

## 1. What are the features of python?

Python is gaining popularity in the programming community; there are many reasons behind this.

- **Interpreted Language:** Python is processed at runtime by Python Interpreter.
- **Object-Oriented Language:** It supports object-oriented features and techniques of programming.
- **Interactive Programming Language:** Users can directly interact with the Python interpreter to write programs.
- **Easy language:** Python is simple to learn, particularly for newcomers.
- **Straightforward Syntax:** The formation of Python syntax is simple, making it popular.
- **Easy to read:** Python source code is clearly defined and visible.
- **Portable:** Python codes can be run on various hardware platforms with the same interface.
- **Extendable:** Users can add low level-modules to the Python interpreter.
- **Scalable:** Python provides an improved structure for supporting large programs than shell scripts.

## 2. What are the executions modes in Python?

Python uses an interpreter for the execution of source code. There are two ways in which we can use the interpreter. They are as follows:

- Interactive Mode
- Script Mode

### Interactive Mode

In this mode, we can execute a single statement at a time. Moreover, to use the interactive mode, we have to write the statement in front of '>>>' and press enter

This results in the output of that particular statement immediately. This mode is easy and convenient to use to see the instant output. But, at the same time, we cannot save the whole code and have to write it again and again to execute it.

### Script Mode

In this mode we have to write the whole source code and save it as a Python source code file.

Furthermore, we can execute this file using the interpreter. Moreover, we save the python source code file with the extension '.py'.

## 3. What is Python? Why Python is preferred to other languages?

Python is an advanced, interpreted programming language known for its readability and simplicity. Python is a programming language that includes features of C and Java. It provides the style of writing elegant code like C, and for object-oriented programming, it offers classes and objects like Java.

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written.
- Python can be treated in a procedural way, an object-oriented way or a functional way.
- Used for AI applications

#### 4. What are the various areas where python can be used?

- Server side scripting for Web Applications
- As a software language
- Can be connected to the database and thus it will be used as a server side scripting for dynamic websites.
- It can handle big data and perform complex mathematics.
- It can be used for various statistical applications
- Used for AI applications
- Researchers for various analysis
- Rapid prototyping, or for production-ready software development.

#### 5. What is python identifier? What are the rules for python identifier?

All the variables, class, object, functions, lists, dictionaries etc. in Python are together termed as Python Identifiers. Identifiers are the basis of any Python program. Almost every Python Code uses some or other identifiers.

##### Rules for using Python Identifiers:

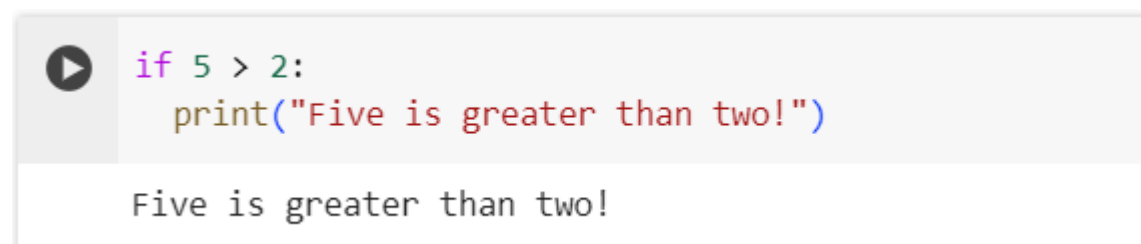
- An identifier name should not be a keyword.
- An identifier name can begin with a letter or an underscore only.
- An identifier name can contain both numbers and letters along with underscores (A-z, 0-9, and \_).
- An identifier name in Python is case-sensitive i.e, sum and Sum are two different identifier.

#### 6. What is indentation in python? Explain with a example.

Indentation refers to the spaces at the beginning of a code line.

Where in other programming languages the indentation in code is for readability only, the indentation in Python is very important.

Python uses indentation to indicate a block of code.

