FUNDAMENTALS OF PROGRAMMING

Week 4

Loops

LEARNING GOAL: LOOPS

▶▶ Understand the Concept of Repetition and Loops:

    ▶▶ What is the concept of repetition in programming?

    ▶▶ Why loops and iterations are essential for automating tasks?

▶▶ Explore Different Loop Types:

    ▶▶ for loops and while loops as the two primary loop types in Python.

    ▶▶ When to use each type based on the problem at hand.

CASE: INVITING EVERYONE TO A PARTY

▶▶ We are going to invite all students of this course to a party!

▶▶ As we are TrU c0d3rs, we can use python to do that!

```python
address = "janne@student.fi"
message = "Hi! I am inviting you to the party..."
send_email(address, message)


address = "john@student.lut.fi"
send_email(address, message)


address = "jill@student.lut.fi"
send_email(address, message)
```

BAD IDEAS
We All Have Them

CASE: INVITING EVERYONE TO PARTY

» No worries! LOOP to the rescue!

» We can have a list of ALL the student email addresses

» We can then LOOP over each address, sending a message to everyone in ITERATIVE manner

```python
addresses = ["janne@lut.fi", "john@student.lut.fi", "jill@student.lut.fi"]
message = "Hi! I am inviting you to the party..."

for address in addresses:
    send_email(address, message)
```

CONCEPTS

- **Loop**
  - Loop is a fundamental programming construct used to execute a block of code repeatedly.
  - Loops are essential for automating repetitive tasks and processing data structures like lists and arrays.

- **Iteration**
  - Iteration refers to the repetition of a block of code.
  - In the context of loops, an iteration is one execution of the loop body.

TYPES OF LOOPS

▶▶ There are two main types of loops in Python

▶▶ for

   ▶▶ The for loop is used to iterate over a sequence of elements, such as a list or a range of numbers.

▶▶ while

   ▶▶ The while loop is used to iterate over a block of code if a certain condition is met.