Activity 1
Introduction to Computing and Number Systems

CSI-140 Introduction to Programming

Instructor: Dr. Vikas Thammanna Gowda Semester: Fall 2025

Q1a: Algorithm Design Challenge

Goal: Practice writing algorithms from problem statements.

Instructions: Work individually or in teams. For the problem statement below:

1. Identify the **Input**, **Output**, and **Steps**.
2. Write the algorithm in plain English.

Problem Statement: Given a list of 5 numbers, determine the largest number.

Input(s):

Output(s):

Steps:

Q1b: Mapping Algorithm to the Computing Process

Goal: Understand how a computer executes an algorithm.
Instructions: Using the diagram below, map your algorithm from Step 1 to the components of a computer system:

- Which steps are part of **Input**?
- Which steps are part of **Processing**?
- Which steps involve **Memory/Storage**?
- Which steps are part of **Output**?

Q1c: Generalizing the problem

The current algorithm works for a list 5 numbers. How would you generalize the algorithm such that it works for a given list of any size.

Q3: Number System Conversion Challenge

Goal: Practice conversion between decimal, binary, and hexadecimal.

Instructions: Work individually or with a partner to convert the following numbers as indicated.

1. Do not skip any intermediate steps.
2. Write your answers clearly.

1. Convert the following Decimal number to Binary and Hexadecimal

Given Decimal: 29_{10}

Binary Equivalent:

Hexadecimal Equivalent:

2. Convert the following Binary number to Decimal and Hexadecimal

Given Binary: 1011010_2
Decimal Equivalent:

Hexadecimal Equivalent:

2. Convert the following Hexadecimal number to Decimal and Binary

Given Hexadecimal: $1A4_{16}$
Decimal Equivalent:

Binary Equivalent: