GLA UNIVERSITY, MATHURA

C-PROGRAMMING LANGUAGE (WEEK QUESTIONS)

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CLASS: AY-2

CLASS ROLL NO: 56

SUBJECT: COMPUTER LAB FILE

SUBMITTED TO: GURPREET KAUR MAM

WEEK – 5 Questions:

Q-1. **Write a program to print the following patterns:**

a. *****

*****

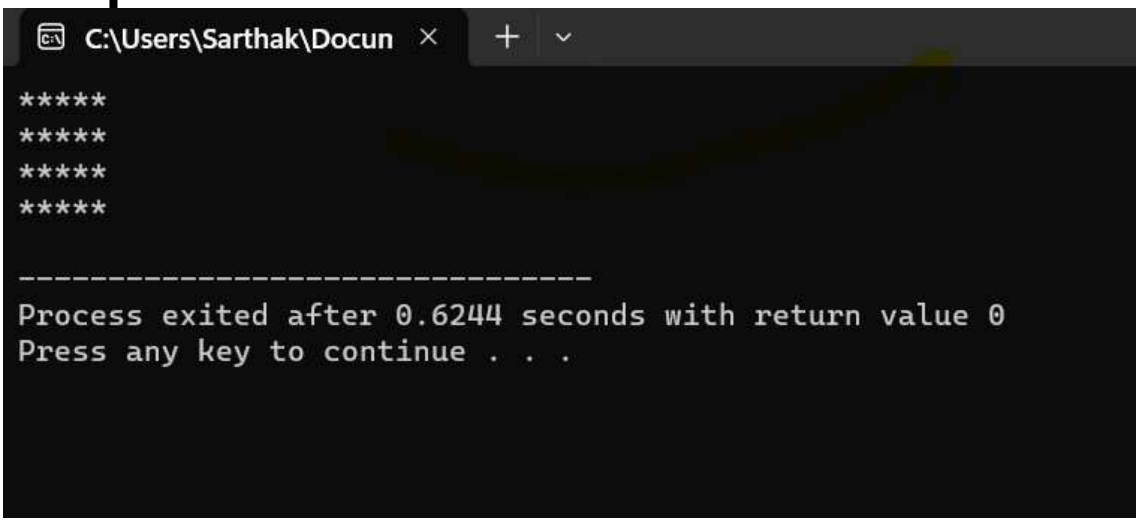
*****

***** **Ans.**

```
#include<stdio.h> int
main() {    for(int
i=1;i<=4;i++)
{
        for(int j=1;j<=5;j++)
{
        printf("*");
        }
      printf("\n");
}
     return 0;
```

}

Output:



---

b. *

**

***

****

Ans. #include<stdio.h> int

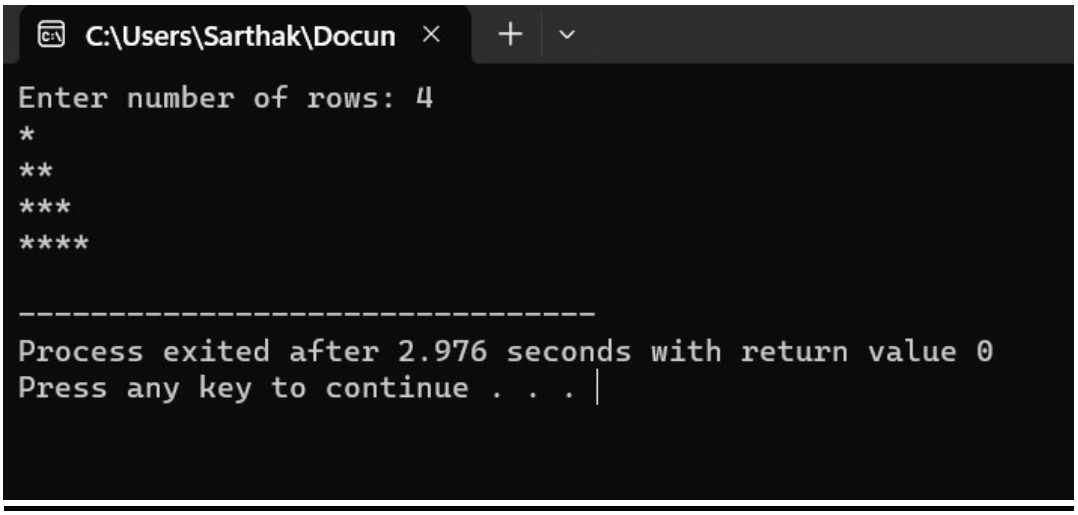
main() {

int n; printf("Enter number of

rows: "); scanf("%d", &n);

```
    for(int i=1;i<=n;i++){
    for(int j=1;j<=i;j++)
    {
    printf("*");
}
printf("\n");
    }
    return 0;
}
```

Output:



---

c. 54321

5432

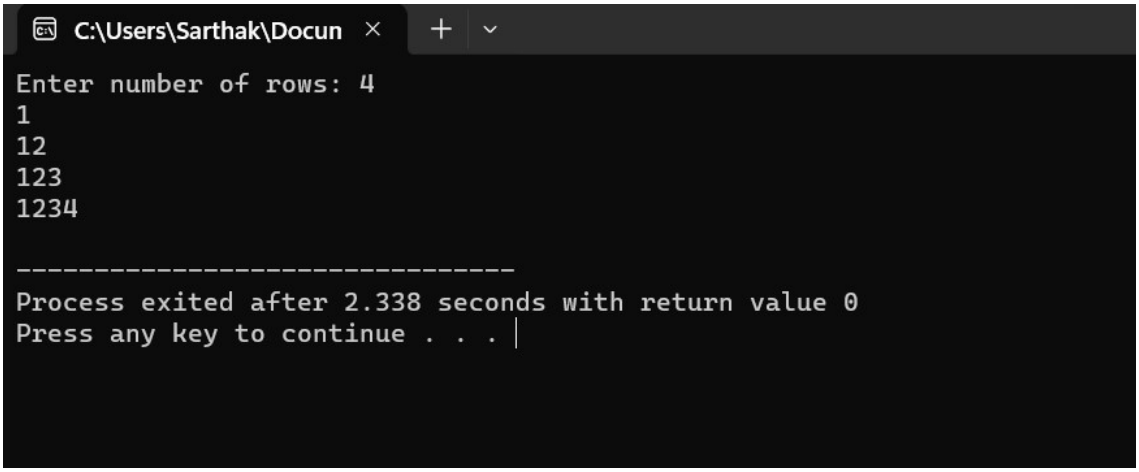
543

54

5

Ans.

Output:



d.

1

22

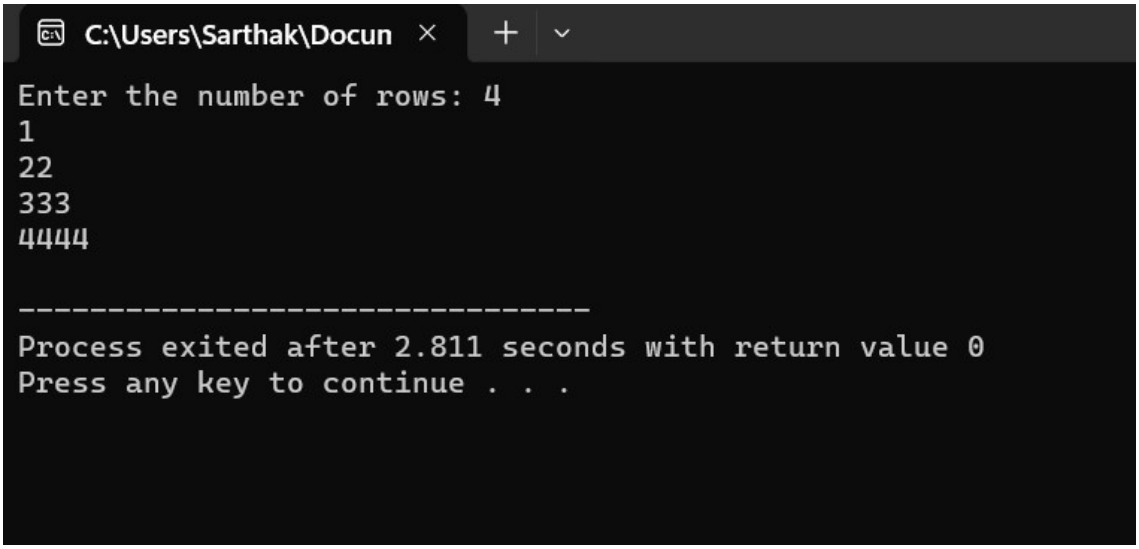
333

4444

Ans. #include <stdio.h> int
main()

```
{ int n, i, j;
printf("Enter the number of rows:
");   scanf("%d", &n);   for(i = 1; i <=
n; i++)
{
for(j = 1; j <= i; j++)
{
printf("%d", i);
}
printf("\n");
}
return 0;
}
```

Output:



e.

54321

5432

543

54

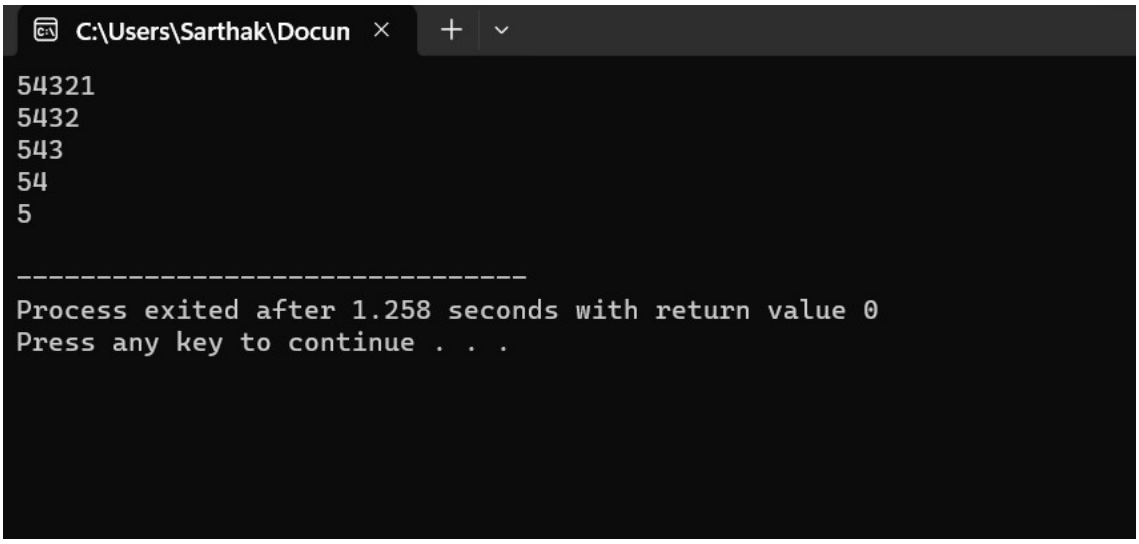
5

Ans.

#include <stdio.h> int main() {
int rows = 5; for (int i = 1; i
<= rows; i++) { for (int j =
rows; j >= i; j--) {
printf("%d", j);

```
        }
        printf("\n");
    }
    return 0;
}
```

Output:



f.

A

AB

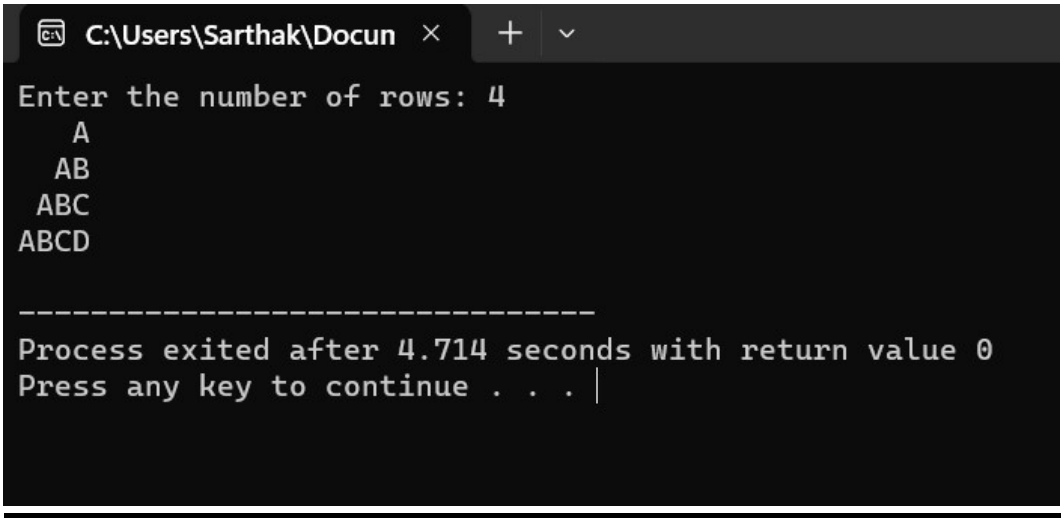
ABC

ABCD

Ans. #include <stdio.h> int

```
main() {
    int i, j;
int n;
   printf("Enter the number of rows: ");
scanf("%d", &n);     for (i = 1; i <= n; i++) {         for
(j = 1; j <= n - i; j++) {             printf(" ");
        }
        for (j = 1; j <= i; j++) {
printf("%c", 'A' + j - 1);
        }
        printf("\n");
    }
    return 0;
}
```

Output:



Week-6 Questions:

Q-1. **Write a menu driven program to insert and delete elements of kth position to an array of size N.**

Ans-1.

#include <stdio.h> int

main ()

{ int a; printf("enter the no of the elements of the

array:- "); scanf("%d",&a); int n[a]; for(int

i=0;i<a;i++)

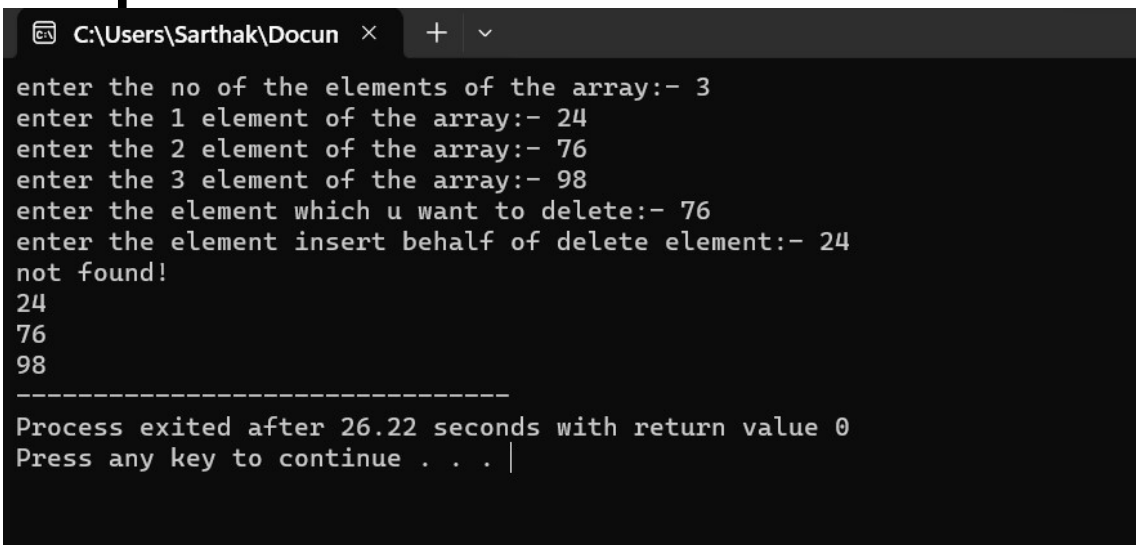
{

printf("enter the %d element of the array:- ",i+1);

scanf("%d",&n[i]);

```
} int k; printf("enter the element which u want to
delete:- "); scanf("%d",&k);
int g; printf("enter the element insert behalf of
delete element:- "); scanf("%d",&g); for(int
i=0;i<a;i++)
{
if(n[i]==k)
{
n[i]=g;
}
else
{
printf("not found!");
break;
}
}
for(int i=0;i<a;i++)
{
printf("\n%d ",n[i]);
}
return 0;
}
```

Output:



Q-2. Write the program to print the biggest and smallest element in an array.

