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Daffodil International University
Department of Software Engineering
Faculty of Science & Information Technology
Lab Final, Summer 2026
Course Code: SE215; Course Title: Algorithm Design & Analysis Lab
Sections & Teachers: 44I2 (AF)

Time: 35 Minutes **Marks: 40**

Question 1: You are given n items, each with weight and value, and a knapsack with capacity W.

You must solve the **Fractional Knapsack** problem using a greedy approach.

Special Condition:

- Take the **last two digits of your student ID**
- If their **sum is even → use Insertion Sort**
- If their **sum is odd → use Selection Sort**

  to sort items based on **value/weight ratio (descending)** before applying greedy selection.
- Show the calculation in the word file

Input:

- First line: Integer n
- Second line: n weights
- Third line: n values
- Fourth line: Capacity W

Output:

- Maximum obtainable value (fraction allowed)

Requirements:

- Must implement the specified sorting algorithm manually

Sample Input	Sample Output
3 10 20 30 60 100 120 50	Maximum value = 240.00

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Question 1: A student will enter their **full student ID** as an array of digits.

- If the sum of **last 2 digits** of the student ID is **even**, sort the array in **ascending order** using the **Insertion Sort** algorithm.
- If the **last digit** is **odd**, sort the array in **descending order** using the **Insertion Sort** algorithm.

Input

- The digits of the student's ID as an integer array.

Output

- Print the original array.
- Print the sorted array.

Example

Input

2 2 1 9 0 2 3 4 5

Last digit: 5 (Odd)

Output

Original Array: 2 2 1 9 0 2 3 4 5

Sorted Array (Descending): 9 5 4 3 2 2 2 1 0

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