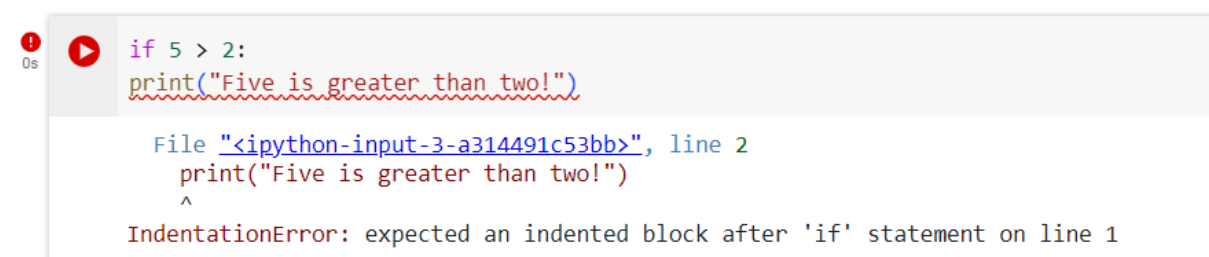


```
if 5 > 2:
    print("Five is greater than two!")
```

Five is greater than two!

The image shows a code editor with a play button icon. The code is an if statement with a single line of indented code. The output of the code is displayed below it.

Python will give you an error if you skip the indentation:



```
if 5 > 2:
print("Five is greater than two!")
```

File "<ipython-input-3-a314491c53bb>", line 2  
 print("Five is greater than two!")  
 ^  
IndentationError: expected an indented block after 'if' statement on line 1

The image shows a code editor with a play button icon and a red error icon. The code is an if statement with a single line of code that is not indented. The output of the code is displayed below it, showing an IndentationError.

**7. What is comment in python? How to create single line comment and multiline comments?**

Comments can be used to explain Python code.

Comments can be used to make the code more readable.

Comments can be used to prevent execution when testing code.

***Creating a Comment***

Comments starts with a #, and Python will ignore them:

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

***Output***

```
Hello, World!
```

***Multiline comments:***

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

```
Hello, World!
```

**8. Give some examples for reserved keywords.(Any 8)**

Python has a set of keywords that are reserved words that cannot be used as variable names, function names, or any other identifiers:

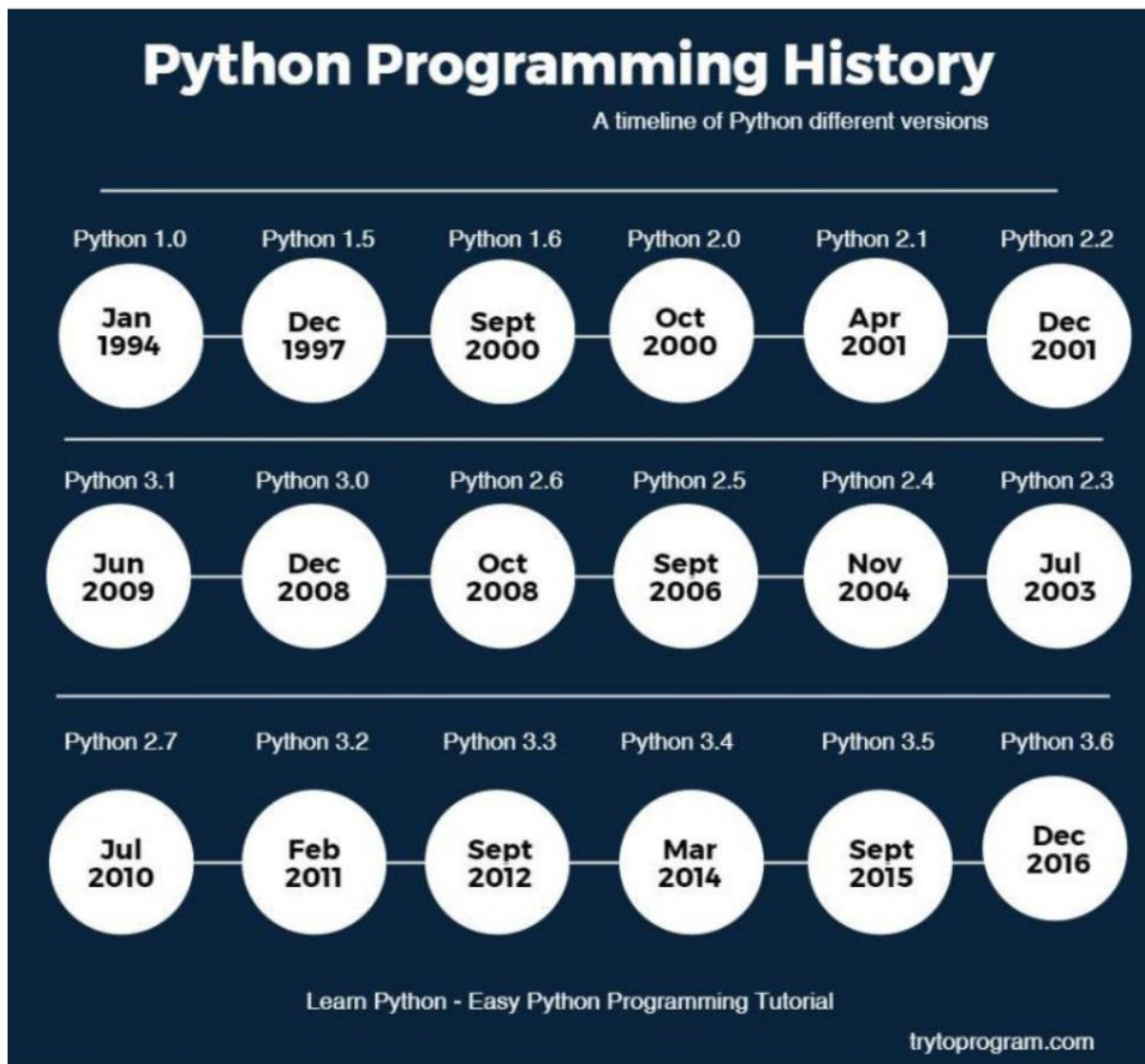
Keyword	Description
<u>and</u>	A logical operator
<u>as</u>	To create an alias
<u>assert</u>	For debugging
<u>break</u>	To break out of a loop
<u>class</u>	To define a class
<u>continue</u>	To continue to the next iteration of a loop
<u>def</u>	To define a function
<u>del</u>	To delete an object
<u>elif</u>	Used in conditional statements, same as else if
<u>else</u>	Used in conditional statements
<u>except</u>	Used with exceptions, what to do when an exception occurs

<u>False</u>	Boolean value, result of comparison operations
<u>finally</u>	Used with exceptions, a block of code that will be executed no matter if there is an exception or not
<u>for</u>	To create a for loop
<u>from</u>	To import specific parts of a module
<u>global</u>	To declare a global variable
<u>if</u>	To make a conditional statement
<u>import</u>	To import a module
<u>in</u>	To check if a value is present in a list, tuple, etc.
<u>is</u>	To test if two variables are equal
<u>lambda</u>	To create an anonymous function
<u>None</u>	Represents a null value
<u>nonlocal</u>	To declare a non-local variable

<u>not</u>	A logical operator
<u>or</u>	A logical operator
<u>pass</u>	A null statement, a statement that will do nothing
<u>raise</u>	To raise an exception
<u>return</u>	To exit a function and return a value
<u>True</u>	Boolean value, result of comparison operations
<u>try</u>	To make a try...except statement
<u>while</u>	To create a while loop
With	Used to simplify exception handling
Yield	To end a function, returns a generator

### 9. Explain evolution of python.

The first ever version of Python(i.e. Python 1.0) was introduced in 1991. Since its inception and introduction of Version 1, the evolution of Python has reached up to Version 3.x (till 2017). Here is the brief chart depicting the timeline of the release of different versions of Python programming language.



## 10. How to use blank lines in python?

The `print()` function in Python is often used to display output on the screen. It can also be used to print an empty line.

