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Q.1 Create an empty object. Display it's data type.

Ans)#create an empty object

```
class Kg:
    pass
Instance=Kg()
print(type(Instance))
```

```
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class Kg:
    pass
Instance=Kg()
print(type(Instance))
```

```
PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\Q.1.py"
<class '__main__.Kg'>
```

Q.2 Write a Python program which add five complex number. Display the sum

Ans)#adding 5 complex numbers

```
#initalisation of five complex no
cn1=complex(2,3)
cn2=complex(4,6)
cn3=complex(8,9)
cn4=complex(1,2)
cn5=complex(13,7)
#printing sum of five complex no
sum=cn1+cn2+cn3+cn4+cn5
print(sum)
```

```
#adding 5 complex numbers
#initalisation of five complex no
cn1=complex(2,3)
cn2=complex(4,6)
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cn5=complex(13,7)
#printing sum of five complex no
sum=cn1+cn2+cn3+cn4+cn5
print(sum)
```

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```
PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\Q.2.py"
(28+27j)
```

Q.3 Write a python program to create the complex numbers from the following integers:

i) a = 10

ii) a =5 b=-2

iii) a = 3.5 b = 6.4

iv) a = -6 b =7.2

v) a =8   b =-4

Ans)#initalising a1 and b1

a1=10

b1=0

#print z1=a+ib

z1=complex(a1,b1)

print(z1)

#initalising a2 and b2

a2=5

b2=2

#print z=a+ib

z2=complex(a2,b2)

print(z2)

#initalising a3 and b3

a3=3.5

b3=6.4

#print z=a+ib

z3=complex(a3,b3)

print(z3)

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```
#initalising a4 and b4

a4=-6

b4=7.2

#print z=a+ib

z4=complex(a4,b4)

print(z4)


#initalising a5 and b5

a5=8

b5=-4

#print z=a+ib

z5=complex(a5,b5)

print(z5)
```

```
PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\Q.3.py"
(10+0j)
(5+2j)
(3.5+6.4j)
(-6+7.2j)
(8-4j)
```

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```python
#initalising a1 and b1
a1=10
b1=0
#print z1=a+ib
z1=complex(a1,b1)
print(z1)

#initalising a2 and b2
a2=5
b2=2
#print z=a+ib
z2=complex(a2,b2)
print(z2)

#initalising a1 and b1
a3=3.5
b3=6.4
#print z=a+ib
z3=complex(a3,b3)
print(z3)

#initalising a1 and b1
a4=-6
b4=7.2
#print z=a+ib
z4=complex(a4,b4)
print(z4)

#initalising a1 and b1
a5=8
b5=-4
#print z=a+ib
z5=complex(a5,b5)
print(z5)
```

Q.4 Write a python program to convert binary number, octal number and hexadecimal number into an integer number. Take five examples of each number.

Ans) # conversion from Binary to Integer

binary_numbers = ['100', '1000', '10000', '11', '111']

for binary_num in binary_numbers:

    decimal_num = int(binary_num, 2)

    print(f"Binary: {binary_num} = Integer: {decimal_num}")

conversion from Octal to Integer

octal_numbers = ['10', '16', '24', '32', '40']

for octal_num in octal_numbers:

    decimal_num = int(octal_num, 8)

```
    print(f"Octal: {octal_num} = Integer: {decimal_num}")


#conversion from Hexadecimal to Integer
hexadecimal_numbers = ['1A', '2B', '3C', '4D', '5E']
for hex_num in hexadecimal_numbers:
    decimal_num = int(hex_num, 16)
    print(f"Hexadecimal: {hex_num} = Integer: {decimal_num}")
```

```
1
2   # conversion from Binary to Integer
3   binary_numbers = ['100', '1000', '10000', '11', '111']
4   for binary_num in binary_numbers:
5       decimal_num = int(binary_num, 2)
6       print(f"Binary: {binary_num} = Integer: {decimal_num}")
7
8   # conversion from Octal to Integer
9   octal_numbers = ['10', '16', '24', '32', '40']
10  for octal_num in octal_numbers:
11      decimal_num = int(octal_num, 8)
12      print(f"Octal: {octal_num} = Integer: {decimal_num}")
13
14  #conversion from Hexadecimal to Integer
15  hexadecimal_numbers = ['1A', '2B', '3C', '4D', '5E']
16  for hex_num in hexadecimal_numbers:
17      decimal_num = int(hex_num, 16)
18      print(f"Hexadecimal: {hex_num} = Integer: {decimal_num}")
```

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```
Hexadecimal: 4D -> Integer: 77
Hexadecimal: 5E -> Integer: 94
PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\Q.6.py"
Binary: 100 = Integer: 4
Binary: 1000 = Integer: 8
Binary: 10000 = Integer: 16
Binary: 11 = Integer: 3
Binary: 111 = Integer: 7
Octal: 10 = Integer: 8
Octal: 16 = Integer: 14
Octal: 24 = Integer: 20
Octal: 32 = Integer: 26
Octal: 40 = Integer: 32
Hexadecimal: 1A = Integer: 26
Hexadecimal: 2B = Integer: 43
Hexadecimal: 3C = Integer: 60
Hexadecimal: 4D = Integer: 77
Hexadecimal: 5E = Integer: 94
PS C:\Users\Kshitiz Gupta\Desktop\kg>
```

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Q.5 Write a python program to convert string into decimal number system by using the command int(string, base). Take five examples of each number system.

Ans)
```
def convert_to_decimal():
    '''
    Converts strings into decimal numbers using the int(string, base) function.
    '''

    binary_numbers = ['1101', '10101', '111001', '10011', '110110']
    for binary_num in binary_numbers:
        decimal_num = int(binary_num, 2)
        print(f"Binary: {binary_num} -> Decimal: {decimal_num}")



    octal_numbers = ['12', '34', '76', '543', '127']
    for octal_num in octal_numbers:
        decimal_num = int(octal_num, 8)
        print(f"Octal: {octal_num} -> Decimal: {decimal_num}")

    hexadecimal_numbers = ['1A', '2F', '4C', 'FF', '1D7']
    for hex_num in hexadecimal_numbers:
        decimal_num = int(hex_num, 16)
        print(f"Hexadecimal: {hex_num} -> Decimal: {decimal_num}")



convert_to_decimal()
```

n2Q.14.py | assign2Q.15.py | assign2Q.16.py | assign2Q.17.py | assign2Q.18.py | assign2Q.1

```python

    binary_numbers = ['1101', '10101', '111001', '10011', '110110']
    for binary_num in binary_numbers:
        decimal_num = int(binary_num, 2)
        print(f"Binary: {binary_num} -> Decimal: {decimal_num}")


    octal_numbers = ['12', '34', '76', '543', '127']
    for octal_num in octal_numbers:
        decimal_num = int(octal_num, 8)
        print(f"Octal: {octal_num} -> Decimal: {decimal_num}")

    hexadecimal_numbers = ['1A', '2F', '4C', 'FF', '1D7']
    for hex_num in hexadecimal_numbers:
        decimal_num = int(hex_num, 16)
        print(f"Hexadecimal: {hex_num} -> Decimal: {decimal_num}")


convert_to_decimal()

```

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```
PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\assign2Q.21.py"
Binary: 1101 -> Decimal: 13
Binary: 10101 -> Decimal: 21
Binary: 111001 -> Decimal: 57
Binary: 10011 -> Decimal: 19
Binary: 110110 -> Decimal: 54
Octal: 12 -> Decimal: 10
Octal: 34 -> Decimal: 28
Octal: 76 -> Decimal: 62
Octal: 543 -> Decimal: 355
Octal: 127 -> Decimal: 87
Hexadecimal: 1A -> Decimal: 26
Hexadecimal: 2F -> Decimal: 47
Hexadecimal: 4C -> Decimal: 76
Hexadecimal: FF -> Decimal: 255
Hexadecimal: 1D7 -> Decimal: 471
```

Q.6 convert a decimal number into binary, octal and hexadecimal number system. Solve five examples of each number system.

Ans) def decimal_to_binary(decimal):

    return bin(decimal)

def decimal_to_octal(decimal):

    return oct(decimal)

def decimal_to_hexadecimal(decimal):

    return hex(decimal)

Example decimal numbers

decimals = [25, 128, 75, 255, 42]

Convert each decimal number to binary, octal, and hexadecimal

for dec in decimals:

binary = decimal_to_binary(dec)

octal = decimal_to_octal(dec)

hexadecimal = decimal_to_hexadecimal(dec)

print(f"Decimal: {dec}, Binary: {binary}, Octal: {octal}, Hexadecimal: {hexadecimal}")

```python
def decimal_to_binary(decimal):
    return bin(decimal)

def decimal_to_octal(decimal):
    return oct(decimal)

def decimal_to_hexadecimal(decimal):
    return hex(decimal)

# Example decimal numbers
decimals = [25, 128, 75, 255, 42]

# Convert each decimal number to binary, octal, and hexadecimal
for dec in decimals:
    binary = decimal_to_binary(dec)
    octal = decimal_to_octal(dec)
    hexadecimal = decimal_to_hexadecimal(dec)
    print(f"Decimal: {dec}, Binary: {binary}, Octal: {octal}, Hexadecimal: {hexadecimal}")

```

```
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PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\Q.6.py"
Decimal: 25, Binary: 0b11001, Octal: 0o31, Hexadecimal: 0x19
Decimal: 128, Binary: 0b10000000, Octal: 0o200, Hexadecimal: 0x80
Decimal: 75, Binary: 0b1001011, Octal: 0o113, Hexadecimal: 0x4b
Decimal: 255, Binary: 0b11111111, Octal: 0o377, Hexadecimal: 0xff
```

Q.7 Write a python program to represent False by a string.

Ans) def represent_false_as_string():

'''

Represents False by a string in Python.

'''

false_as_string = str(False)

return false_as_string

result = represent_false_as_string()

print("Result:", result)

Ans)

```
def represent_false_as_string():
    '''
    Represents False by a string in Python.
    '''
    false_as_string = str(False)
    return false_as_string


result = represent_false_as_string()
print("Result:", result)
```

```
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PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\q.7.py"
Result: False
```

Q.8 Write a python program to display the output of the following expression

i) True = True

ii) True + False

iii) True – True

iv) True - True

Ans)print(True = True)

print(True+False)

print(True-True)

print(False-False)

```
#print(True = True)
print(True+False)
print(True-True)
print(False-False)
```

```
PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\Q.8.py"
  File "c:\Users\Kshitiz Gupta\Desktop\kg\Q.8.py", line 1
    print(True = True)
          ^^^^^^
SyntaxError: cannot assign to True
```

```
PS C:\Users\Kshitiz Gupta\Desktop\kg> python -u "c:\Users\Kshitiz Gupta\Desktop\kg\Q.8.py"
1
0
0
```