

Introduction to Software Development Week 3: Control Flow

1. Learning Objectives

- Control the execution path of a program using conditional statements.
- Implement `if`, `elif`, and `else` blocks to make decisions.
- Repeat blocks of code using `for` and `while` loops.

2. Core Concepts

- **Conditional Statements:**
 - Allows a program to execute certain code blocks only if a condition is met.
 - **`if`:** Runs the block if the condition is `True`.
 - **`elif (else if)`:** Runs if the previous `if/elif` was `False`, but this condition is `True`.
 - **`else`:** Runs if all preceding conditions were `False`.
- **Loops:**
 - Used to execute a block of code repeatedly.
 - **`for loop`:** Iterates over a sequence (like a list or a range of numbers). Best used when you know the number of iterations.
 - **`while loop`:** Repeats as long as a condition is `True`. Best used when the number of iterations is unknown.

3. Code Examples

Conditional example

```
temperature = 15
```

```
if temperature > 20:
```

```
    print("It's a warm day.")
```

```
elif temperature > 10:
```

```
    print("It's a mild day.")
```

```
else:
```

```
    print("It's cold outside!")
```

For loop example

Prints numbers from 0 to 4

```
for i in range(5):
```

```
    print(f"Current number is {i}")
```

```
# While loop example
```

```
count = 0
```

```
while count < 3:
```

```
    print("Looping...")
```

```
    count += 1
```

4. Summary

Control flow statements (`if`, `for`, `while`) are the "verbs" of programming. They allow you to create dynamic and intelligent programs that don't just execute line-by-line.