

20 May

Python Basic - 1

Q.1. What are keywords in Python? Using the keyword library, print all the Python keywords.

Answer:

- Keywords in Python are reserved words that have a special meaning and cannot be used as identifiers (like variable names). They are used to define the syntax and structure of Python programs.

To print all the Python keywords, use the keyword module:

```
python
Copy code
import keyword
print(keyword.kwlist)
```

Q.2. What are the rules to create variables in Python?

Answer:

- Variable names must start with a letter (A-Z or a-z) or an underscore (_).
- The rest of the variable name can contain letters, digits (0-9), or underscores.
- Variable names are case-sensitive (e.g., myVar and myvar are different).
- Reserved keywords (like if, def, etc.) cannot be used as variable names.

Q.3. What are the standards and conventions followed for the nomenclature of variables in Python to improve code readability and maintainability?

Answer:

- Use **lowercase words** separated by underscores (snake_case) for variable names (e.g., student_name, total_marks).
- For constants, use **uppercase letters** separated by underscores (e.g., PI = 3.14).
- Class names are written in **CamelCase** (e.g., EmployeeData).
- Avoid using single-character variable names unless for counters (e.g., i, j, etc.).
- Use meaningful names that describe the variable's purpose (e.g., total_sales instead of x).

Q.4. What will happen if a keyword is used as a variable name?

Answer:

- If a keyword is used as a variable name, Python will throw a SyntaxError because keywords have special meaning and cannot be used for identifiers.

Example:

```
python
Copy code
if = 10 # This will raise a SyntaxError
```

Q.5. For what purpose def keyword is used?

Answer:

- The def keyword is used to define a function in Python. It introduces a function block and assigns it a name.

Example:

```
python
Copy code
def greet():
    print("Hello, world!")
```

Q.6. What is the operation of this special character \?

Answer:

- The backslash \ is used as an **escape character** in Python. It allows you to include special characters like newline (\n), tab (\t), or include quotes within strings.

Example:

```
print("This is a line\nThis is a new line")
print("He said, \"Hello!\"")
```

Q.7. Give an example of the following conditions:

(i) Homogeneous list

- A list where all elements are of the same data type.

Example:

```
homogeneous_list = [1, 2, 3, 4, 5]
```

(ii) Heterogeneous set

- A set where elements can be of different data types.

Example:

```
heterogeneous_set = {1, 'apple', 3.14, True}
```

(iii) Homogeneous tuple

- A tuple where all elements are of the same data type.

Example:

```
homogeneous_tuple = ('a', 'b', 'c')
```

Q.8. Explain the mutable and immutable data types with proper explanation & examples.

Answer:

- **Mutable data types:** These are data types whose values can be changed after they are created.

Example: Lists, dictionaries, and sets.

```
my_list = [1, 2, 3]
```

```
my_list[0] = 100 # List is mutable, so we can modify its elements
```

```
print(my_list) # Output: [100, 2, 3]
```

- **Immutable data types:** These are data types whose values cannot be changed once created.

Example: Strings, tuples, and integers.

```
my_tuple = (1, 2, 3)
```

```
# my_tuple[0] = 100 # This will raise a TypeError because tuples are immutable.
```

Q.9. Write a code to create the given structure using only a for loop.

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Answer:

```
for i in range(1, 10, 2):
```

```
    print('*' * i)
```

Q.10. Write a code to create the given structure using a while loop.

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Answer:

```
n = 9
```

```
while n > 0:
```

```
    print('|' * n)
```

```
    n -= 2
```