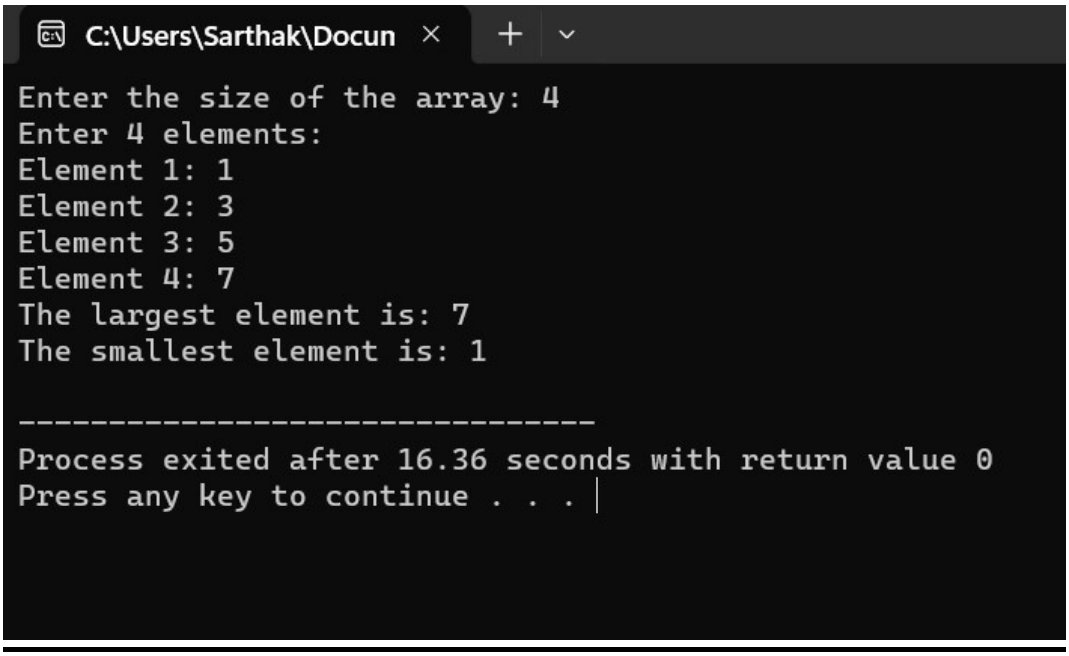
Ans-2.

```
#include <stdio.h>

int main() { int

size;

// Get the size of the array

printf("Enter the size of the array: ");

scanf("%d", &size); // Check for

invalid input if (size <= 0) {

printf("Invalid array size.

Exiting...\n"); return 1;
```

```
}
// Create an array of integers
int arr[size];
// Get elements from the user
printf("Enter %d elements:\n", size);
for (int i = 0; i < size; i++) {
printf("Element %d: ", i + 1);
scanf("%d", &arr[i]);
}
// Initialize variables for the largest and smallest
elements
int largest = arr[0];
int smallest = arr[0];
// Find the largest and smallest
elements for (int i = 1; i < size; i++) { if
(arr[i] > largest) { largest = arr[i];
}
if (arr[i] < smallest) { smallest
= arr[i];
}
}
```

```
// Print the results printf("The largest element is: %d\n", largest); printf("The smallest element is: %d\n", smallest); return 0;
}
```

Output:



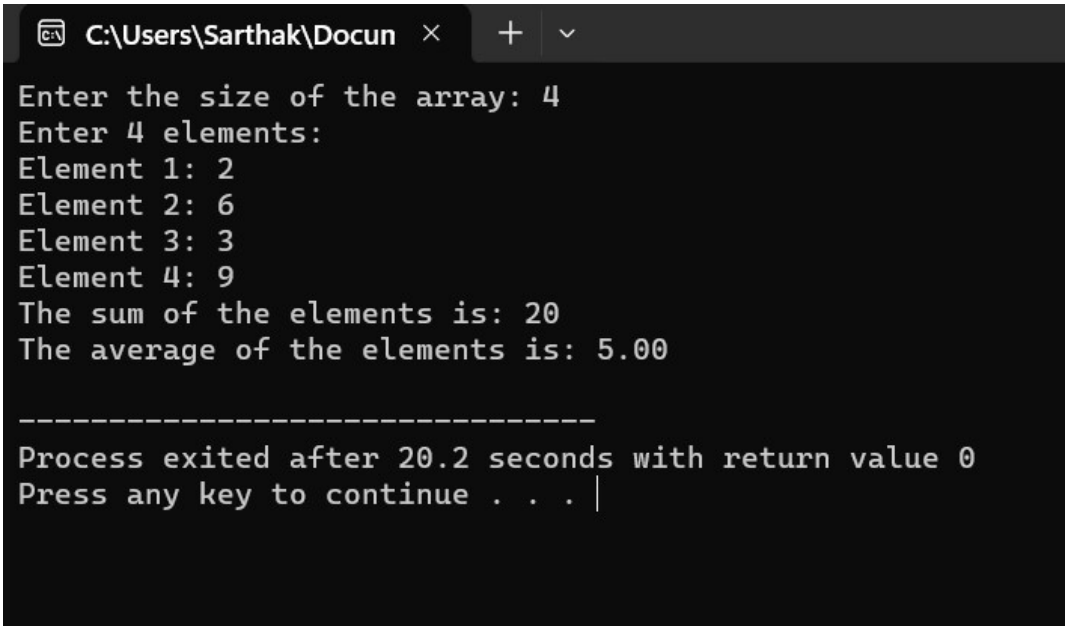
Q-3. Write the program to print the sum and average of an array.

Ans-3.

```
#include <stdio.h> int main() { int size; printf("Enter the size of the array: "); scanf("%d", &size); if (size
```

```
<= 0) { printf("Invalid array size.
Exiting...\n"); return 1;
} int arr[size]; printf("Enter %d
elements:\n", size); for (int i = 0; i <
size; i++) { printf("Element %d: ", i +
1); scanf("%d", &arr[i]);
}
int sum = 0; for (int i = 0; i
< size; i++) { sum +=
arr[i];
}
float average = (float)sum / size; printf("The
sum of the elements is: %d\n", sum);
printf("The average of the elements is: %.2f\n",
average); return 0;
}
```

Output:



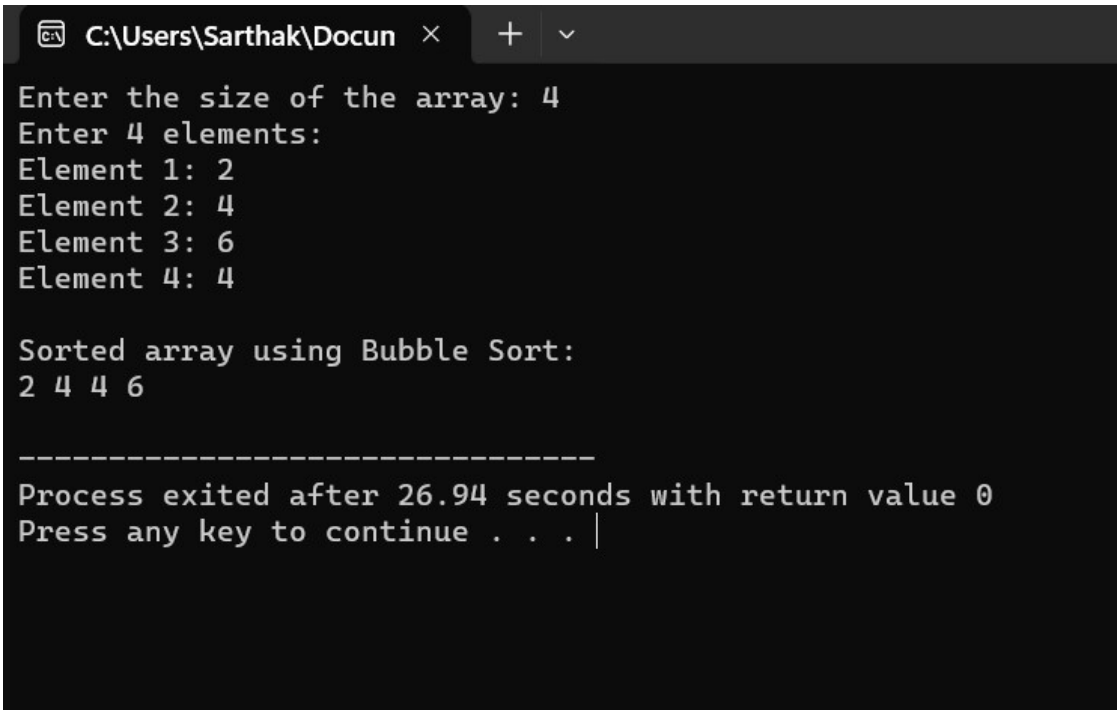
Q-4. Write the program to sort an array using bubble sort.

Ans-4.

```
#include <stdio.h> void
swap(int *a, int *b) { int
temp = *a; *a = *b;
*b = temp;
}
void bubbleSort(int arr[], int size) {
for (int i = 0; i < size - 1; i++) {
for (int j = 0; j < size - i - 1; j++) {
if (arr[j] > arr[j + 1]) {
swap(&arr[j], &arr[j + 1]);
```

```
}
}
}
}
int main() { int size; printf("Enter the
size of the array: "); scanf("%d",
&size); if (size <= 0) { printf("Invalid
array size. Exiting...\n"); return 1;
} int arr[size]; printf("Enter %d
elements:\n", size); for (int i = 0; i <
size; i++) { printf("Element %d: ", i +
1); scanf("%d", &arr[i]);
}
bubbleSort(arr, size); printf("\nSorted array
using Bubble Sort:\n"); for (int i = 0; i < size;
i++) { printf("%d ", arr[i]);
}
printf("\n");
return 0;
}
```

Output:



Q-5. Write the program to search an element using linear search as well as binary search.

Ans.

#include <stdio.h> int linearSearch(int

arr[], int size, int key) { for (int i = 0; i <

size; i++) { if (arr[i] == key) { return i;

}

}

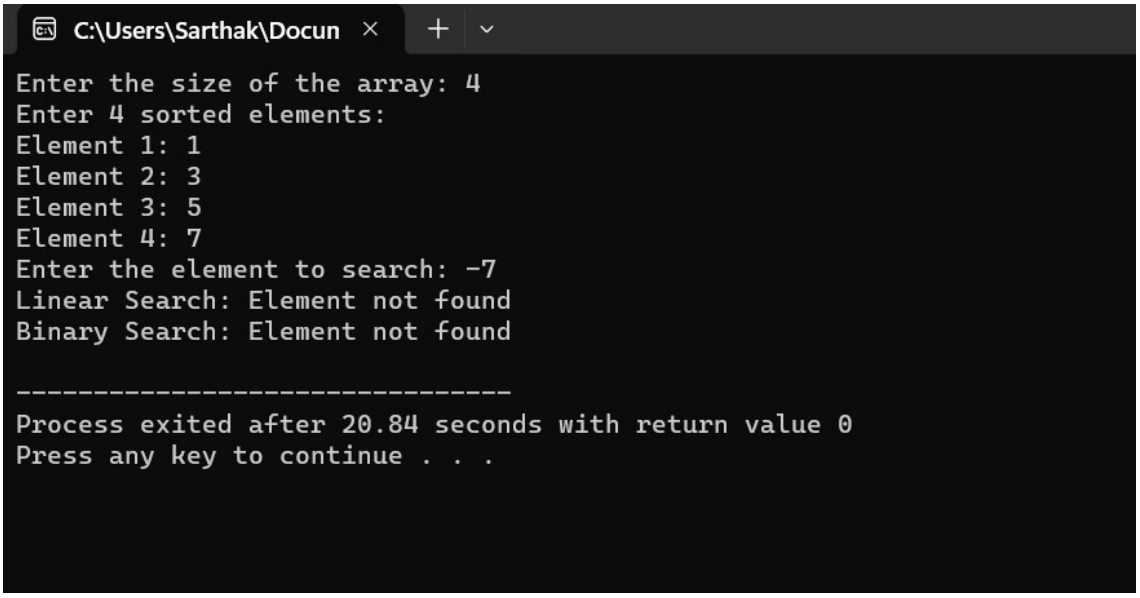
return -1;

}

```
int binarySearch(int arr[], int size, int key) {
int low = 0, high = size - 1; while (low <=
high) { int mid = low + (high - low) / 2; if
(arr[mid] == key) { return mid;
} else if (arr[mid] < key) { low
= mid + 1;
} else { high =
mid - 1;
}
}
return -1;
}
int main() { int size, key; printf("Enter
the size of the array: "); scanf("%d",
&size); if (size <= 0) { printf("Invalid
array size. Exiting...\n"); return 1;
}
int arr[size]; printf("Enter %d sorted
elements:\n", size); for (int i = 0; i < size;
i++) { printf("Element %d: ", i + 1);
scanf("%d", &arr[i]);
```

```
}
printf("Enter the element to search: "); scanf("%d",
&key); int linearIndex = linearSearch(arr, size, key); if
(linearIndex != -1) { printf("Linear Search: Element
found at index %d\n", linearIndex);
} else { printf("Linear Search: Element not
found\n");
}
int binaryIndex = binarySearch(arr, size, key); if
(binaryIndex != -1) { printf("Binary Search: Element
found at index %d\n", binaryIndex);
} else { printf("Binary Search: Element not
found\n");
}
return 0;
}
```

Output:



Q-6. Take an array of 20 integer inputs from user and print the following: a. number of positive numbers

b. number of negative numbers

c. number of odd numbers

d. number of even numbers

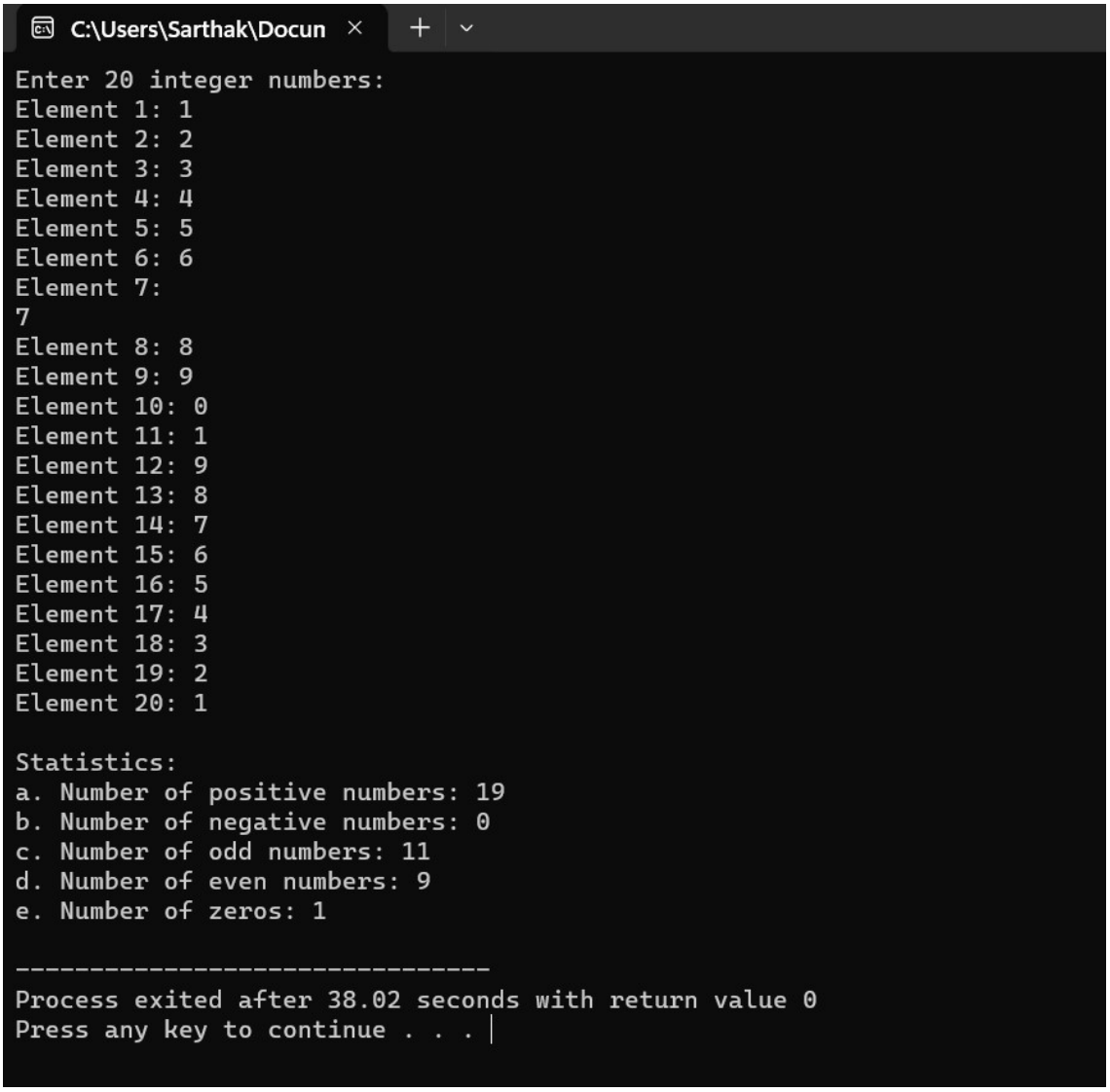
e. number of 0.

Ans.

```
#include <stdio.h>
```

```
int main() { int size; printf("Enter the
size of the array: "); scanf("%d",
&size); if (size <= 0) { printf("Invalid
array size. Exiting...\n"); return 1;
}
int arr[size]; printf("Enter %d elements for the
array:\n", size); for (int i = 0; i < size; i++) {
printf("Element %d: ", i + 1); scanf("%d", &(*(arr
+ i)));
}
printf("\nArray elements using pointers:\n");
for (int i = 0; i < size; i++) { printf("%d ", *(arr
+ i));
}
return 0;
}
```

Output:



Q-7. Take an array of 10 elements. Split it into middle and store the elements in two different arrays.

Ans.

#include <stdio.h> int main() { const int size

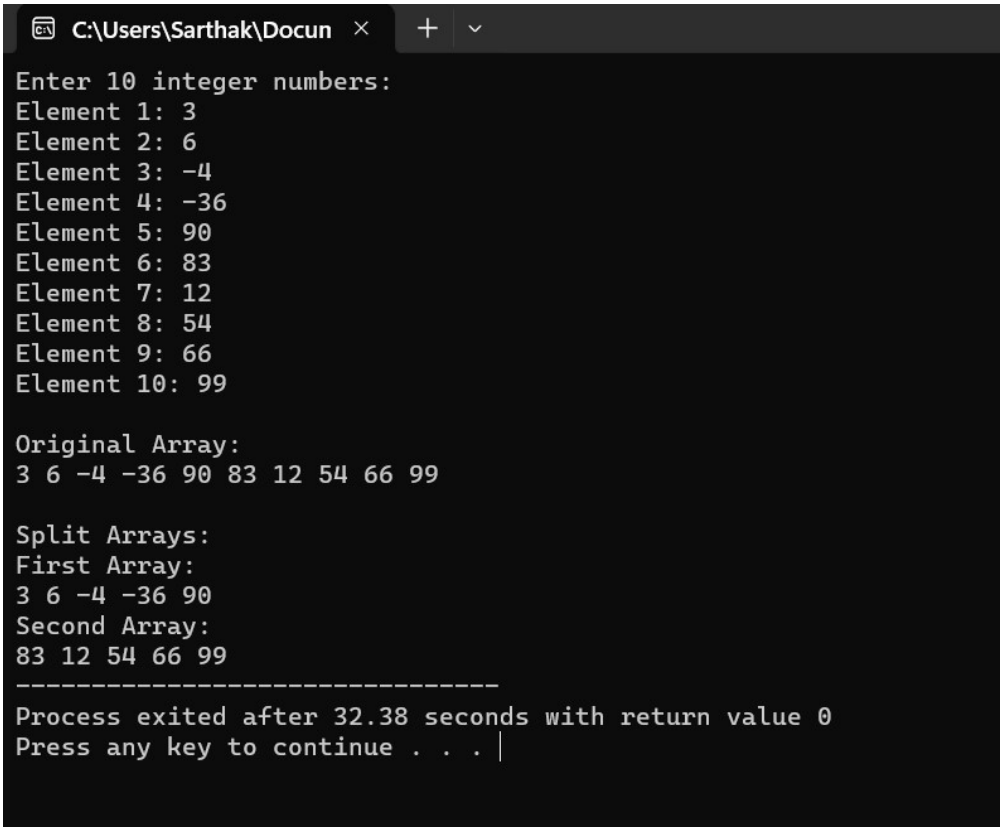
= 10; int originalArray[size]; int

firstArray[size / 2], secondArray[size / 2];

```
printf("Enter %d integer numbers:\n", size);
for (int i = 0; i < size; i++) { printf("Element
%d: ", i + 1); scanf("%d", &originalArray[i]);
} for (int i = 0; i < size / 2; i++) {
firstArray[i] = originalArray[i];
secondArray[i] = originalArray[size / 2 + i];
}
printf("\nOriginal Array:\n"); for
(int i = 0; i < size; i++) {
printf("%d ", originalArray[i]);
}
printf("\n\nSplit Arrays:\n");
printf("First Array:\n");
for (int i = 0; i < size / 2; i++) {
printf("%d ", firstArray[i]);
}
printf("\nSecond Array:\n");
for (int i = 0; i < size / 2; i++) {
printf("%d ", secondArray[i]);
}
return 0;
```

}

Output:



Q-8. Write the program to count frequency of each element in an array.

Ans.

#include <stdio.h> void

toggleChars(char str[])

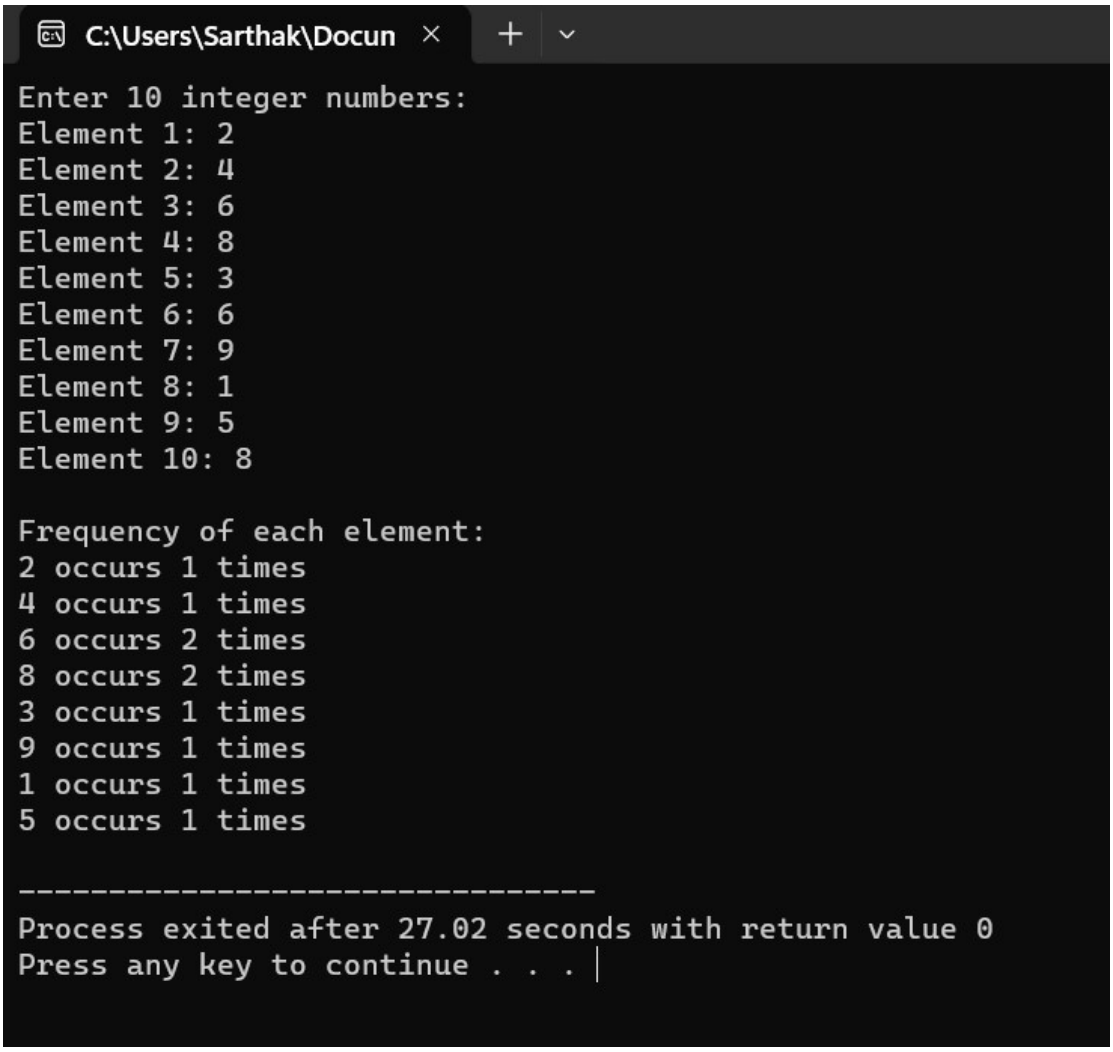
{ for (int i = 0; str[i] != '\0'; i++) {

if (str[i] >= 'A' && str[i] <= 'Z')

str[i] = str[i] + 'a' - 'A'; else if

```
(str[i] >= 'a' && str[i] <= 'z') str[i]
= str[i] + 'A' - 'a';
}
}
// Driver code int
main()
{
char str[] = "GeKf@rGeek$";
toggleChars(str); printf("String
after toggle \n");
printf("%s\n", str); return 0;
}
```

Output:



Week-7 Questions:

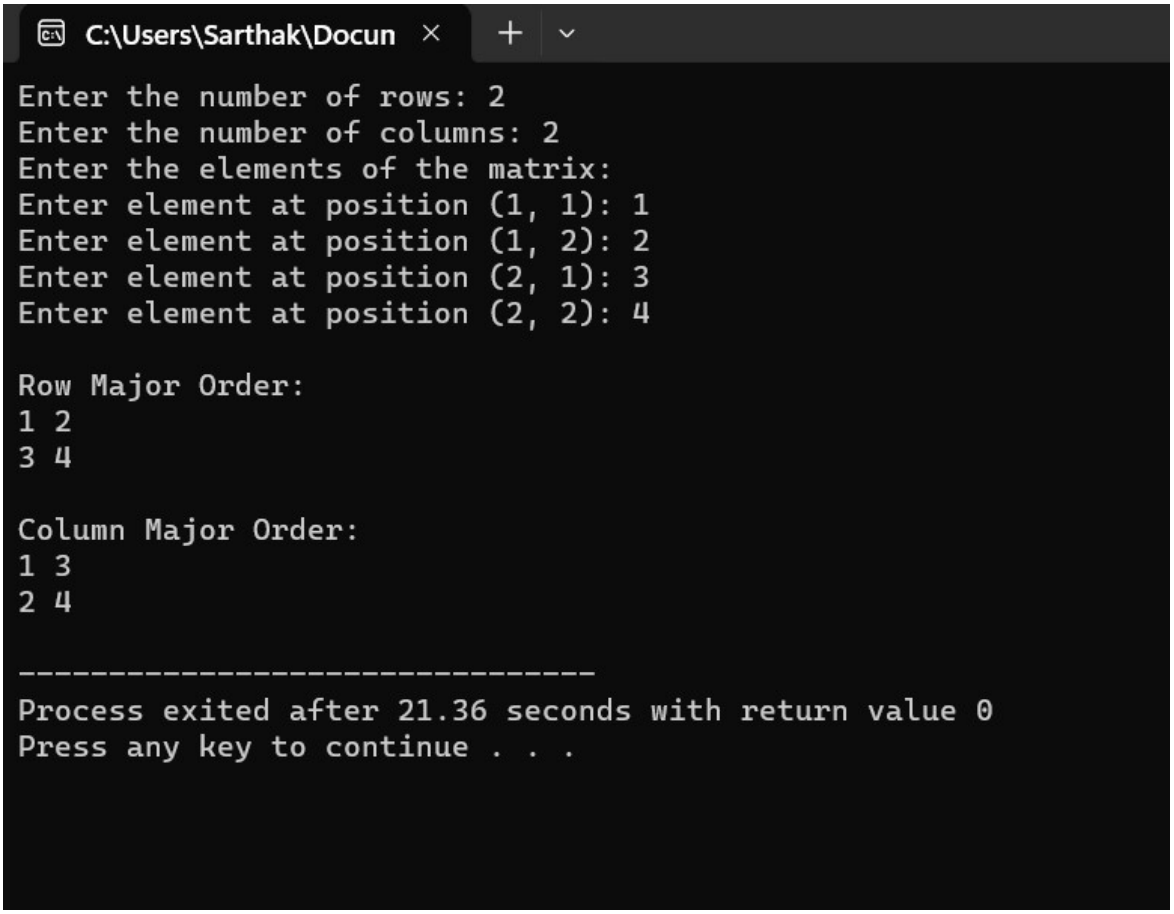
Q-1. Write the program to print row major and column major matrix.

Ans. #include <stdio.h>

```
int main() {     int rows, cols;     printf("Enter the
number of rows: ");     scanf("%d", &rows);
printf("Enter the number of columns: ");
scanf("%d", &cols);     int matrix[rows][cols];
printf("Enter the elements of the matrix:\n");     for
(int i = 0; i < rows; i++) {         for (int j = 0; j < cols; j++)
{             printf("Enter element at position (%d, %d): ",
i +
1, j + 1);             scanf("%d",
&matrix[i][j]);
        }
    }
    printf("\nRow Major Order:\n");
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
printf("%d ", matrix[i][j]);
        }
        printf("\n");
    }
    printf("\nColumn Major Order:\n");
```

```
    for (int j = 0; j < cols; j++) {
for (int i = 0; i < rows; i++) {
printf("%d ", matrix[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

Output:



Q-2. Write the program to print sum of a whole matrix:

Ans. #include <stdio.h> int main() { int rows, cols; printf("Enter the number of rows: "); scanf("%d", &rows); printf("Enter the number of columns: "); scanf("%d", &cols); int matrix[rows][cols];

printf("Enter the elements of the matrix:\n"); for (int i = 0; i < rows; i++) { for (int j = 0; j < cols; j++) { printf("Enter element at position (%d, %d): ", i + 1, j + 1); scanf("%d", &matrix[i][j]);

}

}

printf("\nRow Major Order:\n");

for (int i = 0; i < rows; i++) {

for (int j = 0; j < cols; j++) {

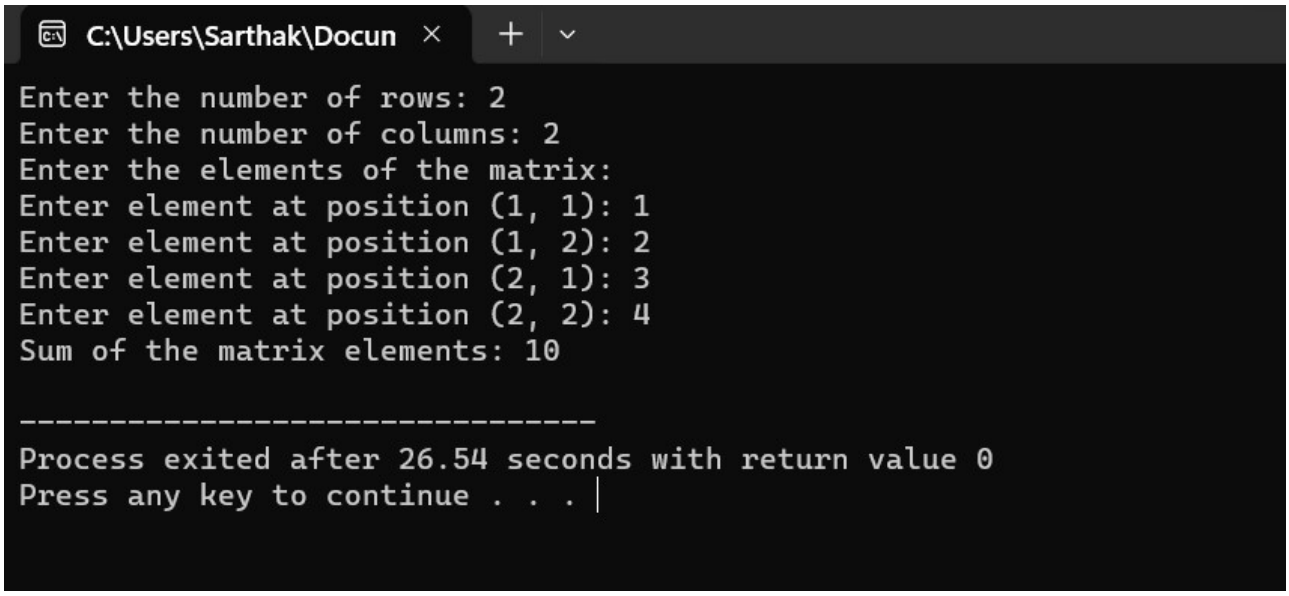
printf("%d ", matrix[i][j]);

}

printf("\n");

```
    }
    printf("\nColumn Major Order:\n");
    for (int j = 0; j < cols; j++) {
for (int i = 0; i < rows; i++) {
printf("%d ", matrix[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

Output:



Q-3. Write a program to add and multiply two 3x3 matrices. You can use 2D array to create a matrix.

