



In Python, a `while` loop is a control flow statement that allows you to execute a block of code repeatedly as long as a specified condition is true. The basic syntax of a `while` loop in Python is as follows:

```
python Copy code  
  
while condition:  
    # code block
```

Here's how it works:

The condition is evaluated before executing the code block. If the condition is true, the code block is executed. If the condition is false, the loop is terminated, and the program continues with the next statement after the loop.

After the code block is executed, the condition is checked again. If it's still true, the code block is executed again. This process repeats until the condition becomes false. If the condition never becomes false, the loop will continue indefinitely, resulting in an infinite loop. Infinite loops are generally avoided, and it's essential to ensure that the condition in the `while` loop eventually becomes false to prevent this.

Here's a simple example to illustrate how a `while` loop works:

```
python Copy code  
  
count = 0  
while count < 5:  
    print("Count:", count)  
    count += 1
```

- The variable `count` is initialized to 0.
- The `while` loop continues as long as `count` is less than 5.
- Inside the loop, the current value of `count` is printed, and then `count` is incremented by 1 (`count += 1`).
- Once `count` reaches 5, the condition `count < 5` becomes false, and the loop terminates.

**Code 1:**

---



```
i=0
while(i<45):
    print(i)
    i=i+1
```

### Output:

```
C:\Users\test\PycharmProjects\project_1\.venv\Scripts\python.exe C:\Users\test\PycharmProjects\project_1\temp.py
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
```

Going till 45.

---

### Code 2:

```
# Initialize variables
total = 0

# Prompt the user for input
print("Enter positive numbers (enter a negative number to exit):")

# Start the while loop
while True:
    number = int(input("Enter a number: "))
```



```
# Check if the number is negative
if number < 0:
    break # Exit the loop if the number is negative

# Add the positive number to the total
total += number

# Print the sum of positive numbers
print("The sum of positive numbers entered is:", total)
```

### Output:

```
C:\Users\test\PycharmProjects\project_1\.venv\Scripts\python.exe C:\Users\test\PycharmProjects\project_1\Project_1.py
Enter positive numbers (enter a negative number to exit):
Enter a number: 21
Enter a number: 21
Enter a number: 22
Enter a number: -1
The sum of positive numbers entered is: 64
```