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

Ans.) Following are keywords in python:

False, None, True, and, as, assert, async, await, break, class, continue, def, del, elif, else, except, finally, for, from, global, if, import, in, is, lambda, nonlocal, not, or, pass, raise, return, try, while, with, yield.



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

Ans.) Rules to create variables are as follows:

1. Variable names must start with a letter (a-z, A-Z) or an underscore (\_). They cannot start with a number.
2. After the initial letter, variable names can contain letters, numbers, and underscores.
3. Variable names are case-sensitive, so **ram** and **RAM** are different variables.
4. Python keywords cannot be used as variable names.
5. They cannot contain spaces or other special characters.

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

Ans.) Following are some standard and conventions followed for the nomenclature of the variable:

1. **Variable Naming**: Use lowercase letters and separate words with underscores for variable names. For example:’ **my\_variable’, ‘age’, ‘total\_count’.**
2. **Constants**: If you have a variable that should not be modified, use uppercase letters and underscores to indicate it as a constant. For example: **‘MAX\_VALUE’, ‘PI’, ‘DEFAULT\_NAME’.**
3. **Function and Method Names**: Use lowercase letters and separate words with underscores for function and method names. For example: ‘**calculate\_average()’, ‘get\_user\_name()’**.

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

Ans.)

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Hence When we use keyword as a variable name, we will get **syntaxError.**

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

Ans.) The **def** keyword in Python is used to define a function.

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

Ans.) special character **‘\‘** (backslash) serves as an escape character and is used to perform various operations, including:

1. **Escape Sequences:** The backslash is used to escape special characters within strings. When certain characters are preceded by a backslash, they are interpreted as special characters instead of their literal meaning.

**Ex.)** print("This is a \"quote\".")

# Output: This is a "quote".

1. **Unicode Escape:** The backslash is used to represent Unicode characters using escape sequences. It allows you to include characters that are not part of the ASCII character set.

**Ex.**) print("\u03B1")

# Output: α

1. **Raw Strings:** By using the r prefix before a string literal, the backslash is treated as a literal character rather than an escape character. This is known as a raw string.

**Ex.**) print(r"C:\path\to\file.txt")

# Output: C:\path\to\file.txt

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

**(i) Homogeneous list**

**(ii) Heterogeneous set**

**(iii) Homogeneous tuple**

Ans.) i) **Homogeneous list:** A homogeneous list is a list where all elements have the same data type.

Ex.) numbers = [1, 2, 3, 4, 5]

(ii) **Heterogeneous set:** A heterogeneous set is a set where the elements can have different data types.

Ex.) my\_set = {1, "apple", True, 3.14}

(iii) **Homogeneous tuple:** A homogeneous tuple is a tuple where all elements have the same data type.

Ex.) fruits = ("apple", "banana", "orange")

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

Ans.) **Mutable Data Types**: Mutable data types are those that allow modifications to their values. When you modify a mutable object, you are changing its content or state while keeping the same identity (memory address).

Ex. 1) **Lists**:

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Ex.2) **Dictionaries**:

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Ex.3) **Sets:**

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**Immutable Data Types:** Immutable data types, on the other hand, do not allow modifications to their values once they are created. When you modify an immutable object, you are actually creating a new object with a different value.

Ex.1) **Strings**:

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In this example, a new string object is created by concatenating the original string with " World", but the original **‘my\_string**’ remains unchanged.

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

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Ans.)

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

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