

MAT 115E Introduction to Programming Language

Lab-6 / CRN : CRN : 21132

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1 Question 1

Each digit in a positive integer K has a digit position. Digit positions begin at 0 and count from the right-most digit of K . For example, in 168589, the digit 9 is at position 0 and digit 5 is at position 2. The digit 8 appears at both positions 1 and 3.

Write a C function named **findDigit**, which **takes a positive integer K and a digit d** greater than or equal to 0 and less than 10. It **returns the largest position** in K at which digit d appears. If d does not appear in k , then **findDigit** returns -1.

Do not forget to check if K is positive and d is a digit.

Example Scenario

› Enter integer K: 5678623110
› Enter digit d: 6
› The largest position 6 appears in 5678623110 is 8.

2 Question 2

The explicit form of Maclaurin series expansion for e^x is given below.

$$e^x = \lim_{n \rightarrow \infty} \sum_{k=0}^n \frac{x^k}{k!} = \frac{x^0}{0!} + \frac{x^1}{1!} + \frac{x^2}{2!} + \cdots + \frac{x^n}{n!} + \cdots \quad (1)$$

Write a **C function** that takes **a positive integer n** and **a real number x** as parameters and returns **the first n-term summation of the Maclaurin series expansion for e^x** .

Note: The first term of the summation is the term with $k = 0$. The n-th term of the summation is the term with $k = n - 1$.

Example Scenario

› Enter integer n: 5
› Enter real number x: 3
› The first n-term summation of the Maclaurin series expansion for exp(x) is: 16.375