

Tracing Python Programs

- Trace the values of all variables in the following program and show the corresponding output.

Python Code

```
#get input from user
num=int(input("Enter the number for multiplication table: \n"))
i=1;
step=10;
while i<=step:
    print(i,'x',num,'=',i*num)
    i+=1

print ('End of the Program')
```

Starting of the Program		
Reading the variable 'num' from user. Assume, user enters 'num' = 10 i=1 (initialization) step=3 (initialization)		Enter the number for multiplication table: 10
Iteration 1	num=10 i=1 step = 3 while condition (i<=step) i.e. while condition (1<=3): True print(i,'x',num,'=',i*num) i.e. 1 'x' 10 '=' (1x10) '=' 10 i=i+1. So i=1+1 i.e. i=2.	Output Enter the number for multiplication table: 10 1 x 10 = 10
Iteration 2	num=10 i=2 step = 3 while condition (i<=step) i.e. while condition (2<=3): True print(i,'x',num,'=',i*num) i.e. 2 'x' 10 = (2x10) = 20 i=i+1 So i=2+1 i.e. i=3.	Output Enter the number for multiplication table: 10 1 x 10 = 10 2 x 10 = 20
Iteration 3	num=10 i=3 step = 3 while condition (i<=3): True print(i,'x',num,'=',i*num) i.e. 3 'x' 10 = (3x10) = 30 i=i+1 So i=3+1 i.e. i=4.	Output Enter the number for multiplication table: 10 1 x 10 = 10 2 x 10 = 20 3 x 10 = 30
Iteration 4	num=10 i=4 step = 3 while condition (4<=3): False	Output Enter the number for multiplication table: 10

	<pre>print(i,'x',num,'=',i*num) i.e. 1 'x' 10 = (1x10) = 10 i=i+1</pre> <p>End of the while loop:</p> <p>End of the Program</p>	<p>1 x 10 = 10 2 x 10 = 20 3 x 10 = 30</p>
		<p>Output</p> <p>Enter the number for multiplication table:</p> <p>10</p> <p>1 x 10 = 10 2 x 10 = 20 3 x 10 = 30</p> <p>End of the Program</p>

2. Trace the values of all variables in the following program and show the corresponding output.

Python Code

```
i = 1
while i < 6:
    print(i)
    if i == 3:
        a=5    # dummy statement
        break  # on and off the break and observe the output
    i += 1
```

3. Trace the values of all variables in the following program and show the corresponding output.

Python Code

```
i = 0
while i < 6:
    i=i+1
    if i == 3:
        a=5 #dummy statement
        continue # on and off 'continue' and observe
    print(i)
```

4. Trace the values of all variables in the following program and show the corresponding output.

Python Code

```
print('Program-1')
i = 1
while i <= 3:
    j=1
    print("\n")
    while j <= 5:
        print('*')
        j = j + 1
    i = i + 1
```

5. Trace the values of all variables in the following program and show the corresponding output.

Python Code

```
i = 1
while i <= 3:
    j=1
    print("\n")
    while j <= 5:
        print(j,end=' -')
        j = j + 1
    i = i + 1
```