Assignment 6

1. What are keywords in python? Using the keyword library, print all the python keywords.
   Keywords are the reserved words which have predefined functions.

   Snippet:
   import keyword
   print(keyword.kwlist)
   print("The Total keyword in python is ", len(keyword.kwlist))

   Output:
   ['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']
   The Total keyword in python is 35

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

   - **Variables name must begin with letters(A-Z,a-z) or underscore(_).**
   - **Variables must contain letters,digits and underscore. It cannot start with numbers.**
   - **It is generally recommended to use lowercase for variables.**
   - **In python, Variables are case-sensistive. Var and var are considered to be different variables.**
     Snippet:
     printVar = "hi Variable"
     print(printVar)

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

   -**Use descriptive names**
   -**Avoid reserved keywords**
   -**Use meaningful names**
   -**It can contain letters, numbers, and underscores.**

4. What will happen if a keyword is used as a variable name?
   Keyword are reserved words which cannot be used as a variable name. If we use keyword as variable it will throw a invalid syntax.

5. For what purpose def keyword is used?
   def keyword in python is used to define a function.

   Snippet:
   def function_name():

6. What is the operation of this special character '\'?
   In python, '\' is backslash character or escape character. It has several operations and functions.

- **Escape Sequences** - The backslash is used to create escape sequences, which are special characters that represent certain actions or characters. For example \n will add new line, \t will give tab spaces.
- **Continuation line -** The backslash character is used to split long line of code into small code.

```
sumOfnumbers = 10+20+\
30+40
print('Total numbers',sumOfnumbers)
```

output:
C:\Users\surya\anaconda3\python.exe
C:\Users\surya\PycharmProjects\pythonProject\main.py
Total numbers 100

7. **Give an example of the following conditions:**
   (i) Homogeneous list
   (ii) Heterogeneous set
   (iii) Homogeneous tuple

I. Homogenous List :
   Homogenous lists contains elements of same type.
   my_list = [1,2,3,4,5]
   print(my_list)
   The above list contains elements of the numeric type only.

II. Heterogeneous set:
   Heterogenous set contains elements of different type.
   my_set = {1,'surya',237.5}
   print('surya' in my_set)

   The above set contains all type of the elements.

III. Homogenous tuple:
   Homogenous tuple contains elements of same type.
   my_tuple = (1,2,3,4,5)
   print(my_tuple)

   The above tuple contains elements of the numeric type only

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

   Mutable data types: Mutable data types are which the values can be modified after created. In python, Lists , Set and Dictionary are mutable.

   Snippet:

   List:

   my_list = [1,2,3,4,5]
   print("The values of list before changing: ",my_list)

```
my_list[0]= 'surya'
print("The values of list after changing: ",my_list)
```

Output:

The values of list before changing: [1, 2, 3, 4, 5]

The values of list after changing: ['surya', 2, 3, 4, 5]

Set:

```
my_set = {1,2,3,4,5,6}

print("The values of Set ",my_set)

my_set.add('surya')
```

Output:

The values of Set {1, 2, 3, 4, 5, 6}

Dictionary:

```
my_dict = {'name':'surya','age':23,'address':'abdc'}

print('The values of dictionary before changing: ',my_dict)

my_dict['address'] = 'abc,road'

print('The values of dictionary after changing: ',my_dict)
```

Output:

The values of dictionary before changing: {'name': 'surya', 'age': 23, 'address': 'abdc'}

The values of dictionary after changing: {'name': 'surya', 'age': 23, 'address': 'abc,road'}

Immutable data types: Immutable data types are which the values cannot be modified after created. In tuple are immutable. if we try to modify it will throw an error

Snippet:

```
my_tuple = (1,2,3,4,5)

print('The values of tuple are ',my_tuple)
```

Output:

The values of tuple are (1, 2, 3, 4, 5)

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

```
        *
       ***
      *****
     *******
    *********
```

```
n=5
for i in range(n):
    for j in range(n-i):
        print(" ", end='')
    for j in range(i):
        print("*",end='')
    for j in range(i+1):
        print("*",end='')
    print()
```

Output:

```
    *
   ***
  *****
 *******
*********
```

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

```
|||||||||
 |||||||
  |||||
   |||
    |
```

Snippet:

```
i=1
n=5
while i<=n:
    print(" "*(i+1), end=' ')
    print("|"*(n+1-i) + "|"*(n-i))
    i+=1
```

Output:

```
|||||||||
 |||||||
  |||||
   |||
    |
```