total_no,self.prod_name,self.total_no*self.unit_price))

p1=Product()
p1.display()
```

```
Enter the Product ID: A20134
Enter the Product Name: Choclate
Enter the total no. of Items Purchase: 7
Enter the unit Price: 75.50
Total Price of 7 units of Product Choclate is: 528.50
```

Constant: A constant is a type of variable whose value cannot be changed.

```
pi = 3.14                #pi is constant
radius=5
print("Area of circle: %0.2f" %(pi*radius*radius))
```

```
Area of circle: 78.50
```

Modules: Modules refer to a file containing Python statements and definitions.

```
# to import standard module math

import math
print("The value of pi is", math.pi)
```

```
The value of pi is 3.141592653589793
```

Packages: A package is basically a directory with Python files and a file with the name __init__ . py

Code layout

WITHOUT SPACE

These conventions lead to text that you can read easily, like this:

This would become increasingly hard to read. For example have a look at the example below

```
howwillitlookifwedonothavethespace
```

WITH SPACE

Now here, we will use space and write it in regular English language, so it will be very easy to read.

How will it look if we do not have the space

Maximum line length and line breaking

PEP 8 guidelines suggest that each line of code (as well as comment lines) should be 79 characters wide or less. This is a common standard that is also used in other languages including **R**.

CORRECT

```
# Perform some math
a = 1+2
b = 3+4
c = a+b

# Read in and plot some
precip_timeseries = pd.readcsv("precip-2019.csv")
precip_timeseries.plot()
```

#WRONG

```
#Perform some math and do some things
a=1+2
b=3+4
c=a+b
data=pd.readcsv("precip-2019.csv")
data.plot()
```

Should a line break Before or After a Binary Operator

Here, it's harder to see which variable is being added and which is subtracted.

```
# WRONG
Total = (Number 1+
         Number 2-
         Number 3)
```

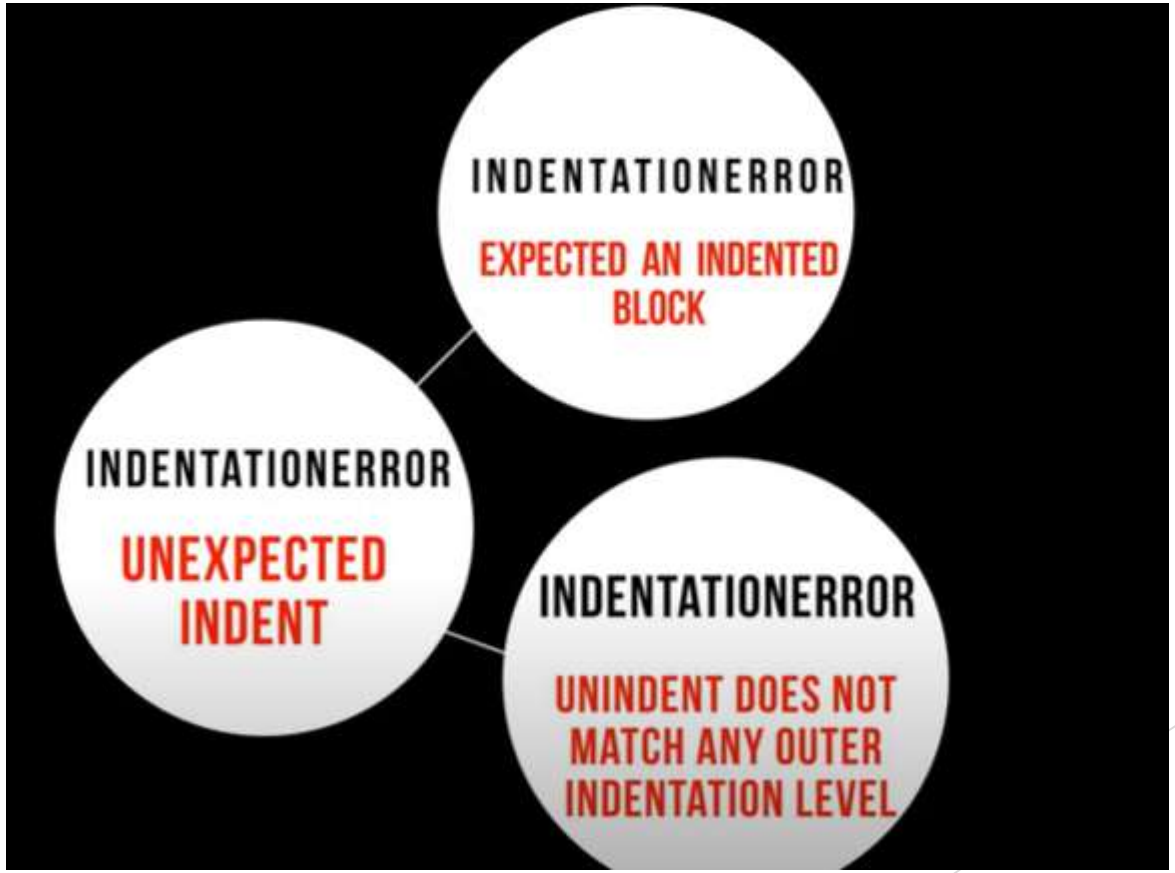
You can immediately see which variable is being added or subtracted, as the operator is right next to the variable being operated on.

In the below Example

```
#CORRECT
Total = (Number 1
         + Number 2
         - Number 3)
```

Indentation

- Indentation is extremely important in Python.
- The Indentation level of lines of code in python determines how statements are grouped together.



1. Expected an indented block

```
x = 2
if x % 2 == 0:
print("It is an even number")
```

```
  File "<ipython-input-20-d2c95d58e212>", line 3
    print("It is an even number")
        ^
IndentationError: expected an indented block
```

```
x = 2
if x % 2 == 0:
    print("It is an even number")
```

```
It is an even number
```

2. Unexpected Indent

```
x = 2
 if x % 2 == 0:
    print("It is an even number")
```

```
  File "<ipython-input-24-a296ed44a7f2>", line 2
    if x % 2 == 0:
    ^
IndentationError: unexpected indent
```

```
x = 2
if x % 2 == 0:
    print("It is an even number")
```

```
It is an even number
```

3. Unindent does not match any outer indentation level

```
def greeting():
    print("Greetings of the day")
  return

greeting()
```

```
  File "<ipython-input-30-698032a46f85>", line 3
    return
         ^
IndentationError: unindent does not match any outer indentation level
```

```
def greeting():
  print("Greetings of the day")
  return

greeting()
```

```
Greetings of the day
```

Tabs vs. Spaces

- Tabs vs. Spaces

The key indentation rules laid out by PEP 8 are the following:

- Use 4 consecutive spaces to indicate indentation.
- Prefer spaces over tabs.

- **Indentation following line breaks**

- Add a comment after the final condition. Due to syntax highlighting in most editors, this will separate the conditions from the nested code:

Not Recommended

```
x = 5
if (x > 3 and
    x < 10):
    print(x)
```

Recommended

```
x = 5
if (x > 3 and
    x < 10):
    # Both conditions satisfied
    print(x)
```

```
x = 5
if (x > 3 and
        x < 10):
    print(x)
```

Not Recommended

```
var = function(arg_one, arg_two,
    arg_three, arg_four)
```

Recommended

```
var = function(
    arg_one, arg_two,
    arg_three, arg_four)
```

Not Recommended

```
def function(
    arg_one, arg_two,
    arg_three, arg_four):
    return arg_one
```

Recommended

```
def function(
        arg_one, arg_two,
        arg_three, arg_four):
    return arg_one
```

➢ Where to put the closing Braces

 # Not Recommended

```
list_of_numbers = [ 1, 2, 3,
                    4, 5, 6,
                    7, 8, 9]
```

1. Method

```
list_of_numbers = [
    1, 2, 3,
    4, 5, 6,
    7, 8, 9
    ]
```

2. Method

```
list_of_numbers = [
    1, 2, 3,
    4, 5, 6,
    7, 8, 9
]
```

COMMENTS:

Comments are lines that exist in computer programs that are ignored by compilers and interpreters.

Comment begins with a hash mark (#)

Generally, comment looks like this:

 # this a comment

Because comment does not execute ,when you will run program you will not see any indication of the comment there.

BLOCK COMMENTS:

Each line of block comments starts with a # and a single space

Paragraphs inside a block comment are separated by a line containing a single #.

Anti-pattern

```
#This comment needs a space
def print_name(self):
    print(self.name)
```

Best practice

```
# Comment is correct now
def print_name(self):
    print(self.name)
```

INLINE COMMENTS:

Inline comment should be separated by at least two spaces from the comment.

They should start with a # and a single space

Inline comments are unnecessary and in fact distracting if they state the obvious

Anti-pattern

```
def print_name(self):
    print(self.name)  #This comment needs a space
```

Best practice

```
def print_name(self):
    print(self.name)  # Comment is correct now
```

DOCSTRING COMMENTS:

A docstring is added as a comment string right below the function,module,or object

RULES:

A docstring is either a single line, or a multi-line comment
In latter case, the first line is short description, and after the first line an empty line follows

This is a basic example of what it looks like:

```
def add(value1, value2):
    """Calculate the sum of value1 and value2."""
    return value1 + value2
```

In the Python interactive help system, the docstring is then made available via the `__doc__` attribute.

