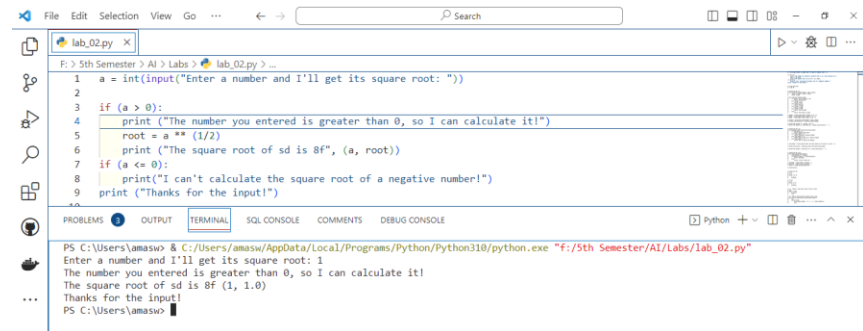


LAB 02

Example 01:



```
1 a = int(input("Enter a number and I'll get its square root: "))
2
3 if (a > 0):
4     print("The number you entered is greater than 0, so I can calculate it!")
5     root = a ** (1/2)
6     print("The square root of sd is 8f", (a, root))
7 if (a <= 0):
8     print("I can't calculate the square root of a negative number!")
9 print("Thanks for the input!")
```

PS C:\Users\amasw> & C:\Users\amasw\AppData\Local\Programs\Python\Python310\python.exe "f:/5th Semester/AI/Labs/lab_02.py"

Enter a number and I'll get its square root: 1

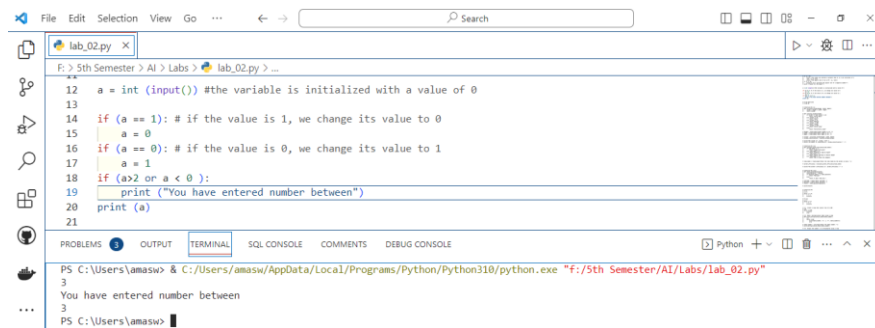
The number you entered is greater than 0, so I can calculate it!

The square root of sd is 8f (1, 1.0)

Thanks for the input!

PS C:\Users\amasw>

Example 02:



```
12 a = int(input()) #the variable is initialized with a value of 0
13
14 if (a == 1): # if the value is 1, we change its value to 0
15     a = 0
16 if (a == 0): # if the value is 0, we change its value to 1
17     a = 1
18 if (a>2 or a < 0):
19     print("You have entered number between")
20 print(a)
21
```

PS C:\Users\amasw> & C:\Users\amasw\AppData\Local\Programs\Python\Python310\python.exe "f:/5th Semester/AI/Labs/lab_02.py"

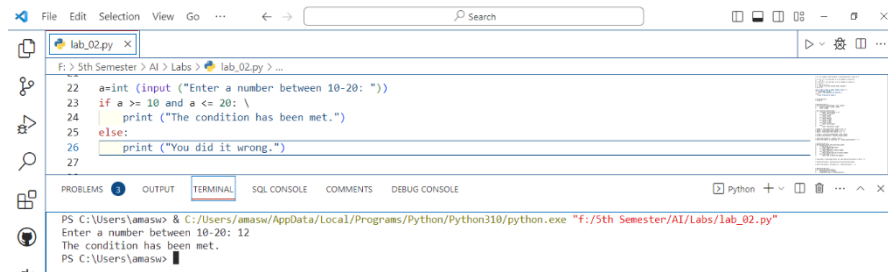
3

You have entered number between

3

PS C:\Users\amasw>

Example 03:



```
22 a=int(input("Enter a number between 10-20: "))
23 if a >= 10 and a <= 20: \
24     print("The condition has been met.")
25 else:
26     print("You did it wrong.")
27
```

PS C:\Users\amasw> & C:\Users\amasw\AppData\Local\Programs\Python\Python310\python.exe "f:/5th Semester/AI/Labs/lab_02.py"

Enter a number between 10-20: 12

The condition has been met.

PS C:\Users\amasw>

Example 04:



```
27
28 a=int(input("Enter a number between 10-20 or 30-40: "))
29
30 if (a>=10 and a<=20) or (a>=30 and a<=40):
31     print("The condition has been met.")
32 else:
33     print("You did it wrong.")
34
```

PS C:\Users\amasw> & C:\Users\amasw\AppData\Local\Programs\Python\Python310\python.exe "f:/5th Semester/AI/Labs/lab_02.py"

Enter a number between 10-20 or 30-40: 15

The condition has been met.

PS C:\Users\amasw>

Example 03:

```

35 #counting positive and negative numbers
36 pcount=0
37 ncount=0
38 count=int(input("how many numbers you want? "))
39 i=1 #initialization
40 while(i<=count): #condition
41     num=int(input("enter number "))
42     if (num>=0):
43         pcount+=1
44     else:
45         ncount+=1
46     i+=1
47 print("positive: ",pcount)
48 print("negative: ",ncount)

```

PS C:\Users\amasu> & C:/Users/amasu/AppData/Local/Programs/Python/Python310/python.exe "f:/5th Semester/AI/Labs/lab_02.py"

how many numbers you want? 3
enter number 1
enter number 2
enter number 3
positive: 3
negative: 0
PS C:\Users\amasu>

Example 04:

```

49
50 value='c'
51 userValue=input("guess a number from a to e ")
52 while(userValue!=value):
53     print("Incorrect")
54     userValue=input("guess a number from a to e")
55 print("welcome user")
56

```

PS C:\Users\amasu> & C:/Users/amasu/AppData/Local/Programs/Python/Python310/python.exe "f:/5th Semester/AI/Labs/lab_02.py"

guess a number from a to e c
welcome user
PS C:\Users\amasu>

(iii)

clist = ["Canada", "USA", "Mexico"]

i = 0

while i < len(clist):

print(clist[i])

i += 1

2. What's the difference between a while loop and a for loop?

The basic function of both loops are same but the structure is different.

3. Can you sum numbers in a while loop?

Yes, you can.

4. Can a for loop be used inside a while loop?

Yes, you can use both loops inside one another.

```
# Lab Exercises
```

```
# Lab 02
```

```
# Exercise 01 (i)
```

```
def calculate_volume(height, width, depth):  
    volume = height * width * depth  
    return volume
```

```
def classify_volume(volume):  
    if volume > 0 and volume <= 10:  
        return "Extra Small"  
    elif volume <= 25:  
        return "Small"  
    elif volume <= 75:  
        return "Medium"  
    elif volume <= 100:  
        return "Large"  
    elif volume <= 250:  
        return "Extra Large"  
    else:  
        return "Extra-Extra Large"
```

```
height = float(input("Enter height in cm: "))  
width = float(input("Enter width in cm: "))  
depth = float(input("Enter depth in cm: "))
```

```
volume = calculate_volume(height, width, depth)  
volume_classification = classify_volume(volume)
```

```
print("The volume is", volume, "cm^3.")  
print("The object is classified as", volume_classification + ".")
```

Exercise 01 (ii)

```
def evaluate_worker_efficiency(time_taken):
    if time_taken >= 2:
        return "Highly Efficient"
    elif time_taken >= 3:
        return "Ordered to Improve Speed"
    elif time_taken >= 4:
        return "Given Training to Improve Speed"
    elif time_taken >= 5:
        return "Has to Leave the Company"

time_taken = float(input("Enter the time taken by the worker in hours: "))

worker_efficiency = evaluate_worker_efficiency(time_taken)

print("The worker's efficiency is", worker_efficiency + ".")
```

Exercise 01 (iii)

```
def check_password(password):
    known_password = 'abc$123'
    if password.lower() == known_password:
        return "Welcome!"
    else:
        return "I don't know you."

username = input("Enter username: ")
password = input("Enter password: ")
result = check_password(password)

print(result)
```

Exercise 02

(i)

```
n = 3
while n >= 0:
    n -= 1
    print(n)
```

Output:

```
2
1
0
-1
```

(ii)

```
n = 4
while n > 0:
    n += 1
    print(n)
```

Output:

```
5
6
.
.
.
Keeps printing...
```

1. Create a loop that counts from 0 to 100

```
i=0
while i<=100:
    print(i)
    i+=1
```

2. Make a multiplication table using a loop

```
def print_multiplication_table(table_number):
    i=1
    while i<=10:
        print(table_number, "x", i, "=", table_number*i)
        i+=1

table_number = int(input("Enter the table number: "))
print_multiplication_table(table_number)
```

3. Output the numbers 1 to 10 backwards using a loop

```
i=10
while i>=1:
    print(i)
    i-=1
```

4. Create a loop that counts all even numbers to 10

```
i=0
while i<=10:
    if i%2==0:
        print(i)
    i+=1
```

5. Create a loop that sums the numbers from 100 to 200

```
i=100
sum=0
while i<=200:
    sum+=i
    i+=1
print(sum)
```