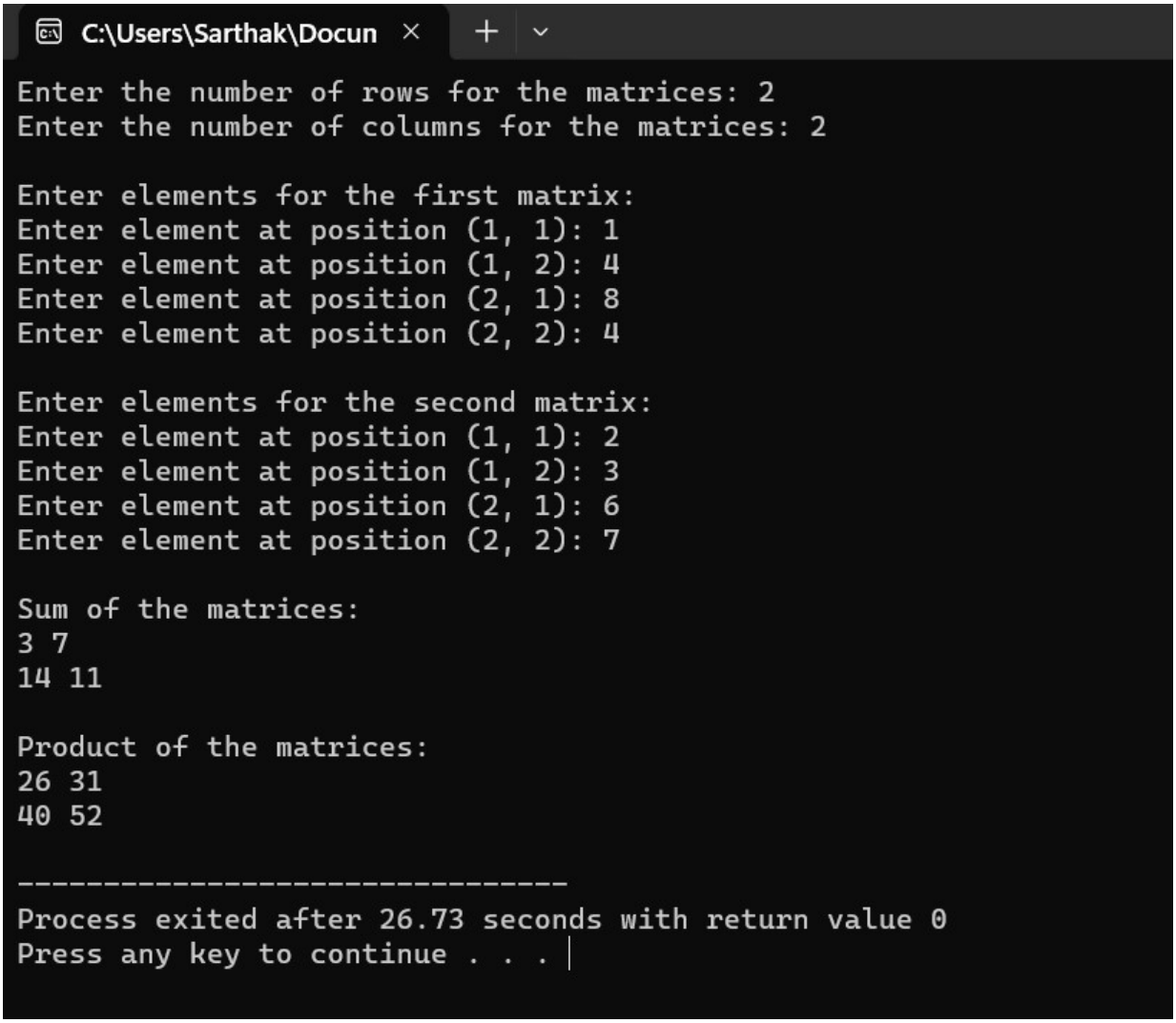
Ans. #include <stdio.h>

```
 int main() {
int rows, cols; printf("Enter the number of rows for
the matrices: ");
scanf("%d", &rows);  printf("Enter the number of
columns for the matrices: ");  scanf("%d", &cols);
int matrix1[rows][cols], matrix2[rows][cols],
sumMatrix[rows][cols], productMatrix[rows][cols];
printf("\nEnter elements for the first matrix:\n");
for (int i = 0; i < rows; i++) {  for (int j = 0; j < cols;
j++) {  printf("Enter element at position (%d,
%d): ", i +
1, j + 1);  scanf("%d",
&matrix1[i][j]);
   }
 }
 printf("\nEnter elements for the second matrix:\n");
for (int i = 0; i < rows; i++) {  for (int j = 0; j < cols;
```

```
j++) {            printf("Enter element at position (%d,
%d): ", i + 1, j + 1);
          scanf("%d", &matrix2[i][j]);
       }
   }
   for (int i = 0; i < rows; i++) {
   }
   for (int i = 0; i < rows; i++) {        for (int j =
0; j < cols; j++) {            productMatrix[i][j] =
0;            for (int k = 0; k < cols; k++) {
productMatrix[i][j] += matrix1[i][k] *
matrix2[k][j];
          }
       }
   }
   printf("\nSum of the matrices:\n");
for (int i = 0; i < rows; i++) {        for
(int j = 0; j < cols; j++) {
printf("%d ", sumMatrix[i][j]);
       }
       printf("\n");
   }
```

```
    printf("\nProduct of the matrices:\n");
for (int i = 0; i < rows; i++) {        for (int j
= 0; j < cols; j++) {            printf("%d ",
productMatrix[i][j]);
        }
        printf("\n");

        for (int j = 0; j < cols; j++) {
sumMatrix[i][j] = matrix1[i][j] + matrix2[i][j];
        }
    }
    return 0;
}
```

Output:



Q-4. **Write the program to print sum of all diagonal elements, upper triangular matrix and lower triangular matrix.**

Ans.

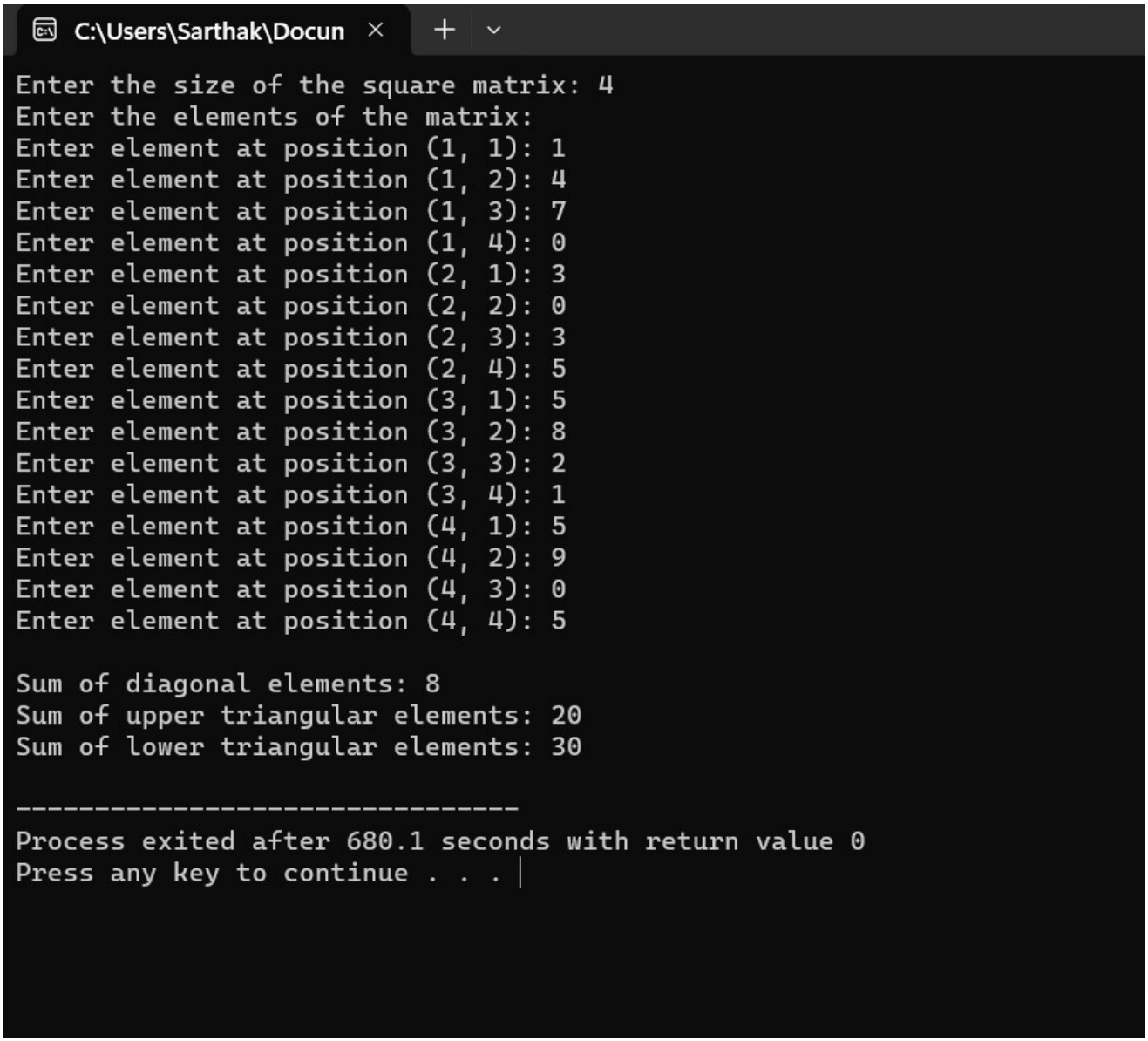
```
#include <stdio.h>
int main() {    int size;    printf("Enter the size of the square matrix: ");    scanf("%d", &size);    int matrix[size][size];    printf("Enter the elements of the
```

```
matrix:\n");     for (int i = 0; i < size; i++) {         for (int j
= 0; j < size; j++) {             printf("Enter element at
position (%d, %d): ", i +
1, j + 1);             scanf("%d",
&matrix[i][j]);
        }
    }
    int sumDiagonal = 0;     for
(int i = 0; i < size; i++) {
sumDiagonal += matrix[i][i];
    }
    int sumUpperTriangular = 0;
for (int i = 0; i < size; i++) {
for (int j = i + 1; j < size; j++) {
sumUpperTriangular +=
matrix[i][j];
        }
    }
    int sumLowerTriangular = 0;     for (int i
= 0; i < size; i++) {         for (int j = 0; j < i;
```

```
j++) {            sumLowerTriangular +=
matrix[i][j];
        }
    }
    printf("\nSum of diagonal elements: %d\n",
sumDiagonal);     printf("Sum of upper triangular
elements: %d\n", sumUpperTriangular);
printf("Sum of lower triangular elements: %d\n",
sumLowerTriangular);
    return 0;
}
```

Output:

Q-5. Write the program to find the

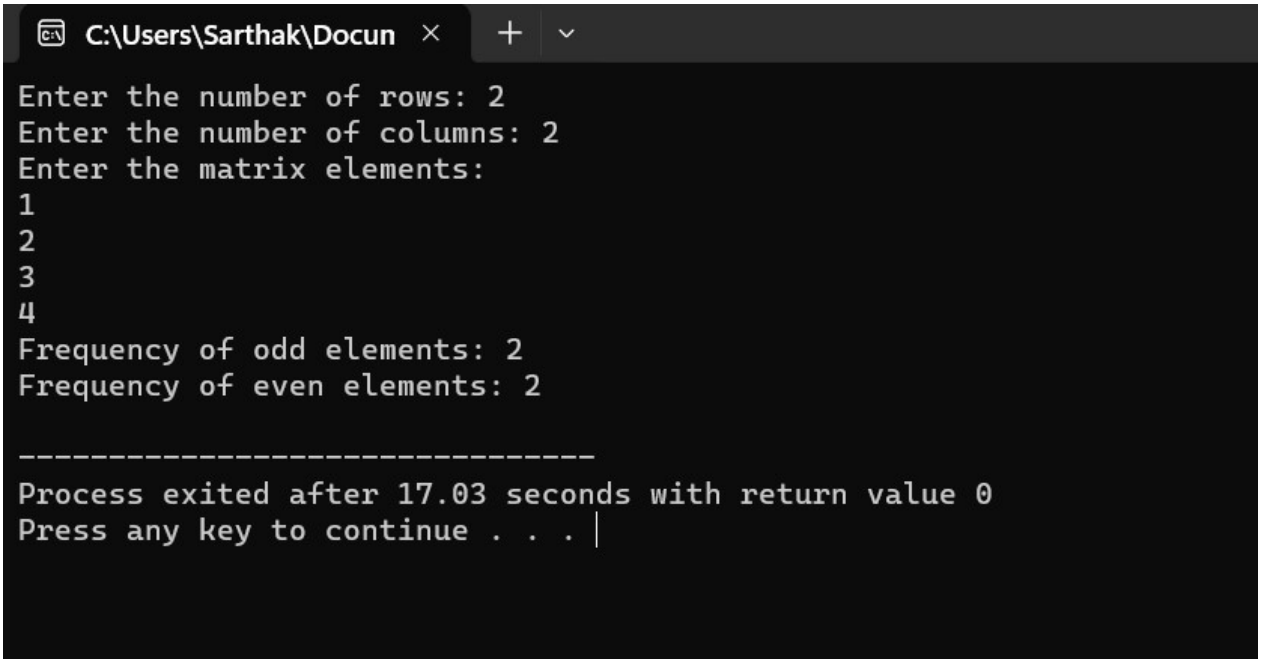


frequency of odd and even elements in matrix.\ ***Ans.***

```
#include <stdio.h>
int main() {     int rows, cols;
printf("Enter the number of rows: ");
scanf("%d", &rows);     printf("Enter the
```

```
number of columns: ");     scanf("%d",
&cols);     int matrix[rows][cols];
printf("Enter the matrix elements:\n");
for (int i = 0; i < rows; i++) {        for (int j =
0; j < cols; j++) {            scanf("%d",
&matrix[i][j]);
       }
   }
   int oddFrequency = 0, evenFrequency =
0;     for (int i = 0; i < rows; i++) {        for (int
j = 0; j < cols; j++) {            if (matrix[i][j] % 2
== 0) {                evenFrequency++;
          } else {
             oddFrequency++;
          }
       }
   }
   printf("Frequency of odd elements: %d\n",
oddFrequency);     printf("Frequency of even
elements: %d\n", evenFrequency);
   return 0;
  }
```

Output:



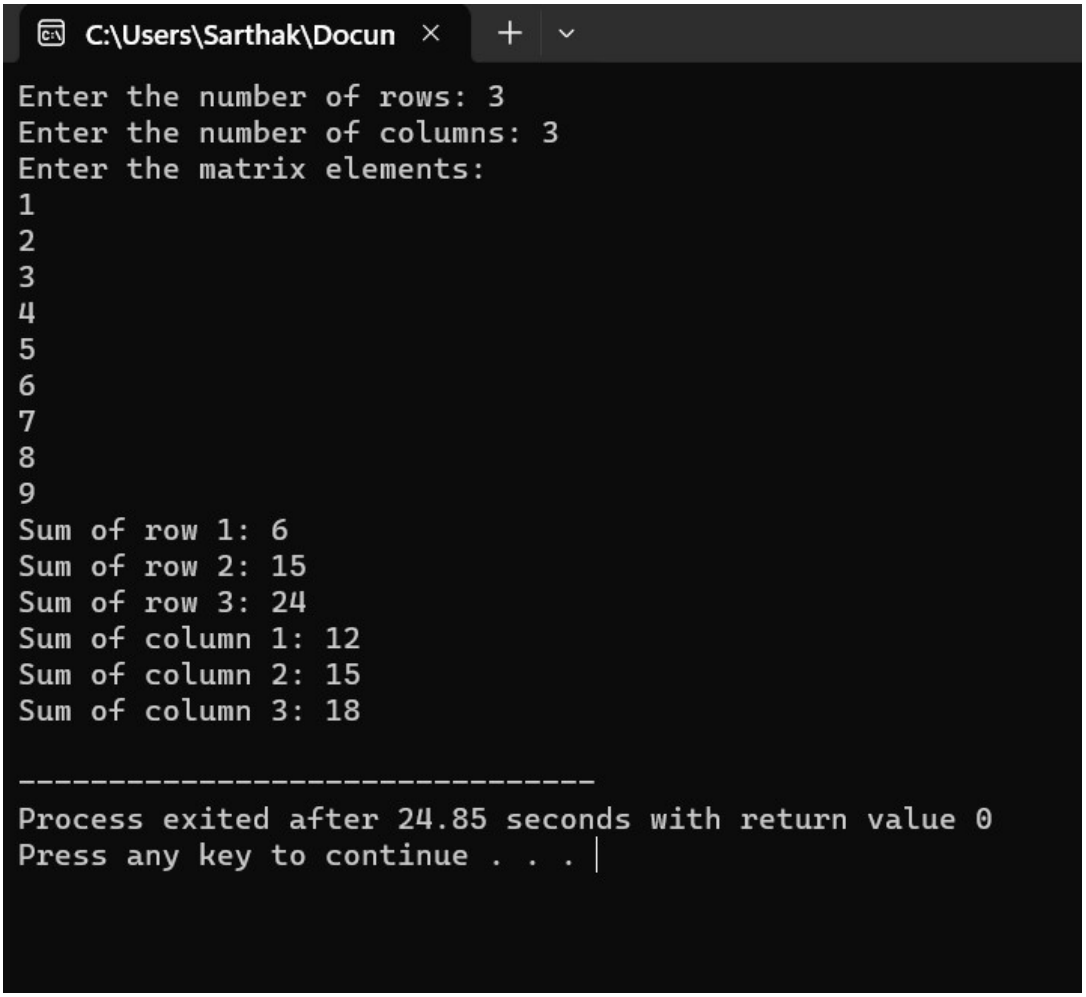
Q-6. Write the program to find sum of each row and sum of each column of matrix.

