Faculty of Electrical and Electronics Engineering
Control and Automation Engineering Department

Introduction to Programming Language (C) (EEF 110E)

MIDTERM EXAM

Question: 1

Fill the function given below to find the index of the element which is less than (or equal to) the given value in an array. Create a simple C program to test the function.

Assumption: The elements in array passed to the function are sorted in ascending order!

```
int lastElementIndexLessThanOrEqualTo(double arr[], int numElements, double value)
{

    . . .

}
```

For example,

```
double arr[10] = {3.2, 5.5, 9.0, 13.1, 22.0, 23.6, 40.1, 44.7, 52.2, 60.0};
int index = lastElementIndexLessThanOrEqualTo(arr, 10, 24.0);
printf("Index = %d", index);
// This should print Index = 5 since the last element less than or equal to 24.0 is 23.6
```

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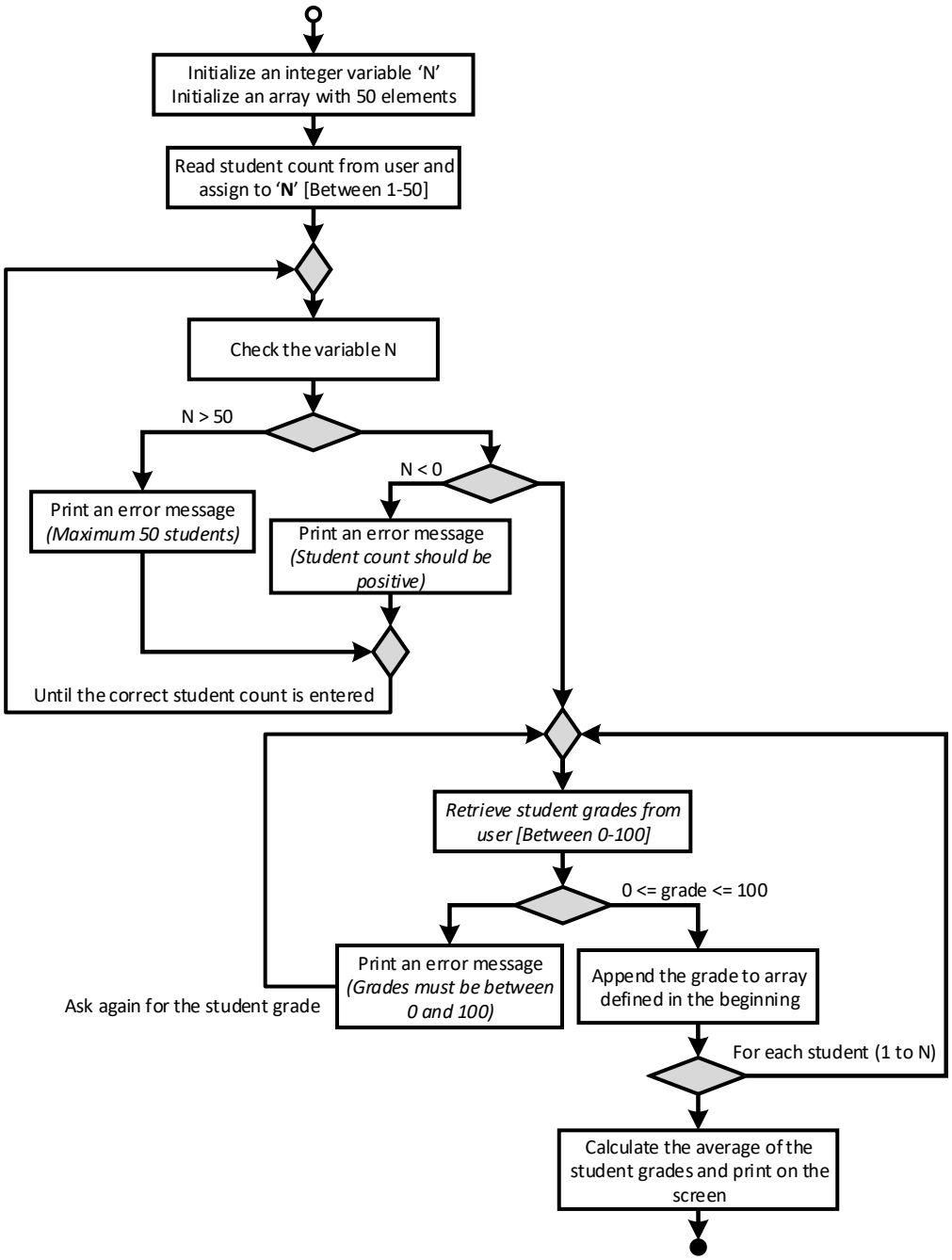
Question: 2



Write a C program by considering the above flowchart.

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Question: 3

Create a 100-element array of random integers from 1-100.

Rearrange the array so that odd numbers are in the first part of the array and even numbers are in the second part.

Create another array to hold the unique elements of the original array.

Print the original array, re-arranged array and unique array to the screen.

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MIDTERM EXAM

Question: 4

Write a program that finds all integers less than 200 that are exactly divisible by the number obtained by the sum of their digits and print the numbers to the screen.

For example, 20 meets the condition since 2+0=2 and 20 is exactly divisible by 2.