```
>>> print add.__doc__
Calculate the sum of value1 and value2.
```

Inline Comments vs Block Comments

Inline comments look like this

```
x = x + 1                 # Compensate for border
```

While block comments look like this

```
# Compensate for border.  These comments
# often cover multiple lines.
x = x + 1
```

Whitespace in Expressions and Statements

1) Whitespace Around Binary Operators

Surround the following binary operators with a single space on either side:

- Assignment operators (=, +=, -=, and so forth)
- Comparisons (==, !=, >, <. >=, <=) and (is, is not, in, not in)
- Booleans (and, not, or)

Note: When = is used to assign a default value to a function argument, do not surround it with spaces.

Python

```python
# Recommended
def function(default_parameter=5):
    # ...


# Not recommended
def function(default_parameter = 5):
    # ...
```

- Adding space when there is more than one operator in a statement.

Python

```python
# Recommended
y = x**2 + 5
z = (x+y) * (x-y)

# Not Recommended
y = x ** 2 + 5
z = (x + y) * (x - y)
```

- Adding space to if statements where there are multiple conditions.

Python

```python
# Not recommended
if x > 5 and x % 2 == 0:
    print('x is larger than 5 and divisible by 2!')
```

Python

```python
# Recommended
if x>5 and x%2==0:
    print('x is larger than 5 and divisible by 2!')
```

Note : Use the same amount of whitespace either side of the operator.

The following is not acceptable :

Python

```python
# Definitely do not do this!
if x >5 and x% 2== 0:
    print('x is larger than 5 and divisible by 2!')
```

When to Avoid Adding Whitespace

- Trailing space
- Immediately inside parentheses, brackets, or braces:

Python

```python
# Recommended
my_list = [1, 2, 3]

# Not recommended
my_list = [ 1, 2, 3, ]
```

- Before a comma, semicolon, or colon:

Python

```python
x = 5
y = 6

# Recommended
print(x, y)

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

Before the open parenthesis that starts the argument list of a function call:

Python

```python
def double(x):
    return x * 2

# Recommended
double(3)

# Not recommended
double (3)
```

Before the open bracket that starts an index or slice:

Python

```python
# Recommended
list[3]

# Not recommended
list [3]
```

- Between a trailing comma and a closing parenthesis:

Python

```python
# Recommended
tuple = (1,)

# Not recommended
tuple = (1, )
```

- To align assignment operators:

Python

```python
# Recommended
var1 = 5
var2 = 6
some_long_var = 7

# Not recommended
var1          = 5
var2          = 6
some_long_var = 7
```

Programming Recommendations

❖ *Two Programming Recom endations by PEP-8*

A)
```
# Not recommended
my_bool = 6 > 5
if my_bool == True:
    return '6 is bigger than 5'
```

B)
```
# Recommended
if my_bool:
    return '6 is bigger than 5'
```

In the above program B is recommended over A by the PEP-8

C)
```
# Not recommended
my_list = []
if not len(my_list):
    print('List is empty!')
```

```
D) # Recommended
    my_list = []
    if not my_list:
        print('List is empty!')
```

In the above program D is recommended over C by the PEP-8

Q. When to Ignore PEP-8

ANSWER: NEVER

Though, there are some guidelines in PEP-8 that are inconvenient in some instances:

- Complying with PEP-8
- Code surrounding
- Code compatibility

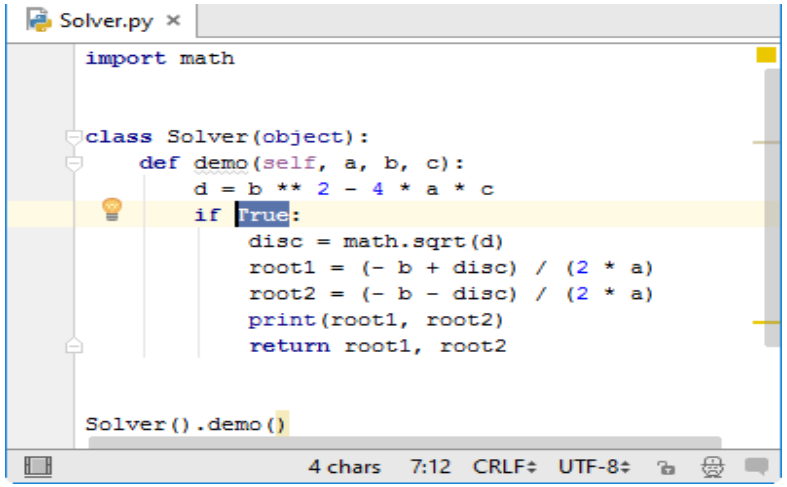
Tips and Tricks to Help Ensure Your Code Follows PEP 8

Highliting code style violations:

(Refer to Code Completion page of the product documentation for details.)

Generating Source code:

Select `if` option from the suggestion list. As you see, PyCharm automatically adds `if True:` and indents the selected lines:



Linter-python-pep8 package

This linter-python-pep8 plugin or Linter provides an interface to pep8. It will be used with files that have the Python syntax.

Installation:

Before using this plugin, you should make sure that pep8 is installed on your system. You can follow following instructions to install pep8:

Install python.
Install pep8 by typing the following in a terminal:

```
pip install pep8
```

Black

Black can be installed by running pip install black. It requires Python 3.6.0+ to run. Once Black is installed, you will have a new command-line tools called black available to you in your shell, and you're ready to start.

```
$ pip install black
```

Format a Single File:

Let's look at this simple example: here are my two python functions in my python file called sample_code.py.

```
def add(a,       b):
    answer     =  a    +    b

    return answer


def sub(c    ,
 d):

    answer = c    -   d

    return answer
```

You can use black sample_code.py in the terminal to change the format. After running Black, you will see the following output:

```
reformatted sample_code.py
All done! ✨✨
1 file reformatted.
```

Then you open sample_code.py to see formatted python code:

```python
def add(a, b):
    answer = a + b

    return answer


def sub(c, d):

    answer = c - d

    return answer
```

Example of code and layout.

With space and without space.

WITH SPACE.

*ex- MY NAME IS NITESH

WITHOUT SPACE.

*ex- MYNAMEISNITESH

Maximum line length and line breaking.

 # Recommended

- Ex-

```python
def function(arg_one, arg_two,
             arg_three, arg_four):
    return arg_one
```

 # Not Recommended

- Ex-

```python
from mypkg import example1, \
    example2, example3
```

Should a line break Before or After A Binary Operator.

- Ex-

Python

```python
# Recommended
total = (first_variable
         + second_variable
         - third_variable)
```

- Ex-

Python

```python
# Not Recommended
total = (first_variable +
         second_variable -
         third_variable)
```

Example of comments.

block comment.

Anti-partten.

Example

```
#This is a comment
print("Hello, World!")
```

Best-pratice.

Example

```
#This is a comment
#written in
#more than just one line
print("Hello, World!")
```

Inline comments.

Anti-partten.

Python

```python
x = 5  # This is an inline comment
```

Best practice.

Python

```python
x = 'John Smith'  # Student Name
```

Documentation string comment.

```
"""Return a foobang


Optional plotz says to

frobnicate the bizbaz first.

"""
```

EXAMPLE OF NAMING CONVENTION

NAMING MODULE WITH HELP OF PEP8

```
# Not recommended
```

tut51.py × tutmain1.py × tutmain2.py × os.py ×

```
import os
print(tutmain1.add(8,7))
```

```
# Recommended
```

.py × tutmain1.py × tutmain2.py

```
import tutmain1
print(tutmain1.add(8,7))
```

NAMING VERIABLE WITH HELP OF PEP8

Veriable:

```
>>> # Not recommended
>>> x = 'John Smith'
>>> y, z = x.split()
>>> print(z, y, sep=', ')
'Smith, John'
```

```
>>>
```

```
>>> # Recommended
>>> name = 'John Smith'
>>> first_name, last_name = name.split()
>>> print(last_name, first_name, sep=', ')
'Smith, John'
```

EXAMPLES OF INDENTATION

❖ METHODS OF WHERE TO PUT CLOSING BRACES:-

 # Recommended

```
list_of_flowers = [
    rose,sunflower,
    marigold,jasmine,
    tulips,lavender
]
```

```
list_of_flowers = [
    rose,sunflower,
    marigold,jasmine,
    tulips,lavender
    ]
```

❖ Methods for following line breaks

 # Recommended

```
x=10
if (x < 15 and
    x > 5):
     #Both the conditions satisfied
    print(x)
```

```
x=10
if (x < 15 and
        x > 5):
    print(x)
```

EXAMPLE OF WHITESPACING

1. **Adding space when there is more than one operator in a statement.**

```
#recommended
b = a**8 + 5
c = (a+b) * (a-b)
```

```
#not recommended
b = a ** 8 + 5
c = (a + b) * (a - b)
```

1. **Adding space to if statemennts where there are multiple conditions.**

```
#Recommended
if x>8 and x%2== 0:
  print('x is larger than 8 and divisible by 2!')
```

```
#not Recommended
if x > 8 and x % 2 == 0:
  print('x is larger than 8 and divisible by 2!')
```

THANK YOU