

Introduction to Software Development Week 2: Data & Operations

1. Learning Objectives

- Declare and use variables to store data.
- Differentiate between core data types: `integer`, `float`, `string`, and `boolean`.
- Use arithmetic, comparison, and logical operators to perform operations.
- Understand and use comments to document code.

2. Core Concepts

- **Variables:**
 - A named storage location in a computer's memory.
 - Example: `user_age = 25`
- **Data Types:**
 - **Integer (`int`):** Whole numbers, e.g., 10, -3, 0.
 - **Float (`float`):** Numbers with decimal points, e.g., 9.81, -0.5.
 - **String (`str`):** A sequence of characters, enclosed in quotes, e.g., "Hello", 'Edinburgh'.
 - **Boolean (`bool`):** Represents truth values, either `True` or `False`.
- **Operators:**
 - **Arithmetic:** Addition (+), Subtraction (-), Multiplication (*), Division (/), Modulus (%), remainder).
 - **Comparison:** Equal to (==), Not equal to (!=), Greater than (>), Less than (<).
 - **Logical:** `and`, `or`, `not`.

3. Code Examples

```
# Variable assignment
student_name = "Alex"
module_credits = 20
passing_grade = 50.5
# Operations
year_of_study = 1
year_of_study = year_of_study + 1
# year_of_study is now 2
# Boolean logic
is_passing = passing_grade > 40
# This evaluates to True is_enrolled = True can_progress = is_passing and is_enrolled
# This is also True
```

4. Summary

Data is the foundation of any program. Understanding how to store it in variables and manipulate it with operators is the first fundamental skill in programming.