



# Introduction to loops

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# What is a Loop?

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Iteration means executing the same block of code over and over, potentially many times.

Loops are used in programming to repeat a specific block of code.

A programming structure that implements iteration is called a loop.

# While loop

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The while loop in Python is used to iterate over a block of code as long as the test expression (condition) is true.

We generally use this loop when we don't know the number of times to iterate beforehand.

```
while test_expression:  
    Body of while
```

# Flowchart

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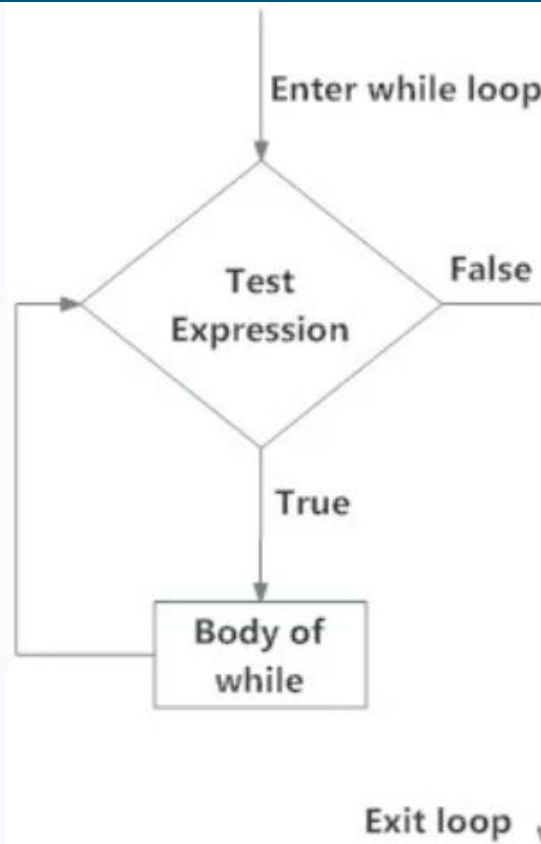


Fig: operation of while loop

# Example

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```
# Program to add natural
# numbers up to
# sum = 1+2+3+...+n

# To take input from the user,
# n = int(input("Enter n: "))

n = 10

# initialize sum and counter
sum = 0
i = 1

while i <= n:
    sum = sum + i
    i = i+1    # update counter

# print the sum
print("The sum is", sum)
```

```
Enter n: 10
The sum is 55
```

# While with else

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```
'''Example to illustrate  
the use of else statement  
with the while loop'''
```

```
counter = 0
```

```
while counter < 3:  
    print("Inside loop")  
    counter = counter + 1  
else:  
    print("Inside else")
```

```
Inside loop  
Inside loop  
Inside loop  
Inside else
```

# References

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<https://www.programiz.com/python-programming/while-loop>