Ans.

#include <stdio.h> int main() { int rows, cols; printf("Enter the number of rows: "); scanf("%d", &rows); printf("Enter the number of columns: "); scanf("%d", &cols); int matrix[rows][cols]; printf("Enter the matrix elements:\n"); for (int i = 0; i < rows; i++) { for (int j =

```
0; j < cols; j++) {            scanf("%d",
&matrix[i][j]);
        }
    }
    for (int i = 0; i < rows; i++) {
        int rowSum = 0;        for
(int j = 0; j < cols; j++) {
rowSum += matrix[i][j];
        }
        printf("Sum of row %d: %d\n", i + 1, rowSum);
    }
    for (int j = 0; j < cols; j++) {
int colSum = 0;        for (int i =
0; i < rows; i++) {            colSum
+= matrix[i][j];
        }
        printf("Sum of column %d: %d\n", j + 1, colSum);
    }
    return 0;
}
```

Output:



Q-7. Initialize a 2D array of 3*3 matrix.

Ans.

#include <stdio.h> int main() { int matrix[3][3];

printf("Enter the elements for a 3x3 matrix:\n");

for (int i = 0; i < 3; i++) { for (int j = 0; j < 3; j++)

{

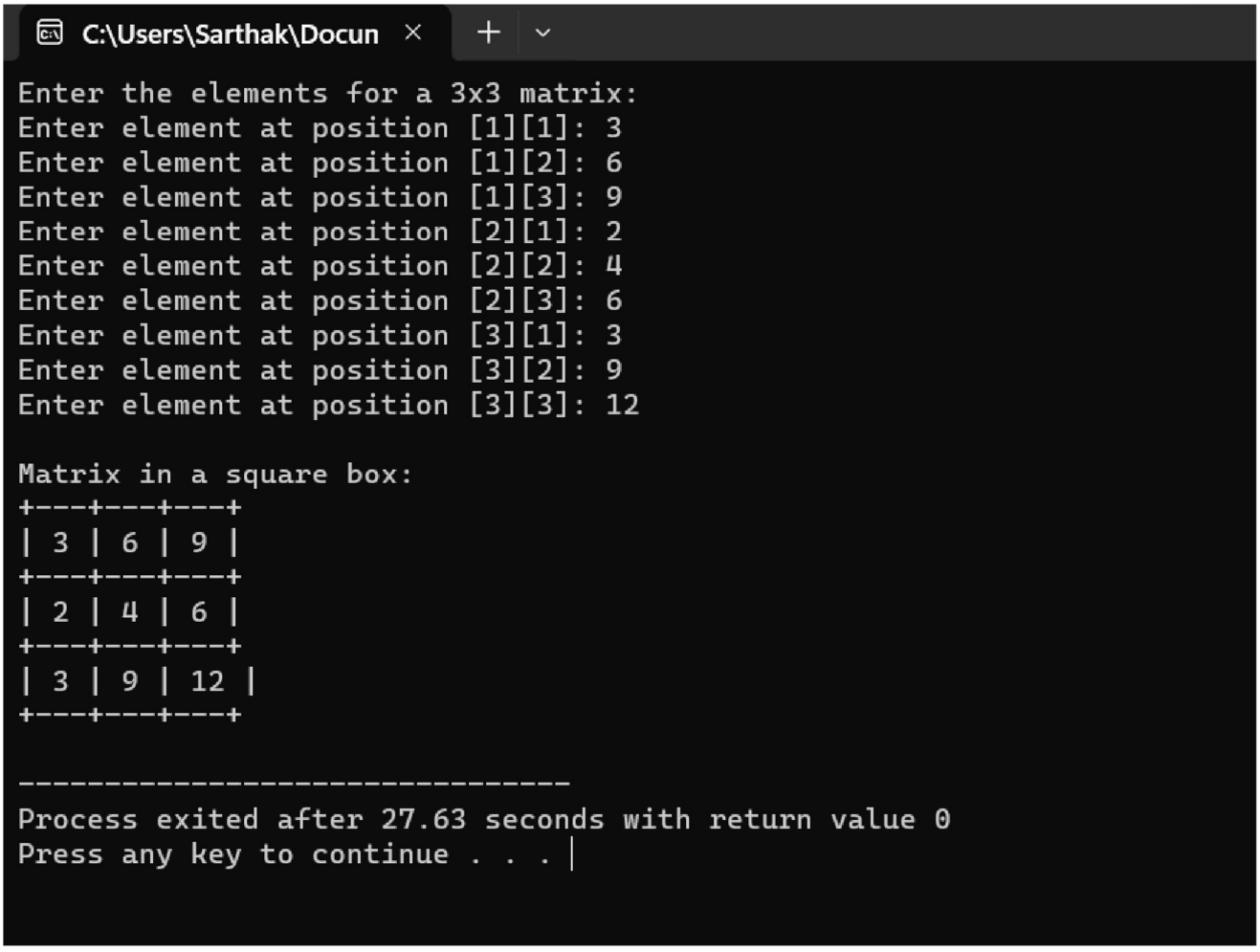
printf("Enter element at position [%d][%d]: ", i + 1, j + 1); scanf("%d",

&matrix[i][j]);

```
        }
    }
    printf("\nMatrix in a square box:\n");
printf("+---+---+---+\n");     for (int i = 0; i < 3;
i++) {         printf("| %d | %d | %d |\n",
matrix[i][0], matrix[i][1], matrix[i][2]);
        if (i < 2) {             printf("+---+---+--
-+\n");
        }
    }
    printf("+---+---+---+\n");
return 0;
}
```

Output:

Q-8. A square matrix, one having the



same number of rows and columns, is called a diagonal matrix if it's only non-zero elements are on the diagonal from upper left to lower right. It is called upper triangular matrix if all elements bellow the diagonal are zeroes, and lower triangular matrix, if

all the elements above the diagonal are zeroes. Write a program that reads a matrix and determines if it is one of the above mentioned three special matrices.

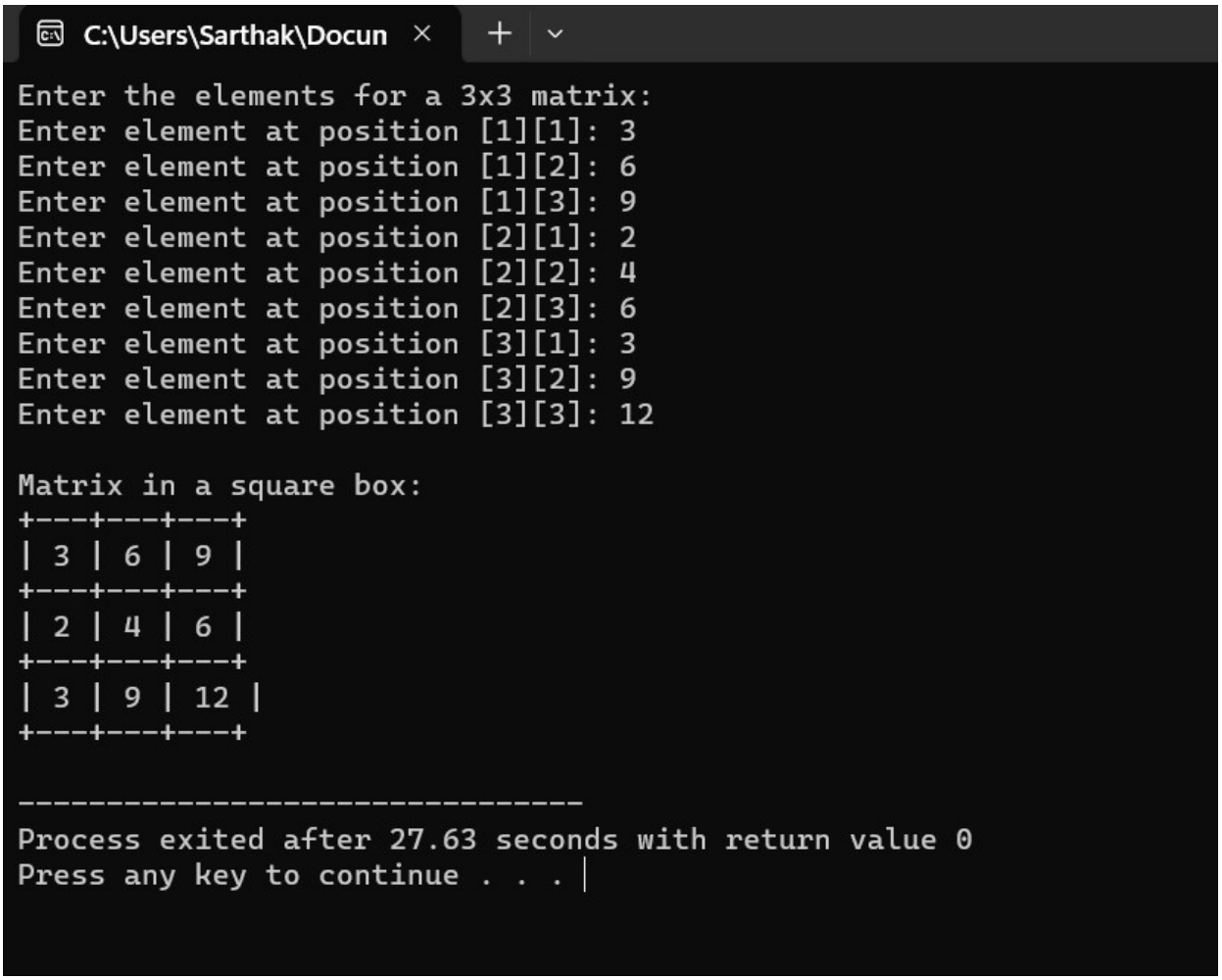
Ans.

```
 #include <stdio.h> int main() {     int n;
printf("Enter the size of the square matrix: ");
scanf("%d", &n);     int matrix[n][n];
printf("Enter the matrix elements:\n");     for
(int i = 0; i < n; i++) {         for (int j = 0; j < n; j++)
{             scanf("%d", &matrix[i][j]);
       }
   }
   int isDiagonal = 1;     int
isUpperTriangular = 1;      int
isLowerTriangular = 1;     for (int i =
0; i < n; i++) {         for (int j = 0; j <
n; j++) {             if (i != j &&
```

```
matrix[i][j] != 0) {
isDiagonal = 0;
            }
            if (i < j && matrix[i][j] != 0) {
isUpperTriangular = 0;
            }
            if (i > j && matrix[i][j] != 0) {
isLowerTriangular = 0;
            }
        }
    }
    if (isDiagonal) {        printf("The matrix is a
diagonal matrix.\n");
    } else if (isUpperTriangular) {
        printf("The matrix is an upper triangular matrix.\n");
    } else if (isLowerTriangular) {        printf("The matrix
is a lower triangular matrix.\n");
    } else {        printf("The matrix is not
diagonal, upper triangular, or lower
triangular.\n");
    }
    return 0;
```

}

Output:



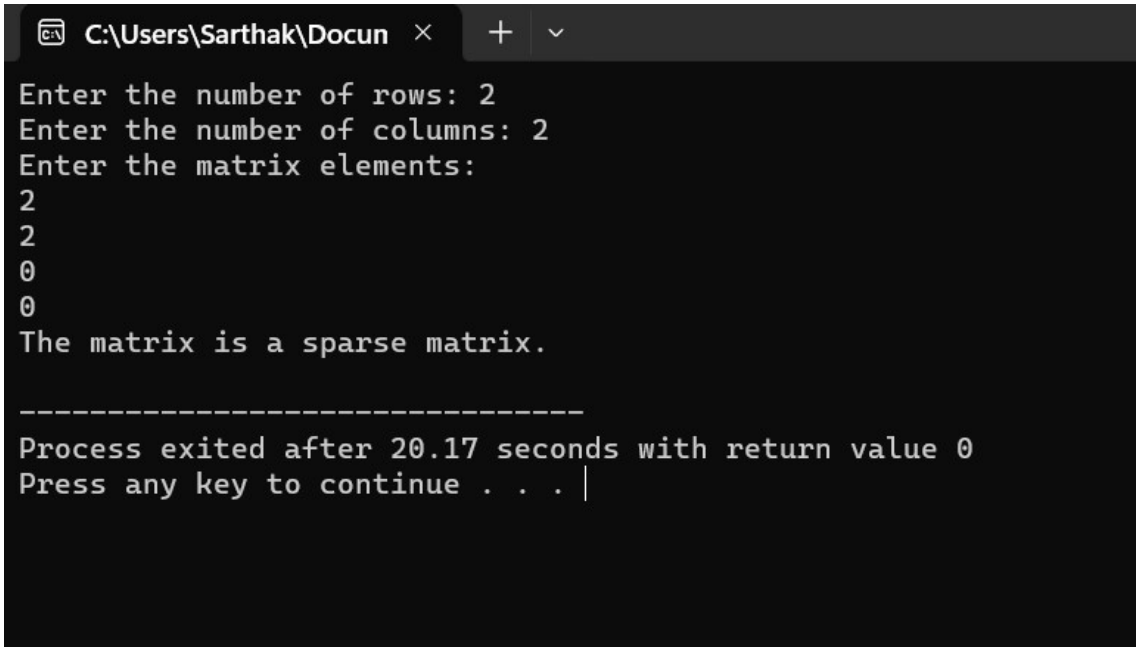
Q-9. Write the program to check whether the matrix is sparse matrix or not. ***Ans.***

```
#include <stdio.h>

int main() {     int

rows, cols;

printf("Enter the
```

```
number of rows:
");     scanf("%d",
&rows);
printf("Enter the
number of
columns: ");
scanf("%d",
&cols);     int
matrix[rows][cols]
;     printf("Enter
the matrix
elements:\n");
for (int i = 0; i <
rows; i++) {
for (int j = 0; j <
cols; j++) {
scanf("%d",
&matrix[i][j]);
        }
    }
```

```
    int nonZeroCount = 0;     for
(int i = 0; i < rows; i++) {
for (int j = 0; j < cols; j++) {
if (matrix[i][j] != 0) {
nonZeroCount++;
            }
        }
    }
    int threshold = rows * cols / 2;
    if (nonZeroCount <= threshold) {
printf("The matrix is a sparse matrix.\n");
    } else {        printf("The matrix is not a sparse
matrix.\n");
    }
    return 0;
}
```

Output:



Week-8 Questions:

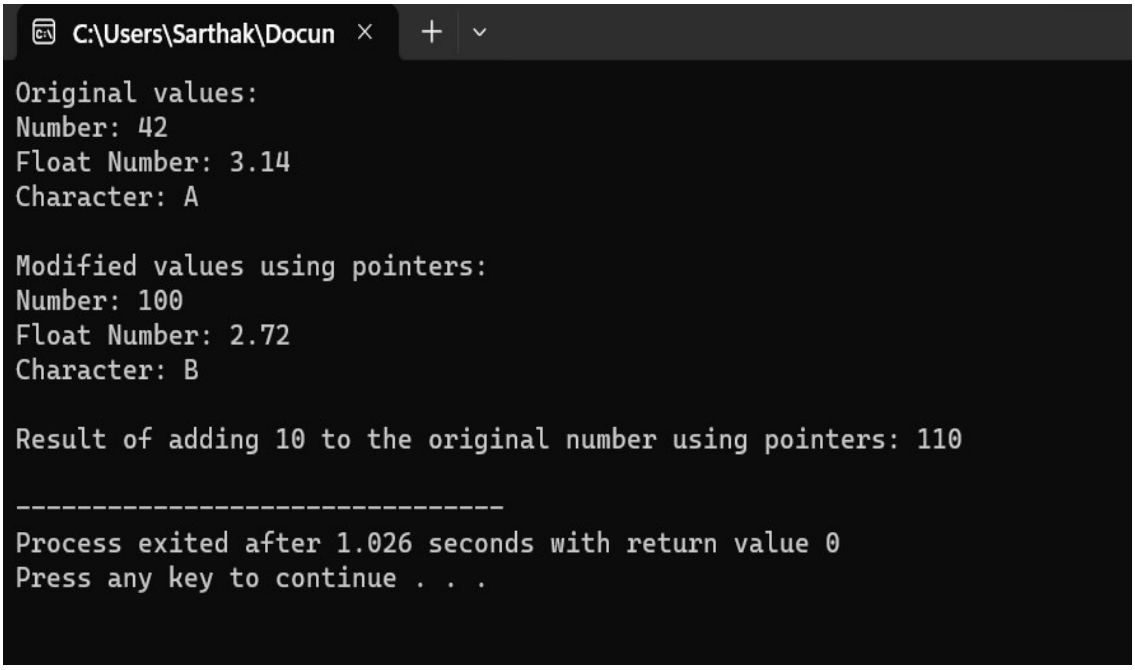
Q-1. **Write a C program to create, initialize and use pointers.**

Ans.

