Question 1:

1. Assign 55 to the variable x and print it in the console
2. change the value of variable to be 60
3. add x by 10 again and print the value.

In [1]:
```
#1.
x=55
print(x)
```

```
55
```

In [2]:
```
x=60  #changing value of variable
print(x)
```

```
60
```

In [3]:
```
print(x+10)
```

```
70
```

Question 2:

1. create a variable x and assign any integer value in it
2. create a variable y and assign any float value in it
3. try using function type() for x and y to check its data type.

In [4]:
```
x=20
y=10.65
print(type(x))
```

```
<class 'int'>
```

In [5]:
```
print(type(y))
```

```
<class 'float'>
```

Question 3:

1. Create two variables first_name, and last_name and print the sentence in the format below:

"My name is John Doe"

1. use + operator to concatenate strings
2. use format() method to achieve the same result
3. use f-strings to achieve the same result
4. use %s formatting method to achieve the same result

In [6]:
```
first_name="John"
last_name="Doe"
print("My name is",first_name, last_name)
```

```
My name is John Doe
```

In [8]:
```
#2.
print("My name is"+" "+first_name+" "+last_name)
```

```
My name is John Doe
```

In [9]:
```
#3
print("My name is {} {}".format(first_name,last_name))
```

```
My name is John Doe
```

In [11]:
```
#4
print(f'My name is {first_name} {last_name}')
```

```
My name is John Doe
```

In [12]:
```
#5
print("My name is %s %s"%(first_name,last_name))
```

```
My name is John Doe
```

Question 4:

1. Assign a variable pi and assign value 3.14159265
2. use formatting strings to show pi with 3 digits after the decimal
3. use formatting strings to show pi with 2 digits after the decimal but allocate 10 spaces for the variable.
4. use f-string to show the result in the following format: "The value of PIE is 3.14"

In [9]:
```
#1
pi=3.14159265
```

In [12]:
```
#2
print(f'The value of pi is {pi:1.3f}')
```

```
The value of pi is 3.142
```

In [13]:
```
#3
# value after decimal will provide how much number after the decimal and value before decimal provide how much
print(f'The value of pi is {pi:10.3f}')
```

```
The value of pi is      3.142
```

In [14]:
```
#4
print(f'The value of pi is {pi:1.2f}')
```

```
The value of pi is 3.14
```

Question 5:

1. Use a function input() to input the the name and age from the command line and display the formatted text as instructed below:
2. use input() function to ask the name to the user. The console should show "What is your name?" to input the name
3. similarly ask the user to input the age and assign it to another variable.
4. Show a sentence describing the user name and age using different formatting methods. hint: Output would be a sentence similar to Hello 20 years old John!!.

In [15]:
```
#1
name=input("Enter your name:\n")    #ask input in new line
age=int(input("Enter your age: "))   #we did not use \n just to see difference
print("Hello {} years old {}".format(age,name))
```

```
Enter your name:
Ram
Enter your age: 21
Hello 21 years old Ram
```

In [18]:
```
#2 #3
name=input("What is your name?\n")
age=int(input("What is your age?\n"))
print(f'hello {age} years old {name}')
```

```
What is your name?
Ram
What is your age?
21
hello 21 years old Ram
```

Question 6:

Perform the addition operations between the following data types and check whether the code runs successfully or not:

1. int and int (Example: 5 + 5)
2. int and float (Example: 5 + 5.5)
3. float and float (Example: 5.5 + 5.5)
4. str and str (Example: 'hello' + 'world')
5. int and str (Example: 5 + 'hello')

In [19]:
```
#1
5+5
```

Out[19]:
```
10
```

In [20]:
```
b=5+5.5
print(b)
```

```
10.5
```

In [21]:
```
type(b)   # int plus float gives float so that values does not get lost
```

Out[21]:
```
float
```

In [22]:
```
5.5+5.5
```

Out[22]:
```
11.0
```

In [23]:
```
#str + str = Concatenation of strings
"Hello" + "World"
```

Out[23]:
```
'HelloWorld'
```

In [24]:
```
5+"world"   # it will give error because int and string cannot be added until 5 change to str
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[24], line 1
----> 1 5+"world"

TypeError: unsupported operand type(s) for +: 'int' and 'str'
```

In [25]:
```
#change int to str (Typecasting)
str(5)+"world"
```

Out[25]:
```
'5world'
```

Question 7:

The following variables are assigned values as below:

x = 10 y = 12

1. Check if x is greater than y
2. Check if y is greater than x
3. check if x is greater than or equal to y
4. check if y is greater than or equal to x
5. Check if x becomes equal to y if x is added by 2
6. Check if x is not equal to y after the previous operation

In [1]:
```
#1
x=10
y=12
print(x>y)
```

```
False
```

In [2]:
```
print(y>x)
```

```
True
```

In [3]:
```
print(x>=y)
```

```
False
```

In [4]:
```
print(y>=x)
```

```
True
```

In [5]:
```
print(x+2==y)
```

```
True
```

In [6]:
```
print(x!=y)
```

```
True
```

Question 8:

1. Use Identity and Membership operations to solve the following problems
2. check whether the number 12 is an integer or not
3. divide 100 by 12 and check whether the number is float or not
4. suppose we have following lists:

x = [1,2,3,4,5] y = [1,2,3,4,5]

z = x

i. Is x identical to y? ii. Is x identical to z?

In [9]:
```
#2
print(isinstance(12,int))    #isinsatnce check whether provided number is int/float/string or not
```

```
True
```

In [10]:
```
print(isinstance(12,float))
```

```
False
```

In [11]:
```
print(isinstance(12,str))
```

```
False
```

In [13]:
```
print(isinstance("12",str))
```

```
True
```

In [14]:
```
#3
```

```
num=100/12
if isinstance(num,float):
    print("num is float")
else:
    print("num is not a float")
```

```
num is float
```

In [15]:
```
#4
x = [1,2,3,4,5]
y = [1,2,3,4,5]

z = x
```

In [16]:
```
#i
print(x==y)
```

```
True
```

In [17]:
```
print(x==z)
```

```
True
```

Question 9:

Suppose there are following animals in the zoo:

elephant, tiger, zebra, lion, wolf

1. Check programmatically whether lion is in the zoo or not.
2. Check programmatically whether horse is in the zoo or not.

In [18]:
```
zoo=["elephant","tiger","zebra","lion","wolf"]
#1
if "lion" in zoo:
    print("lion is in zoo")
else:
    print("sorry, we cannot find lion")
```

```
lion is in zoo
```

In [19]:
```
if "horse" in zoo:
    print("horse is in zoo")
else:
    print("sorry, we cannot find horse")
```

```
sorry, we cannot find horse
```

Question 10: Use bitwise operations to perform the following:

1. Check the final value when 5 is performed bitwise AND with 7
2. Check the final value when 5 is performed bitwise OR with 2

In [20]:
```
#1 Bitwise AND
print(5&7)
```

```
5
```

In [21]:
```
#2 Bitwise OR
print(5|2)
```

```
7
```

In [ ]: