20 May
Python Basic - 1

Q.1. What are keywords in python? Using the keyword library, print all the python keywords.
Keywords are reserved words that have specific meaning and purposes in python.
import keyword as kw
    print(kw.kwlist)

  ['False', 'None', 'True', '__peg_parser__', '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?
1. Variable name cannot be a python keyword.
2. Variable name can have Letters(small, capital), digits and underscore('_') but cannot contain special characters.
3. Variable name can start with a letter or underscore but not with digit
4. Variable cannot start with a digit, but can contain digit after starting it with '_' and letter.
5. Python variables are case sensitive . eg: Sunset_1 and sunset_1 are two different variables.
6. Main use of Underscore is to increase its readability.

Q.3. What are the standards and conventions followed for the nomenclature of variables in python to improve code readability and maintainability?
1. Variable names uses lowercase letters with words separated by underscores for improved readability.
2. If a variable contains constant value that should not be modified, then such names should use uppercase with words separated by underscores.
3. Class names should be written in "CamelCase" without underscores.
4. Avoid one letter name, except for counters and iterators.
5. Reserved keywords should not be used as variable name.
6. Variable name should be meaningful, should describe the content or purpose.

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

It results in SyntaxError.

Q.5. For what purpose def keyword is used?
Def is used to define a function and encapsulate specific functionality, in order to reuse them.

Q.6. What is the operation of this special character '\'?
It is a backslash or escape character, If a code is of multiple lines, this is used at the end of the line to indicate continuity of the code.

Q.7. Give an example of the following conditions:
(i)   Homogeneous list   my_list = [1, 2, 3, 4]
(ii)   Heterogeneous set   my_set = { 'a', 2, True, 4.6 }
(iii)   Homogeneous tuple   my_tuple = (1,2,3)

Q.8. Explain the mutable and immutable data types with proper explanation & examples.
Mutable data types:
Those datatypes whose values can be modified after they are created. This means when we perform certain operations on them, they do not create new object but alter the original.
Example of different data types includes:
- **List**
- **Dictionary**
- **Set**

Eg: my_list = [1,2,3]
                  my_list.append(4)
                  print(my_list)
                  output => [1,2,3,4]   #my_list mutated

Immutable data types
 Those datatypes whose values cannot be modified after they are created. This means when we perform certain operations on them, they do not alter the original object but create the new one.
Example of different data types includes:
- **Tuple**
- **String**
- **Boolean**
- **Float**
- **Int**

Eg: my_tuple= (1,2,3)
               my_tuple[0]= 3
               print(my_tuple)
      output => Error: 'tuple' object does not support item assignment

            eg: my_tuple = (1,2,3)
                 new_tuple = my_tuple + (4,)
                 print(my_tuple) output => (1,2,3)
                 print(new_tuple) output => (1,2,3,4)

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

Code:
```
rows = 5
for i in range(rows):
    for j in range(rows - i - 1):
        print(" ", end="")
    for k in range(2 * i + 1):
        print("*", end="")
    for j in range(rows - i - 1):
```

```
        print(" ", end="")
    print()
```

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

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

Code:
With while loop:
```
rows = 5
i=0
while i < rows:
    j=0
    while j < (i):
        print(" ",end="")
        j+=1
    k=0
    while k < (2*rows-2*i-1):
        print("|",end="")
        k+=1
    j=0
    while j < (i):
        print(" ",end="")
        j+=1

    print(' ')
    i+=1
```

With for loop:

```
rows = 5
for i in range(rows):
    for j in range(i):
        print(" ", end= "")
    for k in range(2*rows-1-2*i)  :
        print("|", end ="")
    for j in range(i):
        print(" ", end= "")
    print()
```