#include <stdio.h> int main() { int number = 42; float floatNumber = 3.14; char character = 'A'; int *intPointer; float *floatPointer; char *charPointer; intPointer = &number; floatPointer = &floatNumber; charPointer = &character; printf("Original values:\n");

```
printf("Number: %d\n", number);
printf("Float Number: %.2f\n",
floatNumber); printf("Character: %c\n\n",
character); *intPointer = 100;
*floatPointer = 2.718; *charPointer = 'B';
printf("Modified values using pointers:\n");
printf("Number: %d\n", number); printf("Float
Number: %.2f\n", floatNumber);
printf("Character: %c\n\n", character); int
anotherNumber = 10; int *resultPointer =
&number; *resultPointer += anotherNumber;
printf("Result of adding %d to the original
number using pointers: %d\n", anotherNumber,
*resultPointer);
return 0;
}
```

Output:



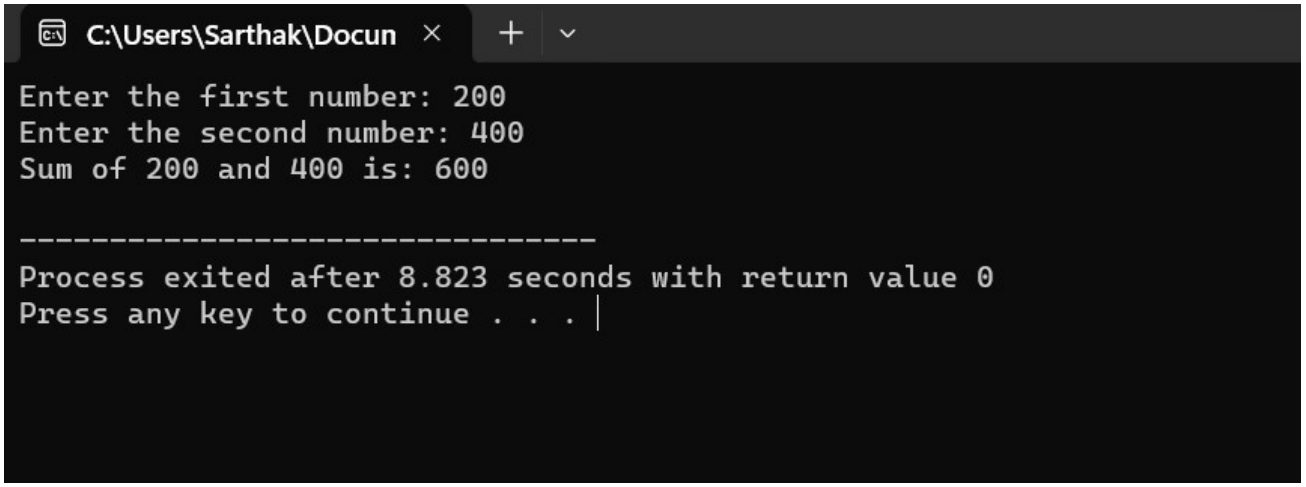
Q-2. Write a C program to add two numbers using pointers.

Ans.

```
#include<stdio.h>
int main()
{
int num1, num2, sum;  int *ptr1,
*ptr2;  ptr1 = &num1;  ptr2 =
&num2;  printf("Enter the first
number: ");  scanf("%d", ptr1);
printf("Enter the second
number: ");  scanf("%d", ptr2);
sum = *ptr1 + *ptr2;
```

```
printf("Sum of %d and %d is:
%d\n", *ptr1, *ptr2, sum);
return 0;
}
```

Output:



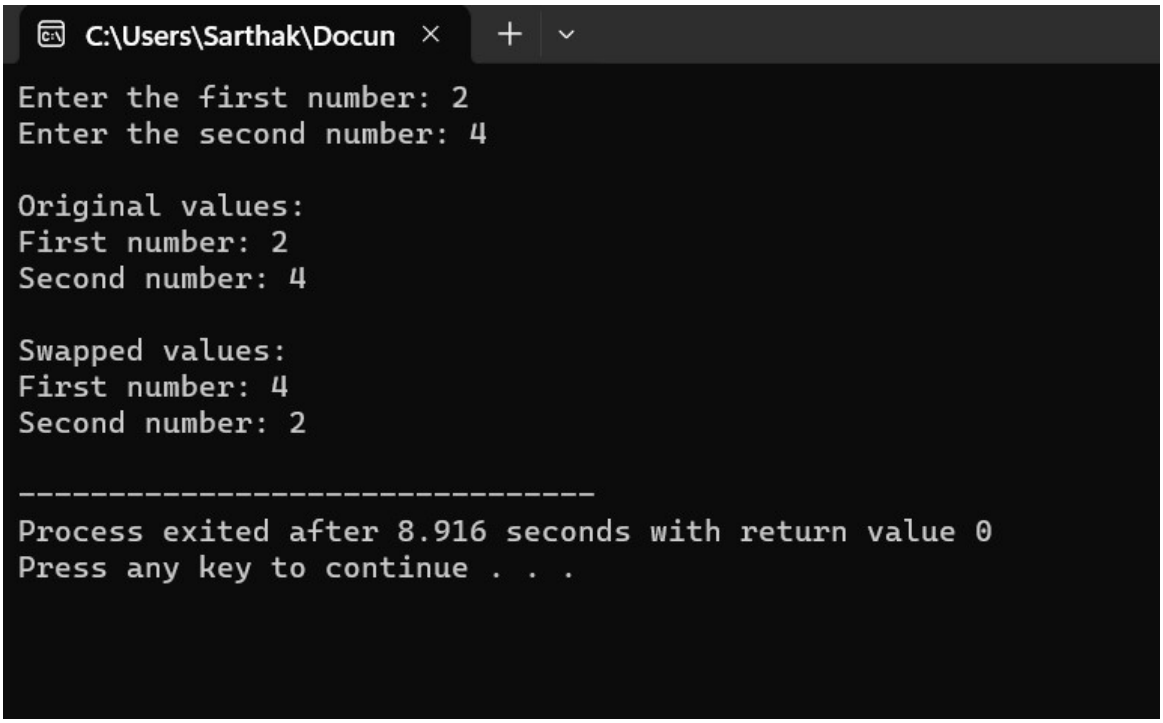
Q-3. Write a C program to swap two numbers using pointers.

Ans.

```
#include <stdio.h> void swap(int
*num1, int *num2) { int temp =
*num1; *num1 = *num2;
*num2 = temp;
}
int main() { int num1, num2;
printf("Enter the first number: ");
```

```
scanf("%d", &num1); printf("Enter the
second number: "); scanf("%d",
&num2); printf("\nOriginal values:\n");
printf("First number: %d\n", num1);
printf("Second number: %d\n", num2);
swap(&num1, &num2);
printf("\nSwapped values:\n");
printf("First number: %d\n", num1);
printf("Second number: %d\n", num2);
return 0;
}
```

Output:

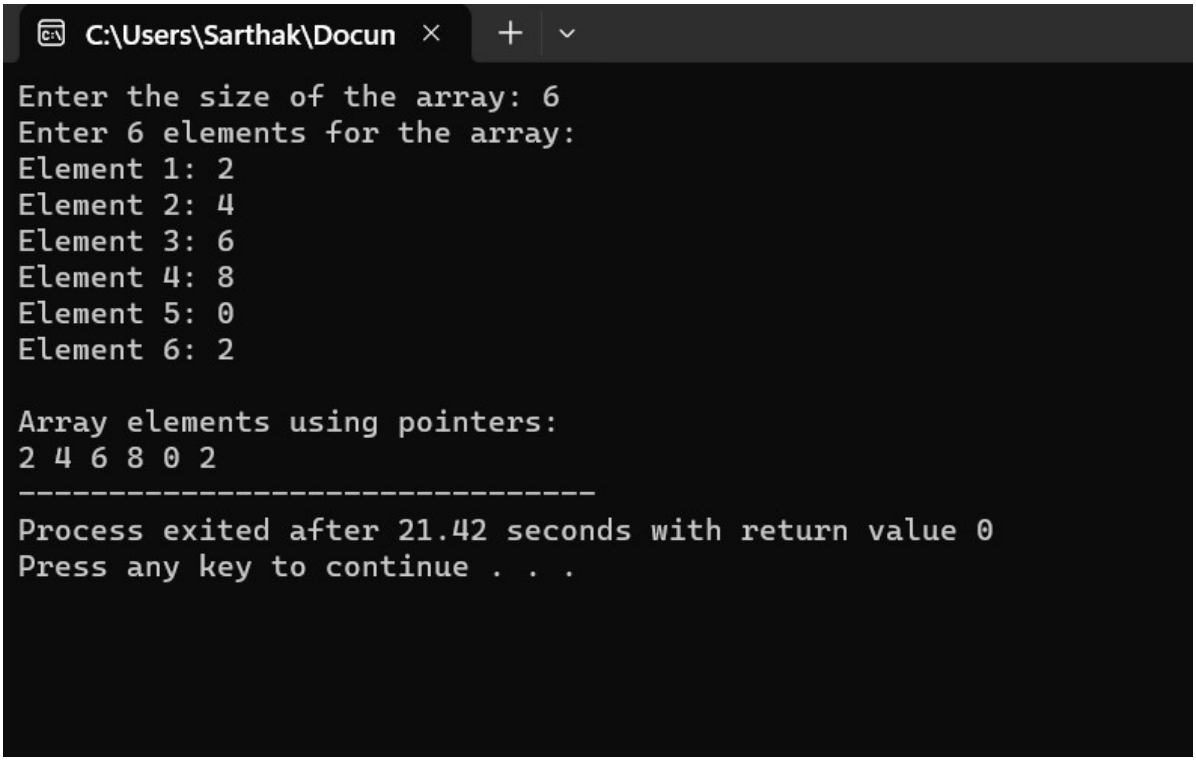


Q-4. Write a C program to input and print array elements using pointer.

Ans.

```
#include <stdio.h> int main() { int size;
printf("Enter the size of the array: ");
scanf("%d", &size); if (size <= 0) {
printf("Invalid array size. Exiting...\n");
return 1;
}
int arr[size]; printf("Enter %d elements for the
array:\n", size); for (int i = 0; i < size; i++) {
printf("Element %d: ", i + 1); scanf("%d", &(*(arr
+ i)));
}
printf("\nArray elements using pointers:\n");
for (int i = 0; i < size; i++) { printf("%d ", *(arr
+ i));
}
return 0; }
```

Output:



Q-5. **Write a C program to copy one array to another using pointer.**

Ans.

#include<stdio.h> void copyArray(int *source, int

*destination, int size)

{

for (int i = 0; i < size; i++)

{

*(destination + i) = *(source + i);

}

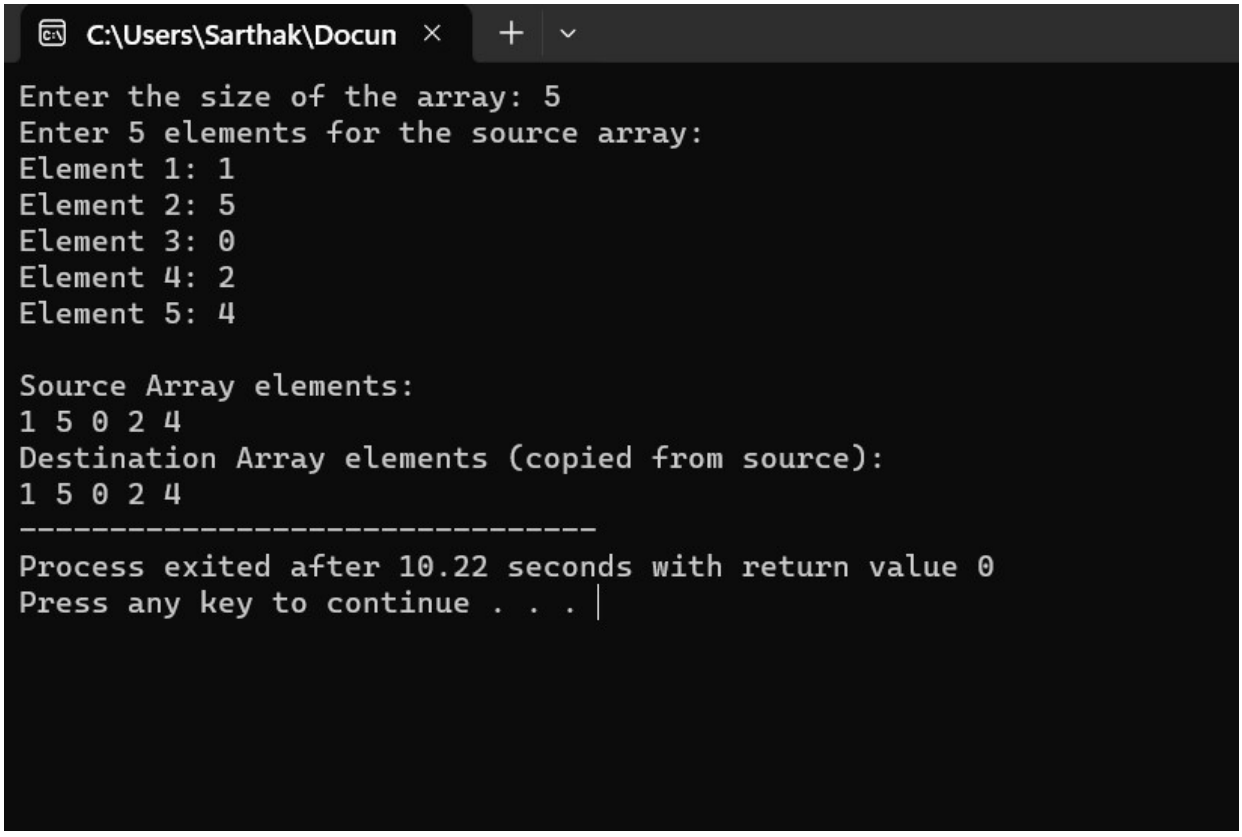
}

int main()

```
{  int size;  printf("Enter the size of
the array: ");  scanf("%d", &size);  if
(size <= 0)
{
printf("Invalid array size. Exiting...\n");
return 1;
}
int sourceArray[size];  int destinationArray[size];
printf("Enter %d elements for the source
array:\n", size);  for (int i = 0; i < size; i++)
{
printf("Element %d: ", i + 1);
scanf("%d", &(*(sourceArray + i)));
}
copyArray(sourceArray, destinationArray,
size); printf("\nSource Array elements:\n");
for (int i = 0; i < size; i++)
{
printf("%d ", *(sourceArray + i));
}
```

```
// Print destination array elements (copied array)
printf("\nDestination Array elements (copied
from source):\n");  for (int i = 0; i < size; i++)
{
printf("%d ", *(destinationArray + i));
}
return 0;
}
```

Output:



Q-6. Write a C program to swap two arrays using pointers.