The simplest way to do this is to call the `print()` function without arguments.

Code	Output
<pre>print()</pre>	

The code above calls the `print()` function with no arguments, resulting in an empty line being printed to the console.

This method is particularly useful if you need to include an empty line between two lines of text:

Code	Output
<code>print("Hello, World!")</code>	Hello, World!
<code>print()</code>	
<code>print("Goodbye, World!")</code>	Goodbye, World!

The code above will print “Hello, World!” on one line, an empty line on the next, and then “Goodbye, World!” on the following line.

### 11. Explain quotation in python.

Python string functions are very popular. There are two ways to represent strings in python. String is enclosed either with single quotes or double quotes. Both the ways (single or double quotes) are correct depending upon the requirement. Sometimes we have to use quotes (single or double quotes) together in the same string, in such cases, we use single and double quotes alternatively so that they can be distinguished.

```
#Gives Error
print('It's python')
```

*Output:*

```
print('It's python')
      ^
SyntaxError: invalid syntax
```

**Explanation** – It gives an invalid syntax error. Because a single quote after “it” is considered the end of the string and rest part is not part of a string. It can be corrected as:

```
print("It's Python !")
```

*Output:*

```
It's Python!
```

### 12. How to run python program?

1<sup>st</sup> way:



### **Google colab:**

1. Search for google colab
2. Register and sign in
3. Open new notebook
4. Type the code and click on debug button

### **2<sup>nd</sup> way:**

#### **Using Text Based:**

If you find that you do not have Python installed on your computer, then you can download it for free from the following website: <https://www.python.org/>

To Run the Python program in a command prompt

```
C:\Users\Your Name>python helloworld.py
```

Hello, World!

#### **Using IDE:**

```
C:\Users\Your Name>python
```

```
Python 3.6.4 (v3.6.4:d48eceb, Dec 19 2017, 06:04:45) [MSC v.1900 32 bit (Intel)] on win32
```

```
Type "help", "copyright", "credits" or "license" for more information.
```

```
>>> print("Hello, World!")
```

```
Hello, World!
```

### **Multiple choice questions:**

1. What is the purpose of comments in Python?
  - a) To execute certain code blocks conditionally
  - b) To document and explain code for better understanding
  - c) To disable certain lines of code temporarily
  - d) To declare variables and functionsCorrect answer: b) To document and explain code for better understanding
2. Which symbol is used to start a single-line comment in Python?
  - a) //
  - b) -
  - c) #
  - d) '"Correct answer: c) #
3. Which of the following statements about comments in Python is true?
  - a) Comments are executed by the Python interpreter
  - b) Comments can span multiple lines using // symbols
  - c) Comments are ignored by the Python interpreter during execution
  - d) Comments can only be used for function documentationCorrect answer: c) Comments are ignored by the Python interpreter during execution
4. Which of the following is a correct way to write a multi-line comment in Python?
  - a) /\* This is a multi-line comment \*/
  - b) <!-- This is a multi-line comment -->
  - c) '" This is a multi-line comment '"
  - d) // This is a multi-line comment //

Correct answer: c) `''' This is a multi-line comment '''`

5. Comments in Python are useful for:

- a) Writing code that runs faster
- b) Hiding code from other programmers
- c) Providing additional information and explanations to the reader
- d) Creating conditional statements

Correct answer: c) Providing additional information and explanations to the reader

6. In Python, how is a block of code defined?

- a) Using braces `{ }`
- b) Using indentation
- c) Using semicolons `;`
- d) Using keywords like `"begin"` and `"end"`

Correct answer: b) Using indentation

7. Which of the following statements is true regarding indentation in Python?

- a) Indentation is optional in Python
- b) Indentation must always be consistent, but the number of spaces or tabs doesn't matter
- c) Indentation is used to define the beginning and end of code blocks
- d) Indentation in Python is purely for aesthetic purposes

Correct answer: c) Indentation is used to define the beginning and end of code blocks

