No.	Questions
	What is Python?
	Features of Python?
	Python Frameworks?
	How to get Id of any object?
	a=1, b=1 does both have same Id or not?
	What is PEP 8?
	Is indentation required in python?
	File Extensions in Python?
	What is the difference between .py and .pyc files?
	What is an Interpreted language?
	What is a dynamically typed language?
	Python Comments?
	What is Docstrings?
	how to get docstring in python
	Difference between Python comments and docstrings?

Ques. What is Python?

- Python is a high-level, interpreted, general-purpose programming language.
- Python is an **interpreter** language. It means it executes the code line by line, which helps in debugging and testing.
- It was created by **Guido van Rossum**, and released in **1991**
- It is used for:
    - web development (server-side)
    - software development
    - mathematics
    - system scripting

Ques. Features of Python?

1. **Easy:-** Python is very easy to learn and understand; using this Python tutorial, any beginner can understand the basics of Python.
2. **Interpreted:-** It is interpreted(executed) line by line. This makes it easy to test and debug.
3. **Object-Oriented:-** The Python programming language supports classes and objects. We discussed these above.
4. **Free and Open Source:-** The language and its source code are available to the public for free; there is no need to buy a costly license.
5. **Portable:-** Since it is open-source, you can run Python on Windows, Mac, Linux or any other platform. Your programs will work without needing to the changed for every machine.
6. **GUI Programming:-** You can use it to develop a GUI (Graphical User Interface). One way to do this is through Tkinter.
7. **Large Library:-** Python provides you with a large standard library. You can use it to implement a variety of functions without needing to reinvent the wheel every time. Just pick the code you need and continue. This lets you focus on other important tasks.

Ques. Python Frameworks?

- **Web Development:** Django, Pyramid, Bottle, Tornado, Flask, web2py
- **GUI Development:** tkInter, PyGObject, PyQt, PySide, Kivy, wxPython
- **Scientific and Numeric:** SciPy, Pandas, IPython
- **Software Development:** Buildbot, Trac, Roundup
- **System Administration:** Ansible, Salt, OpenStack, xonsh

Ques. What is PEP 8?

- PEP stands for **Python Enhancement Proposal**.
- It is a set of rules that specify how to format Python code for maximum readability.
- PEP8 is a document that provides various guidline to write the readable in python.
- PEP8 describe how the developers can write the beautiful code.

Ques. How to get Id of any object?

id() function takes a single parameter object.

```
a = 5
print(id(a))
```

Ques. a=1, b=1 does both have same Id or not?

- Two variables in Python have same id, but not in lists.

```
a = 10
b = 10
print(id(a))
print(id(b))

Output:-
9788992
9788992
```

- In List

```
a = [1, 2, 3]
b = [1, 2, 3]
print(a is b)

Output:- False
```

- In tuples

```
a = (1, 2, 3)
b = (1, 2, 3)
print(a is b)

Output:- True
```

Ques. Is indentation required in python?

Indentation is necessary for Python. It specifies a block of code. All code within loops, classes, functions, etc is specified within an indented block. It is usually done using four space characters. If your code is not indented necessarily, it will not execute accurately and will throw errors as well.

1. NumPy
2. Pylons

Ques. File Extensions in Python?

- **.py–** The normal extension for a Python source file
- **.pyc-** The compiled bytecode
- **.pyd-** A Windows DLL file
- **.pyo-** A file created with optimizations
- **.pyw-** A Python script for Windows
- **.pyz-** A Python script archive

Ques. What is the difference between .py and .pyc files?

- **.py** files contain the source code of a program. Whereas, **.pyc** file contains the bytecode of your program.
- We get bytecode after compilation of **.py** file (source code). **.pyc** files are not created for all the files that you run. It is only created for the files that you import.

Ques. What is an Interpreted language?

- An Interpreted language executes its statements line by line. Languages such as Python, Javascript, R, PHP, and Ruby are prime examples of Interpreted languages.

Ques. What is a dynamically typed language?

- Type-checking can be done at two stages:-

1. **Static-** Data Types are checked before execution.
2. **Dynamic-** Data Types are checked during execution. Python is an interpreted language, executes each statement line by line and thus type-checking is done on the fly, during execution. Hence, Python is a Dynamically Typed Language.

Ques. Python Comments?

- Comments are hints that we add to our code to make it easier to understand.
- Comments are short descriptions along with the code to increase its readability.
- **single Line Comments:-** Comments starts with a #, and Python will ignore them:

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

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

Multi Line Comments(OR)Docstring

- To add a multiline comment you could insert a # for each line.

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

- you can add a multiline string (triple quotes) in your code, and place your comment inside it.

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

Ques. What is Docstrings?

- In Python, docstrings are a way of documenting modules, classes, functions, and methods. They are written within triple quotes (""" or ''') and can span multiple lines.
- Python docstrings are strings used right after the definition of a function, method, class, or module. They are used to document our code.
- There are two main types of docstrings:
    - **Single-line docstrings:** Used for simple explanations that fit on one line.
    - **Multi-line docstrings:** Used for more detailed explanations, including parameter descriptions, return values, and exceptions.
- **Example and Accessing Docstrings:-**

```
class Calculator:
    """
    A simple calculator class to perform basic arithmetic operations.
    """
    def add(self, a, b):
        """
        add(a, b): Return the sum of two numbers.
        """
        return a + b

    def multiply(self, a, b):
        """
        multiply(a, b): Return the product of two numbers.
        """
        return a * b

# Accessing the class docstring
print(Calculator.__doc__) # Output:- A simple calculator class to perform basic
arithmetic operations.

# Accessing the method docstring
print(Calculator.add.__doc__)     # Output:- add(a, b): Return the sum of two
numbers.
print(Calculator.multiply.__doc__)  # Output:-  multiply(a, b): Return the product
of two numbers.
```

```
def square(n):
    '''Take a number n and return the square of n.'''
    return n**2

print(square.__doc__)

Output:- Take a number n and return the square of n.
```

Ques. how to get docstring in python?

- Using the **doc** attribute:

```
def my_function():
    """This is a docstring for my_function."""
    pass

print(my_function.__doc__)

Output:- This is a docstring for my_function.
```

- Using inspect.getdoc():

```
import inspect

def my_function():
    """
        This is a docstring for my_function
        with indentation.
    """
    pass

print(inspect.getdoc(my_function))

Output:-
This is a docstring for my_function
with indentation.
```

Ques. Difference between Python comments and docstrings?

- **Comments:** Comments in Python start with a hash mark (#) and are intended to explain the code to developers. They are ignored by the Python interpreter.
- **Docstrings:** Docstrings provide a description of the function, method, class, or module. Unlike comments, they are not ignored by the interpreter and can be accessed at runtime using the .**doc** attribute.