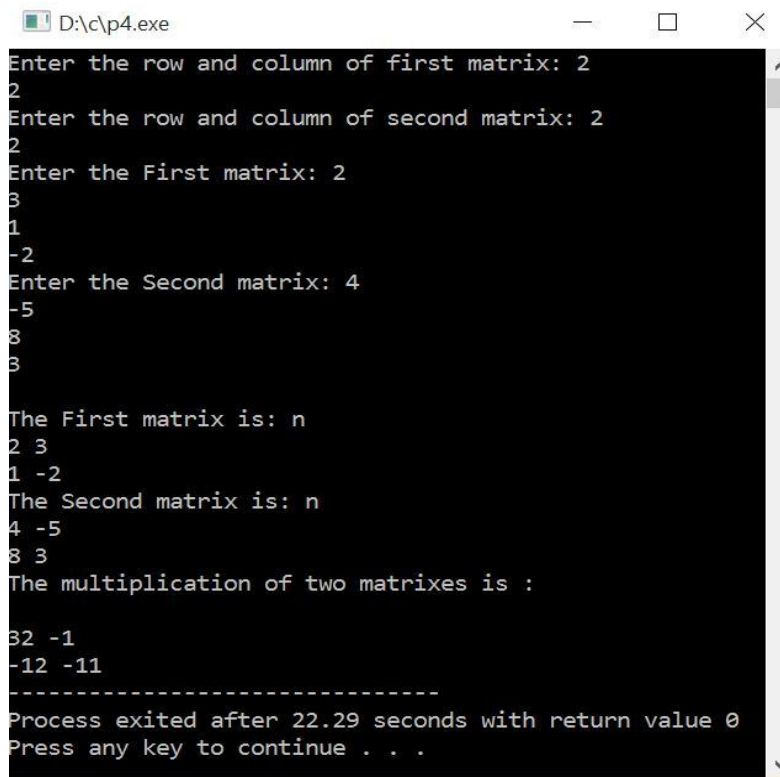


Practice Problems:

Question 1:

Write a program in C to multiply two matrix using recursion.



```
D:\c\p4.exe
Enter the row and column of first matrix: 2
2
Enter the row and column of second matrix: 2
2
Enter the First matrix: 2
3
1
-2
Enter the Second matrix: 4
-5
8
3
The First matrix is: n
2 3
1 -2
The Second matrix is: n
4 -5
8 3
The multiplication of two matrixes is :
32 -1
-12 -11
-----
Process exited after 22.29 seconds with return value 0
Press any key to continue . . .
```

Question 2:

Write a recursive implementation of the factorial function. Recall that $n! = 1 \times 2 \times \dots \times n$, with the special case that $0! = 1$.

Question 3:

Write a recursive function that, given two strings, returns whether the first string is a subsequence of the second. For example, given har and cathartic, you should return true, but given bat and table, you should return false.

Question 4:

Write a recursive function that checks whether a string is a palindrome (a palindrome is a string that's the same when reads forwards and backwards.)

Question 5:

Consider an array given below:

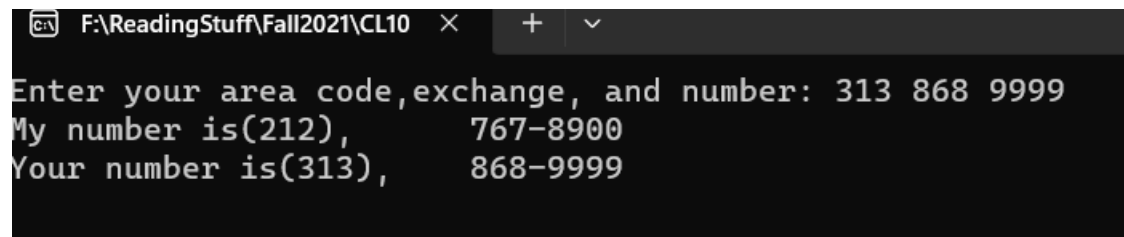
$A[10] = \{5, 4, 3, 2, 1, 6, 10, 9, 7, 8\}$

Your task is to write a recursive function that searches for a given element from that array.

Question 6:

A phone number, such as (212) 767-8900, can be thought of as having three parts: e.g., the area code (212), the exchange (767), and the number (8900). Write a program that uses a structure to store these three parts of a phone number separately. Call the structure phone.

Sample output:



```
F:\ReadingStuff\Fall2021\CL10  X  +  v
Enter your area code,exchange, and number: 313 868 9999
My number is(212),      767-8900
Your number is(313),    868-9999
```

Create two structure variables of type phone. Initialize one, and have the user input a number for the other one. Then display both numbers.

The interchange might look like this:

Enter area code: 415

Enter exchange: 555

Enter number: 1212

Then display like below:

My number is (212) 767-8900

Your number is (415) 555-1212

Question 07:

Define a structure to store the following student data:

CGPA, courses (course name, GPA), address (consisting of street address, city, state, zip). Input 2 student records, compare and display which student have highest GPA in which course also Display which student has the highest CGPA .

HINT: define another structure to hold the courses and address.

Question 08:

Write a C Program to Store Information of N Students Using Structure, where N is provided by the user.

Sample output

```
F:\ReadingStuff\Fall2021\CL10  ×  +  ∨  
How many students information you want to store?:  
2  
  
For roll number1,  
Enter first name: behraj  
Enter marks: 78  
  
For roll number2,  
Enter first name: khan  
Enter marks:  
88  
Displaying Information:  
  
Roll number: 1  
First name: behraj  
Marks: 78.0  
  
Roll number: 2  
First name: khan  
Marks: 88.0  
=====
```

Question 09:

Write a C program that uses functions to perform the following operations:

- i) Reading a complex number
- ii) Writing a complex number
- iii) Addition of two complex numbers
- iv) Multiplication of two complex numbers

(Note: represent complex numbers using a structure.)

Sample output



F:\ReadingStuff\Fall2021\CL10



Reading the first complex number

Enter the values of x and y of a complex number 2 3

Reading the second complex number

Enter the values of x and y of a complex number 4 5

Enter + for addition

Enter * for multiplication

Enter - for subtraction

Enter e for exit: +

$(2+i3)+(4+i5)=6+i(8)$