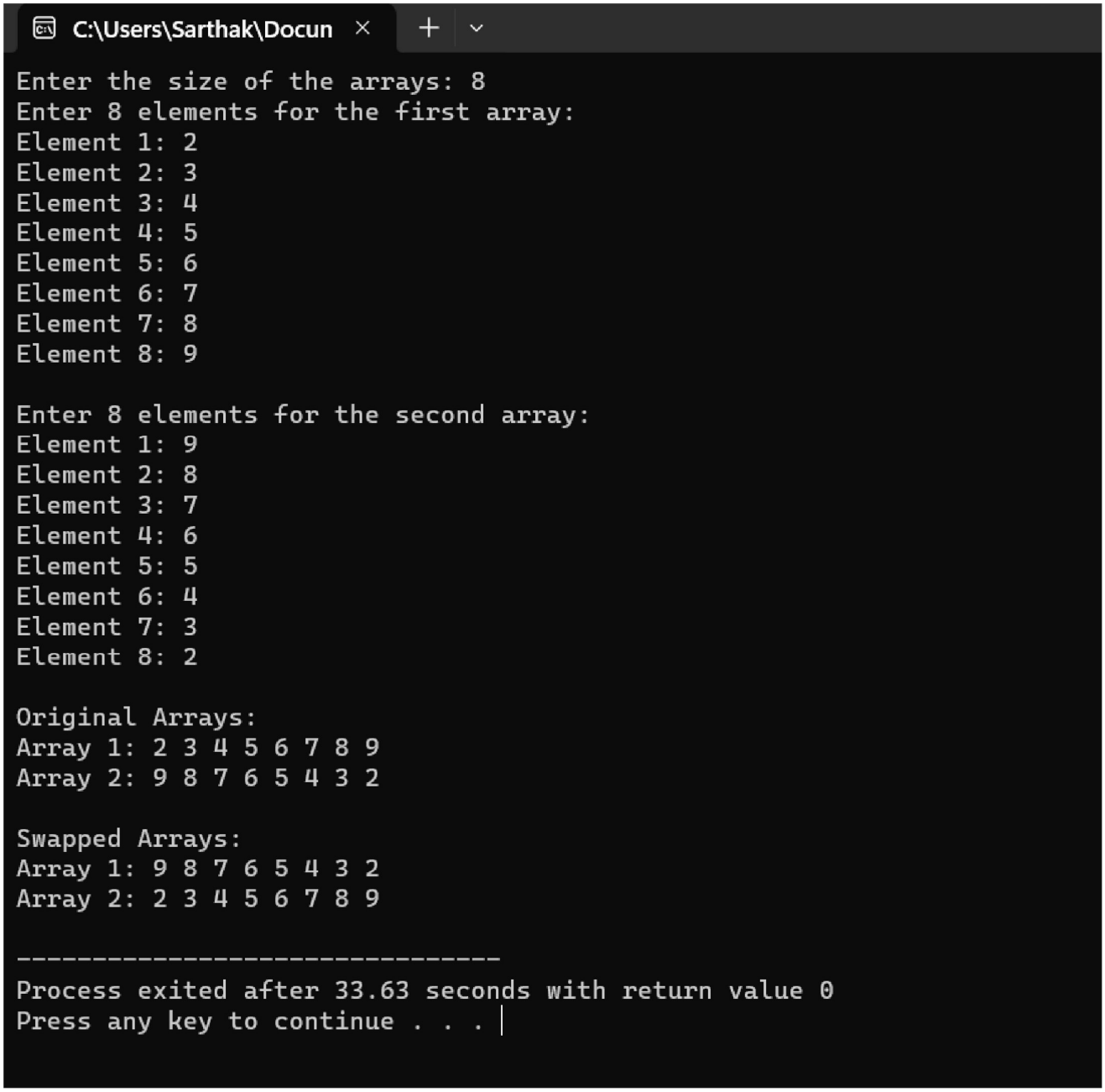
Ans.

```
#include <stdio.h> void swapArrays(int *arr1,
int *arr2, int size) { for (int i = 0; i < size; i++) {
int temp = *(arr1 + i);
*(arr1 + i) = *(arr2 + i);
*(arr2 + i) = temp;
}
}
void printArray(int *arr, int size) {
for (int i = 0; i < size; i++) {
printf("%d ", *(arr + i));
}
printf("\n");
}
int main() { int size; printf("Enter the
size of the arrays: "); scanf("%d",
&size); if (size <= 0) { printf("Invalid
array size. Exiting...\n"); return 1;
}
```

```
int array1[size], array2[size]; printf("Enter %d
elements for the first array:\n", size); for (int i = 0; i <
size; i++) { printf("Element %d: ", i + 1);
scanf("%d", &(*(array1 + i)));
}
printf("\nEnter %d elements for the second
array:\n", size); for (int i = 0; i < size; i++) {
printf("Element %d: ", i + 1); scanf("%d", &(*(array2
+ i)));
}
printf("\nOriginal Arrays:\n");
printf("Array 1: ");
printArray(array1, size);
printf("Array 2: ");
printArray(array2, size);
swapArrays(array1, array2,
size); printf("\nSwapped
Arrays:\n"); printf("Array 1: ");
printArray(array1, size);
printf("Array 2: ");
printArray(array2, size); return
0;
```

}

Output:



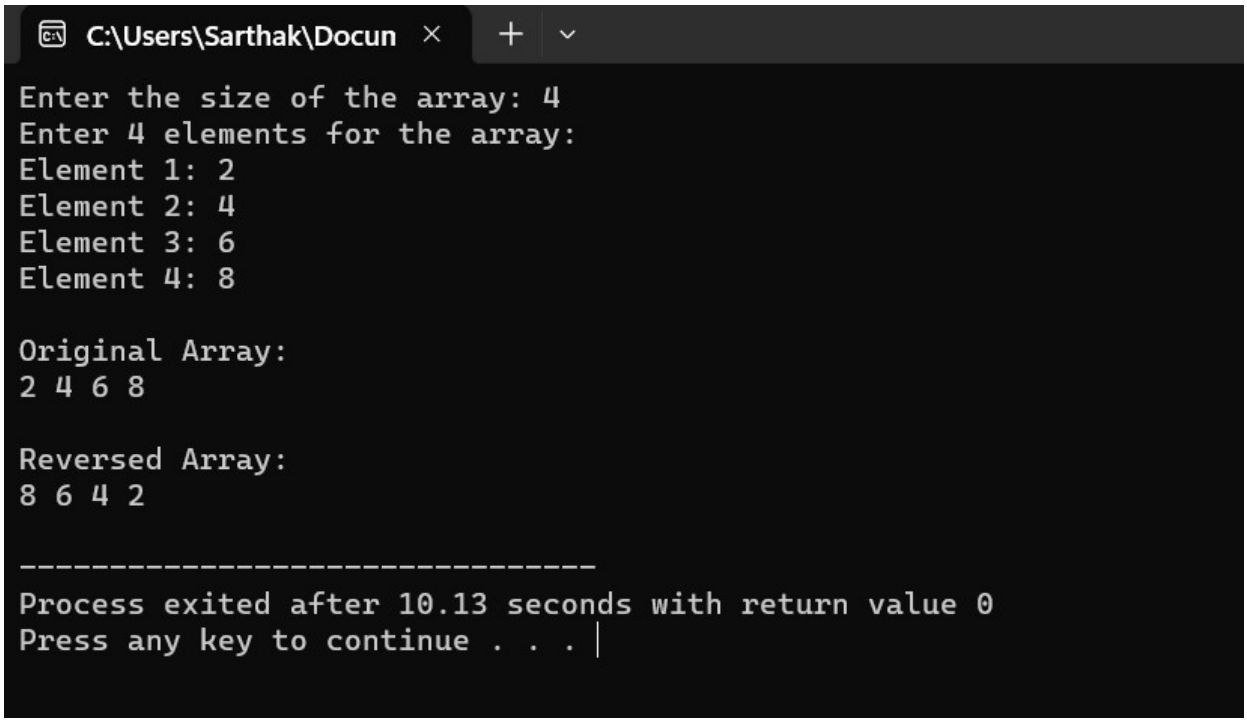
Q-7. Write a C program to reverse an array using pointers.

Ans.

```
#include <stdio.h> void
reverseArray(int *arr, int size) { int
*start = arr; int *end = arr + size -
1; while (start < end) { int temp =
*start; *start = *end; *end = temp;
start++; end--;
}
}
void printArray(int *arr, int size) {
for (int i = 0; i < size; i++) {
printf("%d ", *(arr + i));
}
printf("\n");
}
int main() {
int size; printf("Enter the size of the
array: "); scanf("%d", &size); if (size
<= 0) { printf("Invalid array size.
Exiting...\n"); return 1;
}
```

```
int array[size]; printf("Enter %d elements for the
array:\n", size); for (int i = 0; i < size; i++) {
printf("Element %d: ", i + 1); scanf("%d",
&(*(array + i)));  printf("\nOriginal Array:\n");
printAray(array, size); reverseArray(array, size);
printf("\nReversed Array:\n"); printArray(array,
size); return 0;
}
```

Output:



Q-8. Write a C program to add two matrix using pointers.

Ans.

```
#include <stdio.h>

#define MAX_SIZE 10 void addMatrices(int *matrix1,
int *matrix2, int *result, int rows, int cols) { for (int i =
0; i < rows; i++) { for (int j = 0; j < cols; j++) {

*(result + i * cols + j) = *(matrix1 + i * cols + j) +
*(matrix2 + i * cols + j);

}

}

}

void printMatrix(int *matrix, int rows, int cols)

{ for (int i = 0; i < rows; i++) { for (int j = 0; j <

cols; j++) { printf("%d ", *(matrix + i * cols + j));

}

printf("\n");

}

}

int main() { int rows, cols; printf("Enter

the number of rows: "); scanf("%d",

&rows); printf("Enter the number of

columns: "); scanf("%d", &cols);
```

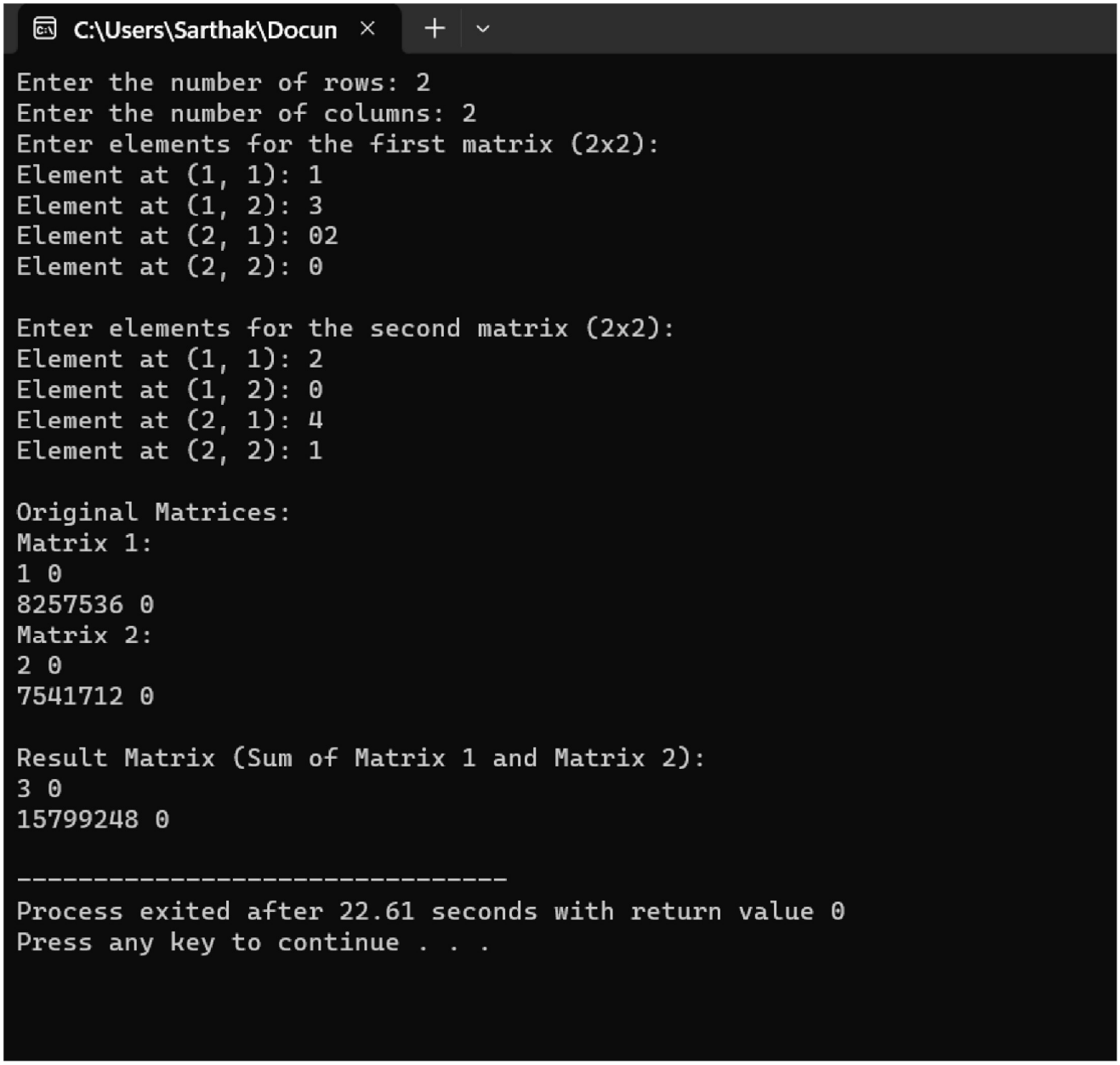
```
if (rows <= 0 || cols <= 0 || rows > MAX_SIZE || cols
> MAX_SIZE) { printf("Invalid matrix size.
Exiting...\n");

return 1;

}

int matrix1[MAX_SIZE][MAX_SIZE],
matrix2[MAX_SIZE][MAX_SIZE],
result[MAX_SIZE][MAX_SIZE]; printf("Enter elements
for the first matrix (%dx%d):\n", rows, cols); for (int i =
0; i < rows; i++) { for (int j = 0; j < cols; j++) {
printf("Element at (%d, %d): ", i + 1, j + 1); scanf("%d",
&(*(matrix1 + i * cols + j)));

}

}

printf("\nEnter elements for the second matrix
(%dx%d):\n", rows, cols); for (int i = 0; i < rows;

i++) { for (int j = 0; j < cols; j++) {

printf("Element at (%d, %d): ", i + 1, j + 1);

scanf("%d", &(*(matrix2 + i * cols + j))); //

Using pointer notation to access matrix

}

}
```

```
addMatrices((int *)matrix1, (int *)matrix2, (int
*)result, rows, cols); printf("\nOriginal Matrices:\n");
printf("Matrix 1:\n"); printMatrix((int *)matrix1, rows,
cols); printf("Matrix 2:\n"); printMatrix((int *)matrix2,
rows, cols);
printf("\nResult Matrix (Sum of Matrix 1 and Matrix
2):\n"); printMatrix((int *)result,
rows, cols); return 0;
}
```

Output:

Q-9. Write a C program to multiply two matrix using pointers.

Ans.



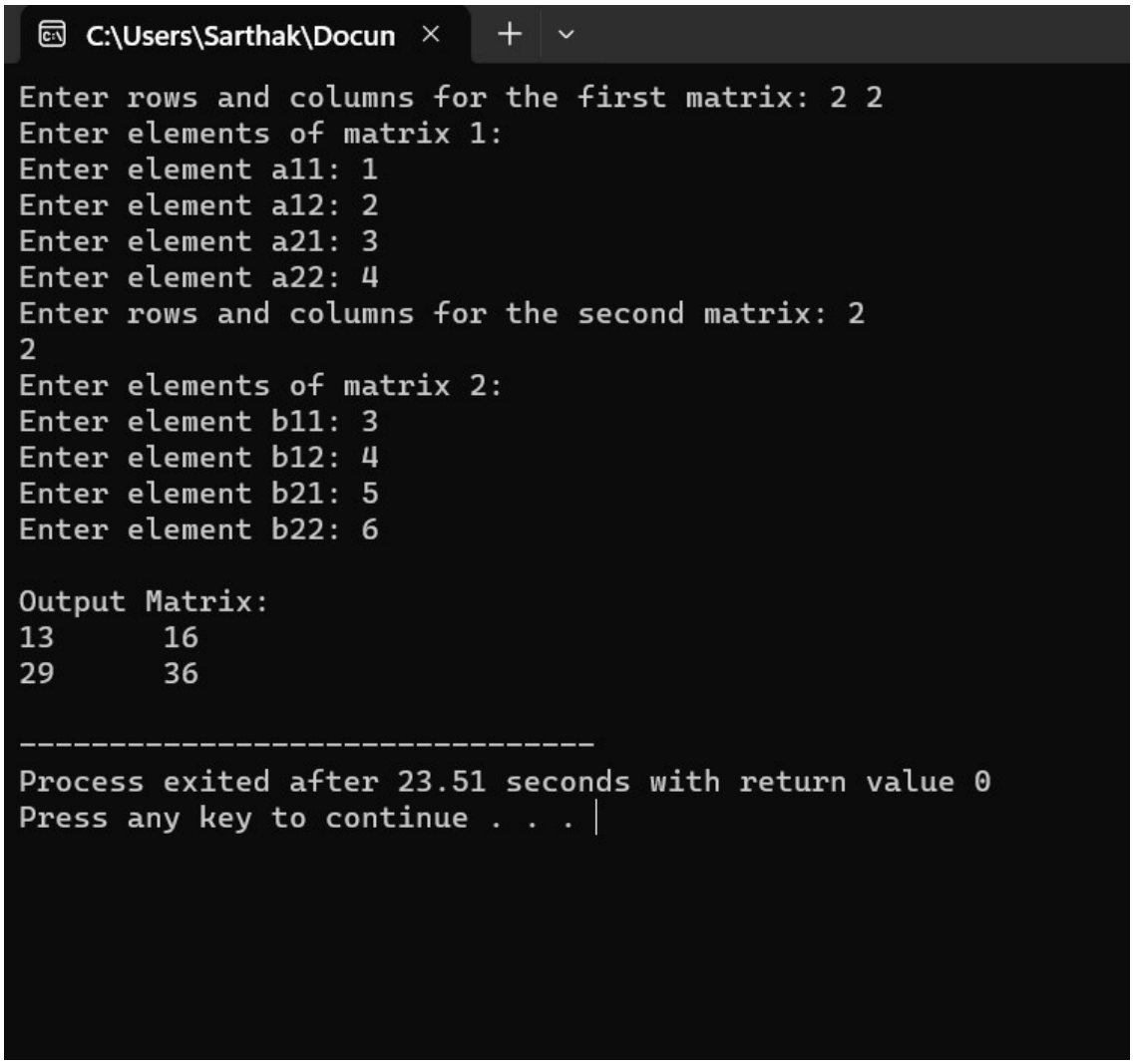

```
#include <stdio.h>

#define MAX_SIZE 10

void multiplyMatrices(int
firstMatrix[MAX_SIZE][MAX_SIZE], int
secondMatrix[MAX_SIZE][MAX_SIZE], int
result[MAX_SIZE][MAX_SIZE], int rowFirst, int
columnFirst, int rowSecond, int columnSecond)
```

```
{    // Initializing elements of result matrix to 0
for (int i = 0; i < rowFirst; ++i) {        for (int j = 0;
j < columnSecond; ++j) {            result[i][j] = 0;
      }
   }
   // Multiplying firstMatrix and secondMatrix
and storing in result     for (int i = 0; i < rowFirst;
++i) {        for (int j = 0; j < columnSecond; ++j) {
for (int k = 0; k < columnFirst; ++k) {
            result[i][j] += firstMatrix[i][k] *
secondMatrix[k][j];
         }
      }
   }
}
void displayMatrix(int
matrix[MAX_SIZE][MAX_SIZE], int row, int column) {
for (int i = 0; i < row; ++i) {        for (int j = 0; j <
column; ++j) {            printf("%d\t", matrix[i][j]);
      }
      printf("\n");
   }
}
```

```
int main() {     int firstMatrix[MAX_SIZE][MAX_SIZE],
secondMatrix[MAX_SIZE][MAX_SIZE],
result[MAX_SIZE][MAX_SIZE];     int rowFirst,
columnFirst, rowSecond, columnSecond;


   printf("Enter rows and columns for the first matrix:
");
   scanf("%d %d", &rowFirst, &columnFirst);


   printf("Enter elements of matrix 1:\n");
   for (int i = 0; i < rowFirst; ++i) {        for (int j = 0;
j < columnFirst; ++j) {            printf("Enter element
a%d%d: ", i + 1, j + 1);            scanf("%d",
&firstMatrix[i][j]);
      }
   }
   printf("Enter rows and columns for the second
matrix: ");     scanf("%d %d", &rowSecond,
&columnSecond);


   if (columnFirst != rowSecond) {        printf("Error!
Number of columns in the first matrix should be
```

```
equal to the number of rows in the second
matrix.\n");
        return 0;
    }
    printf("Enter elements of matrix 2:\n");     for
(int i = 0; i < rowSecond; ++i) {        for (int j = 0; j <
columnSecond; ++j) {            printf("Enter element
b%d%d: ", i + 1, j + 1);            scanf("%d",
&secondMatrix[i][j]);
        }
    }
    multiplyMatrices(firstMatrix, secondMatrix, result,
rowFirst, columnFirst, rowSecond, columnSecond);
    // Displaying the multiplication result
printf("\nOutput Matrix:\n");
displayMatrix(result, rowFirst, columnSecond);
return 0;
}
```

