

Introduction to Programming Using Python, Skill Labs

Course Specifications

Course Number: ACI76-040SL_rev1.0

Lab Length: Approximately 25 hours

Working with Primitive Data Types (PLAB-PYTH)

Introduction

Objective

Welcome to the Working with Primitive Data Types practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Working with Primitive Data Types

After completing this lab, you will be able to:

- Create a program to store and print data of types string, integer, float, and Boolean.
- Run the program in both script and interactive mode using the IDLE.

Working with Multiple Assignment Statements (PLAB-PYTH)

Introduction

Objective

Welcome to the Working with Multiple Assignment Statements practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Handling Multiple Assignment Operations

After completing this lab, you will be able to:

- Use the multiple assignment feature in Python programs.

Converting Types in Python (PLAB-PYTH)

Introduction

Objective

Welcome to the Converting Types in Python practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Managing Data Type Conversions

After completing this lab, you will be able to:

- Use the type() function to determine the data type of variables.
- Perform data type conversions in Python.

Creating Lists (PLAB-PYTH)

Introduction

Objective

Welcome to the Creating Lists practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Working with Lists

After completing this lab, you will be able to:

- Write a program to create a list.
- Write a program to access specific items of a list.

Modifying Lists (PLAB-PYTH)

Introduction

Objective

Welcome to the Modifying Lists practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Performing Basic Operations on Lists

After completing this lab, you will be able to:

- Write a program to update an item in a list.
- Write a program to append an item to a list.
- Write a program to find the index of a list item.
- Write a program to delete an item from a list.

Sorting and Reversing Lists (PLAB-PYTH)

Introduction

Objective

Welcome to the Sorting and Reversing Lists practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Sorting and Reversing the Lists

After completing this lab, you will be able to:

- Write a program to sort the items in a list.
- Write a program to reverse the items in a list.

Slicing Lists (PLAB-PYTH)

Introduction

Objective

Welcome to the Slicing Lists practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Slicing the Lists

After completing this lab, you will be able to:

- Write a program to slice the items in a list.
- Write a program to modify the list items.

- Write a program to use a negative index number to slice the list.

Working with Operators (PLAB-PYTH)

Introduction

Objective

Welcome to the Working with Operators practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Working with Arithmetic, Comparison, and Logical Operators

After completing this lab, you will be able to:

- Use the arithmetic, comparison, and logical operators in Python programs.

Determining Operator Precedence (PLAB-PYTH)

Introduction

Objective

Welcome to the Determining Operator Precedence practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Handling Operator Precedence

After completing this lab, you will be able to:

- Write a program to use the identity and membership operators.
- Write a program to determine operator precedence.

Working with If Statements (PLAB-PYTH)

Introduction

Objective

Welcome to the Working with If Statements practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

Course Outline

In this module, you will complete the following exercise:

- Exercise 1 – Working with Decision Making Statements

After completing this lab, you will be able to:

- Use the if-else and nested if-else statements in Python programs.

Using Compound Conditional Expressions (PLAB-PYTH)

Introduction

Objective

Welcome to the Using Compound Conditional Expressions practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Using Compound Conditions

After completing this lab, you will be able to:

- Use compound conditional expressions in Python programs.

Working with For Loops (PLAB-PYTH)

Introduction

Objective

Welcome to the Working with For Loops practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Performing Iteration with For Loops

After completing this lab, you will be able to:

- Use for loops, break, and continue statements in Python programs.

Working with While Loops (PLAB-PYTH)

Introduction

Objective

Welcome to the Working with While Loops practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes:

In this module, you will complete the following exercise:

- Exercise 1 – Finding Armstrong Numbers in Specified Intervals

After completing this lab, you will be able to:

- Use for loops, while loops, and if...else statements in Python programs.

Nesting For Loops (PLAB-PYTH)

Introduction

Objective

Welcome to the Nesting For Loops practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Using Nested For Loops

After completing this lab, you will be able to:

- Use nested for loops in Python programs.

Reading Files (PLAB-PYTH)

Introduction

Objective

Welcome to the Reading Files practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Working with Files

After completing this lab, you will be able to:

- Open, read, and close text files in Python programs.

Copying Files (PLAB-PYTH)

Introduction

Objective

Welcome to the Copying Files practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Making Copies of Text Files

After completing this lab, you will be able to:

- Copy the contents of one text file to another in Python programs.

Merging Mails (PLAB-PYTH)

Introduction

Objective

Welcome to the Merging Mails practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Merging Mails

After completing this lab, you will be able to:

- Merge text files in Python programs.

Reading Console Inputs and Formatting Outputs (PLAB-PYTH)

Introduction

Objective

Welcome to the Reading Console Inputs and Formatting Outputs practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

Course Outline

In this module, you will complete the following exercise:

- Exercise 1 – Creating a Simple Calculator

After completing this lab, you will be able to:

- Accept console inputs and print formatted output in Python programs.

Reading Command-Line Arguments (PLAB-PYTH)

Introduction

Objective

Welcome to the Reading Command-Line Arguments practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Processing Command-Line Arguments

After completing this lab, you will be able to:

- Use command-line arguments in a Python program.

Defining Functions (PLAB-PYTH)

Introduction

Objective

Welcome to the Defining Functions practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Implementing a Calculator Using Functions

After completing this lab, you will be able to:

- Structure Python programs by defining functions.

Using Default Arguments (PLAB-PYTH)

Introduction

Objective

Course Outline

Welcome to the Using Default Arguments practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Defining Functions with Default Arguments

After completing this lab, you will be able to:

- Define functions with default arguments in Python programs.

Using Keyword and Positional Arguments (PLAB-PYTH)

Introduction

Objective

Welcome to the Using Keyword and Positional Arguments practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Defining Functions with Keyword and Positional Arguments

After completing this lab, you will be able to:

- Define functions with keyword and positional arguments in Python programs.

Handling Exceptions (PLAB-PYTH)

Introduction

Objective

Welcome to the Handling Exceptions practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 – Working with Exception Handling

After completing this lab, you will be able to:

- Handle exceptions in Python programs

Using Math and Random Modules (PLAB-PYTH)

Introduction

Objective

Welcome to the Using Math and Random Modules practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercises:

- Exercise 1 – Using the Math Module
- Exercise 2 – Using the Random Module

After completing this lab, you will be able to:

- Use built-in math functions in Python to perform various math operations such as addition, factorial, exponential, power, and square root.
- Generate random numbers using the random module.
- Demonstrate the use of "seed" to produce pseudo-random numbers.

Displaying Datetime, Working Directory, and File Metadata (PLAB-PYTH)

Introduction

Objective

Welcome to the Displaying Datetime, Working Directory, and File Metadata practice lab. In this module, you will be provided with the instructions and devices needed to develop your hands-on skills.

Overview

Learning Outcomes

In this module, you will complete the following exercises:

- Exercise 1 – Displaying Date and Time
- Exercise 2 – Displaying the Working Directory and File Metadata

After completing this lab, you will be able to:

- Use the built-in datetime module to print the time, date, year, month, and day of the week.
- Use the built-in os module to display the current working directory and manipulate the directory name and file name.
- Use the built-in os and time modules to print the metadata of a file such as creation date, modified date, and file size.