

# Branching and Looping

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## Branching

- Take a decision based on a condition
- Syntax of branching with if-elif-else statement:

```
if condition:  
    # block of code  
  
elif another_condition:  
    # another block  
  
else:  
    # fallback block (when nothing fits)
```

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## if-elif-else – Example 1

```
x = 10  
  
if x > 0:  
    print("Positive")  
  
elif x == 0:  
    print("Zero")  
  
else:  
    print("Negative")
```

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## if-elif-else – Example 2

```
choice = input("Enter y/n: ")  
  
if choice == "y":  
    print("Proceed")  
else:  
    print("Stop")
```

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## Looping

- To repeat a block of code multiple times.

Life without Loops	Life with Loops
<pre>print(0) print(1) print(2) print(3) print(4)</pre>	<pre>for i in range(5):     print(i)</pre>

- In python we have two kinds of loops:

- for
- while

## for Loop - Example

- Printing the squares using a loop

```
for i in range(1, 6): # 1 to 5
    sq_val = i**2
    print(f"{i} squared is {sq_val}")

# or

for i in range(1, 6): # 1 to 5
    print(f"{i} squared is {i**2}")
```

## while Loop – Example

- Adding numbers using while loop:

```
total = 0
num = 1

while total <= 10:
    print(f"Adding {num}, total = {total}")
    total += num
    num += 1
```

## break Statement

- Exit the loop prematurely.
- Example:

```
# stop looping when you find 4

for i in range(1, 10):
    if i == 4:
        print("Found 4! Stopping loop.")
        break
    print(i)
```

## continue Statement

- Skips the current iteration and continues with the next one.
- Example:

```
# don't print 3  
  
i = 1  
while i <= 5:  
    if i == 3:  
        i += 1  
        continue  
    print(i)  
    i += 1
```

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## pass Statement

- Do nothing
- A placeholder for future code or syntactic completeness.
- Example:

```
for i in range(5):  
    if i == 3:  
        pass # Will do something later  
    print(i)
```

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