

What is LOOP

A loop can be used to tell a program to execute statements repeatedly.

Suppose that you need to display a string (e.g., Programming is fun!) 100 times. It would

be tedious to type the statement 100 times:

```
print("Programming is fun!")
```

```
print("Programming is fun!")
```

```
...
```

```
print("Programming is fun!")
```

```
count = 0
```

```
while count < 100:
```

```
    print("Programming is fun!")
```

```
    count = count + 1
```

The for Loop

```
i = initialValue # Initialize loop-control
variable
```

```
while i < endValue:
```

```
    # Loop body
```

```
    ...
```

```
i += 1 # Adjust loop-control variable
```

A for loop can be used to simplify the preceding loop:

```
for i in range(initialValue, endValue):
```

```
    # Loop body
```

In general, the syntax of a for loop is:

```
for var in sequence:
```

```
    # Loop body
```

A Python for loop iterates through each value in a sequence.

Loop Design Strategies

Step 1: Identify the statements that need to be repeated.

Step 2: Wrap these statements in a loop like this:

```
while True:
```

```
    Statements
```

Step 3: Code the loop-continuation-condition and add appropriate statements for controlling the loop.

```
while loop-continuation-condition:
```

```
    Statements
```

```
    Additional statements for controlling the loop
```

Controlling a Loop

With user Confirmation

```
continueLoop == 'Y':
```

```
while continueLoop == 'Y':
```

```
    # Execute the loop body once
```

```
    ...
```

```
    # Prompt the user for confirmation
```

```
    continueLoop = input("Enter Y to continue and N to quit: ")
```

Sentinel Value

Another common technique for controlling a loop is to designate a special input value, known as a sentinel value, which signifies the end of the input. A loop that uses a sentinel value in this way is called a sentinel-controlled loop.

```
data = eval(input("Enter an integer (the input ends " + "if it is 0): "))
```

```
# Keep reading data until the input is 0
```

```
sum = 0
```

```
sum += data
```

```
data = eval(input("Enter an integer (the input ends " + "if it is 0): "))
```

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



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