AYTS 5001 - Programming for Analytics

Lab 1: Getting Started with Python

Duration: 2 hours

Learning Objectives

- Set up and test your Python environment
- Practice basic programming constructs: variables, data types, expressions, input/output
- Get familiar with working in Jupyter Notebooks
- Use version control basics with Git

Instructions

Complete the following tasks in order. Use a Jupyter Notebook. Save your work and push it to your GitHub repository if possible.
Ask your lab instructor if you have any questions.

1. Environment Setup (15 mins)

- Install Anaconda or Python 3.9+ from python.org
- Install and open Jupyter Notebook
- Create a new Python script or notebook and test it by running: print("Hello, world!")
- (Optional) Initialize a Git repository in your working folder and commit your initial code

2. Variables and Data Types (20 mins)

- Create variables for your name (string), age (integer), height in meters (float), and student status (boolean)
- Print each variable and its type using type()
- Try converting the age to a string and concatenate it with another string
- Practice naming variables clearly (e.g., first_name instead of fn)

3. Input and Output (20 mins)

- Ask the user to enter their name and age using input()
- Print a personalized message: "Hi [name], you are [age] years old."
- Try converting the input to the correct data type using int() if needed
- Add string formatting using f-strings

4. Expressions and Calculations (25 mins)

- Write a program to calculate the area and perimeter of a rectangle
- Ask the user for the width and height, then compute area and perimeter
- Display the results using formatted strings
- Use arithmetic operators: +, *, and parentheses

5. Git Basics (15 mins)

- Create a GitHub repository (if you don't have one already)
- Use Git to commit and push your lab work
- Basic Git commands: git init, git add ., git commit -m "Initial commit", git push
- Ask your instructor for help if needed

6. Extension Challenge (Optional)

- Write a program that calculates the Body Mass Index (BMI)
- Ask for weight (kg) and height (m)
- BMI = weight / (height ** 2)
- Output the result with a message: e.g., "Your BMI is 22.5"

Submission

Save your completed lab work as a .py file or Jupyter Notebook. Using GitHub, ensure your code is pushed to your repository. Share your repository with your instructor.