8. Which of the following statements is true about indentation in Python?

- a) Indentation doesn't affect the behavior of the code
- b) Indentation can be skipped if the code is simple
- c) Incorrect indentation can lead to logical errors in the code
- d) Python provides automatic indentation for better code readability

Correct answer: c) Incorrect indentation can lead to logical errors in the code

9. Which of the following options correctly defines Python reserved keywords?

- a) Words that are reserved for future Python versions
- b) Words that are predefined and reserved for specific purposes in Python
- c) Words that are reserved for Python libraries and modules
- d) Words that cannot be used as identifiers in Python

Correct answer: b) Words that are predefined and reserved for specific purposes in Python

10. Which of the following is not a reserved keyword in Python?

- a) `pass`
- b) `module`
- c) `class`
- d) `break`

Correct answer: b) `module`

11. What happens if you try to use a reserved keyword as a variable name in Python?

- a) Python raises a `SyntaxError`
- b) The keyword will be automatically converted to a string
- c) It's allowed, but not recommended
- d) Python ignores the reserved status of the keyword in this context

Correct answer: a) Python raises a `SyntaxError`

12. What is the purpose of reserved keywords in Python?

- a) To provide syntactic sugar for common programming tasks
- b) To define built-in functions and methods
- c) To mark special language constructs and prevent their use as identifiers
- d) To reserve memory space for critical operations

Correct answer: c) To mark special language constructs and prevent their use as identifiers

13. Python is known for its:

- a) Simplicity and readability
- b) Complexity and verbosity
- c) High performance and speed
- d) Low-level system programming capabilities

Correct answer: a) Simplicity and readability

14. What is the primary philosophy behind Python's design?

- a) Optimize code for performance
- b) Prioritize simplicity and readability
- c) Emphasize low-level hardware access
- d) Enable rapid development with minimal documentation

Correct answer: b) Prioritize simplicity and readability

15. What is the purpose of Python's standard library?

- a) To provide a collection of third-party modules
- b) To include advanced features not available in the core language
- c) To extend the functionality of the Python interpreter
- d) To provide a collection of modules and packages for common tasks

Correct answer: d) To provide a collection of modules and packages for common tasks

16. Which major company has played a significant role in the development and promotion of Python?

- a) Google
- b) Microsoft
- c) Apple
- d) IBM

Correct answer: a) Google

17. What is one of the benefits of Python's readability?

- a) It makes debugging easier
- b) It improves code performance
- c) It reduces the need for comments
- d) It speeds up code execution

Correct answer: a) It makes debugging easier

18. Which command is used to execute a Python script?

- a) `python -i script.py`
- b) `python script.py`
- c) `python -c script.py`
- d) `python -e script.py`

Correct answer: b) `python script.py`

19. Which of the following is not a valid way to execute a Python script?

- a) Using an Integrated Development Environment (IDE)
- b) Using a text editor and a command prompt
- c) Using a web browser
- d) Using an online Python compiler

Correct answer: c) Using a web browser

20. What happens when you execute a Python script in immediate mode?

- a) The script runs silently without any output
- b) The script is executed line by line, and the results are displayed immediately
- c) The script is executed in the background

d) The script executes with additional debugging information

Correct answer: b) The script is executed line by line, and the results are displayed immediately

21. What is the purpose of the Python interpreter?

a) To convert Python code into machine code

b) To execute Python code and produce output

c) To optimize Python code for better performance

d) To analyze Python code for errors and warnings

Correct answer: b) To execute Python code and produce output

22. In Python, which of the following control structures rely on indentation?

a) If statements

b) While loops

c) For loops

d) All of the above

Correct answer: d) All of the above

23. What error will you encounter if there's an indentation mismatch in your Python code?

a) SyntaxError

b) IndentationError

c) RuntimeError

d) ValueError

Correct answer: b) IndentationError

24. Which of the following is not a reserved keyword in Python?

a) If

b) then

c) else

d) elif

Correct answer: b) then

25. In Python, which keyword is used to define a loop?

a) for

b) loop

c) iterate

d) do

Correct answer: a) for