Output:



Week-9 Questions:

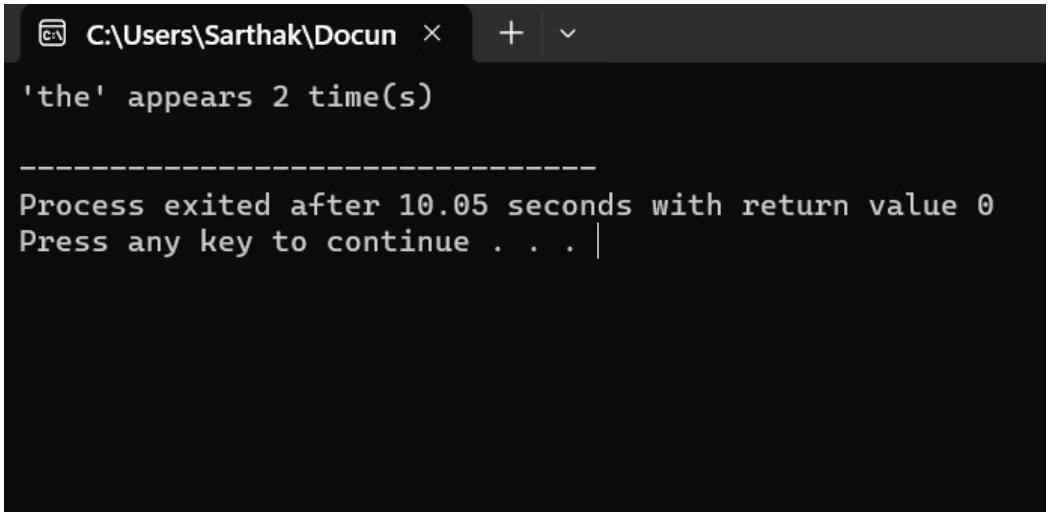
Q-1. Write a C program to Search string. Ans-1.

#include <stdio.h> #include <string.h> int main()

{ char s1[] = "Beauty is in the eye of the

```
beholder"; char s2[] = "the"; int n = 0; int m = 0;
int times = 0; int len = strlen(s2);  while(s1[n] !=
'\0') { if(s1[n] == s2[m]) {  while(s1[n] == s2[m]
&& s1[n] !='\0') { n++; m++;
}
if(m == len && (s1[n] == ' ' || s1[n] == '\0')) { times++;
}
} else {  while(s1[n] != ' ') { // Skip to
next word n++; if(s1[n] == '\0') break;
}
}
n++; m=0;
}
if(times > 0) { printf("'%s' appears %d
time(s)\n", s2, times);
} else { printf("'%s' does not appear in the
sentence.\n", s2);
}
return 0;
}
```

Output:



Q-2. Write a C program to Reverse words in string.

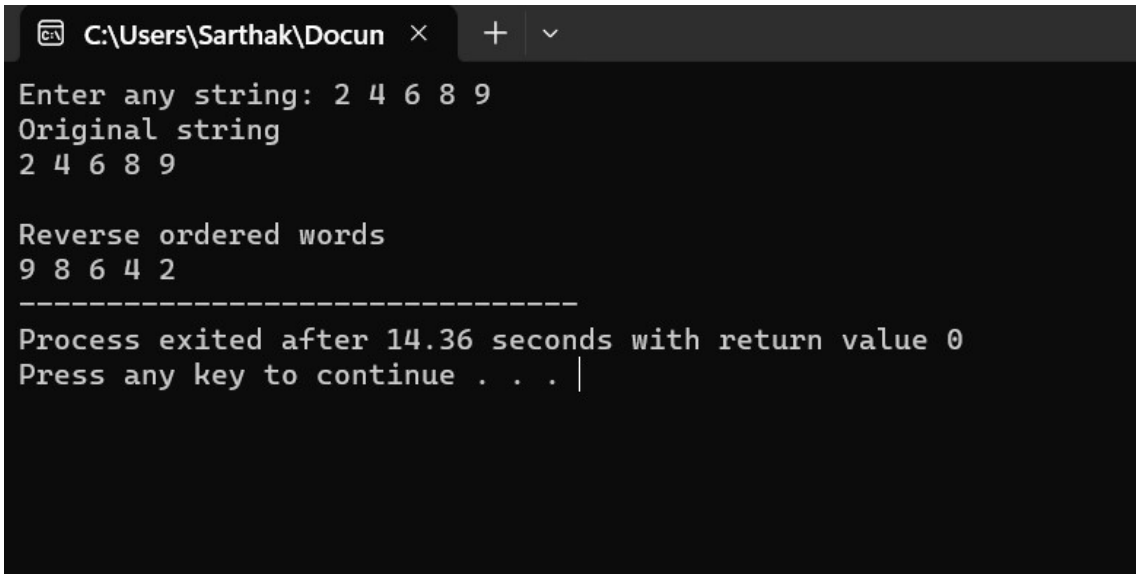
Ans-2.

```
#include <stdio.h>
#include <string.h>
#define MAX_SIZE 100
int main()
{
char str[100], reverse[100]; int len,
i, index, wordStart, wordEnd;
printf("Enter any string: ");
gets(str); len =
strlen(str); index =
0; wordStart = len -
```

```
1; wordEnd = len -
1; while(wordStart >
0)
{
if(str[wordStart] == ' ')
{
i = wordStart + 1; while(i
<= wordEnd)
{
reverse[index] =
str[i]; i++; index++;
}
reverse[index++] = ' ';
wordEnd = wordStart - 1;
}
wordStart--;
}
for(i=0; i<=wordEnd; i++)
{
reverse[index] = str[i];
index++;
```

```
}
reverse[index] = '\0';  printf("Original string
\n%s\n\n", str); printf("Reverse ordered
words \n%s", reverse); return 0;
}
```

Output:



Q-3. Write a C program to count vowels, consonants, etc.

Ans-3.

```
#include <stdio.h> int main() { char line[150];
int vowels, consonant, digit, space; vowels =
consonant = digit = space = 0; printf("Enter a
line of string: "); fgets(line, sizeof(line), stdin);
for (int i = 0; line[i] != '\0'; ++i) { line[i] =
```

```
tolower(line[i]); if (line[i] == 'a' || line[i] == 'e'
|| line[i] == 'i' || line[i] == 'o' || line[i] == 'u') {
++vowels;
} else if ((line[i] >= 'a' && line[i] <= 'z'))
{
++consonant;
}
else if (line[i] >= '0' && line[i] <= '9') {
++digit;
} else if (line[i] == ' ')
{
++space;
}
}
printf("Vowels: %d", vowels);
printf("\nConsonants: %d", consonant);
printf("\nDigits: %d", digit);
printf("\nWhite spaces: %d", space);
return 0;
}
```

Q-4. Create a program to separate characters in a given string?

Ans-4.

```
#include <stdio.h>
#include <stdlib.h>
void main(){
char str[100];  int l= 0; printf("\n\separate the individual characters from a string :\n"); printf("----------------------------------------\n");
printf("Input the string : "); fgets(str, sizeof str, stdin); printf("The characters of the string are : \n");
while(str[l]!='\0')
{
printf("%c ", str[l]);
l++;
}
printf("\n");
}
```

Q-5. Write a program to take two strings from user and concatenate

them also add a space between them using strcat() function.

Ans-5.

```
#include <stdio.h>
#include <string.h>
int main()
{
char a[100], b[100]; printf("Enter the first string\n");
gets(a); printf("Enter the second string\n"); gets(b);
strcat(a,b); printf("String obtained on concatenation
is %s\n",a); return 0;
}
```

Sample Input:

Jai Gla

Jai Gla

Sample output:

Identical

Q-6. Write a C program to take a string from user and make it toggle its case

i.e. lower case to upper case and upper case to lower case.

Ans-6.

```
#include <stdio.h> void
toggleChars(char str[])
{ for (int i = 0; str[i] != '\0'; i++) {
if (str[i] >= 'A' && str[i] <= 'Z')
str[i] = str[i] + 'a' - 'A'; else if
(str[i] >= 'a' && str[i] <= 'z') str[i]
= str[i] + 'A' - 'a';
}
}
int main()
{
char str[] = " HElLo wOrlD";
toggleChars(str); printf("String after toggle
\n"); printf("%s\n", str); return 0;
}
```

Q-7. Write a C program to take two strings as input from user and check

they are identical or not without using string functions.

Ans-7.

```
#include <stdio.h>
#include <string.h>
int main()
{
char Str1[100], Str2[100]; int result, i;
printf("\n Please Enter the First String : ");
gets(Str1); printf("\n Please Enter the
Second String : "); gets(Str2);
for(i = 0; Str1[i] == Str2[i] && Str1[i] == '\0'; i++);
if(Str1[i] < Str2[i])
{
printf("\n str1 is Less than str2");
} else if(Str1[i] >
Str2[i])
{
printf("\n str2 is Less than str1");
}
```

```
else
{
printf("\n str1 is Equal to str2");
}
return 0;
}
```

Q-8. **Write a C program to take a list of a student's names from user by asking number of students and sort them alphabetical order.**

Ans-8.

```
#include <stdio.h>
#include <stdlib.h> #include <string.h> int
main() { int numStudents; printf("Enter the
number of students: "); scanf("%d",
&numStudents); if (numStudents <= 0) {
printf("Invalid number of students.
Exiting...\n"); return 1;
}
```

```
char **studentNames = (char **)malloc(numStudents
* sizeof(char *)); for (int i = 0; i < numStudents; i++) {
printf("Enter the name of student %d: ", i + 1);
studentNames[i] = (char *)malloc(100 *
sizeof(char)); scanf("%s", studentNames[i]);
}
for (int i = 0; i < numStudents - 1; i++) { for (int j = i
+ 1; j < numStudents; j++) { if
(strcmp(studentNames[i], studentNames[j]) > 0) {
char *temp = studentNames[i]; studentNames[i] =
studentNames[j]; studentNames[j] = temp;
}
}
}
printf("\nSorted names in alphabetical
order:\n"); for (int i = 0; i < numStudents; i++) {
printf("%d. %s\n", i + 1, studentNames[i]);
}
for (int i = 0; i < numStudents; i++) {
free(studentNames[i]);
}
```

```
free(studentNames);
return 0; }
```

Week-10 Questions:

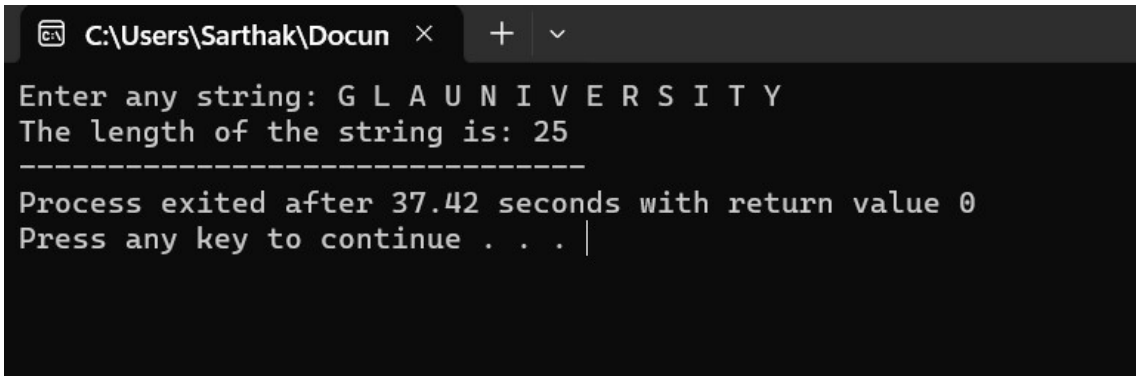
Q-1. **Write a C program to find length of string using pointers.**

Ans-1.

```
#include <stdio.h> int
main() { char str[100], *
ptr; int count;
printf("Enter any string:
"); gets(str);

ptr = str; count
= 0;

while ( *ptr != '\0') {
count++; ptr++;
}
printf("The length of the string is: %d", count);
return 0;
```

}

Output:



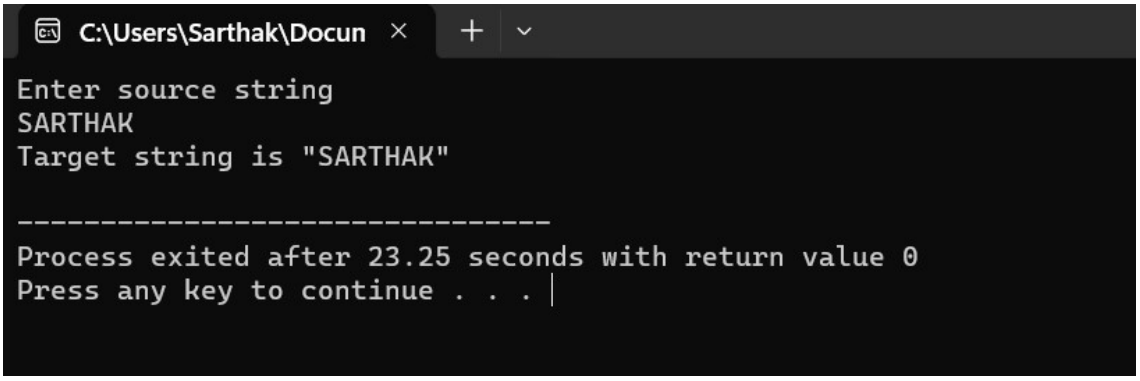
Q-2. Write a C program to copy one string to another using pointer.

Ans-2.

```
#include<stdio.h> void
copy_string(char*, char*);
main()
{
char source[100], target[100];
printf("Enter source string\n");
gets(source);  copy_string(target, source);
printf("Target string is \"%s\"\n", target);
return 0;
}
void copy_string(char *target, char *source)
```

```
{
while(*source)
{
*target = *source;
source++;
target++;
}
*target = '\0';
}
```

Output:



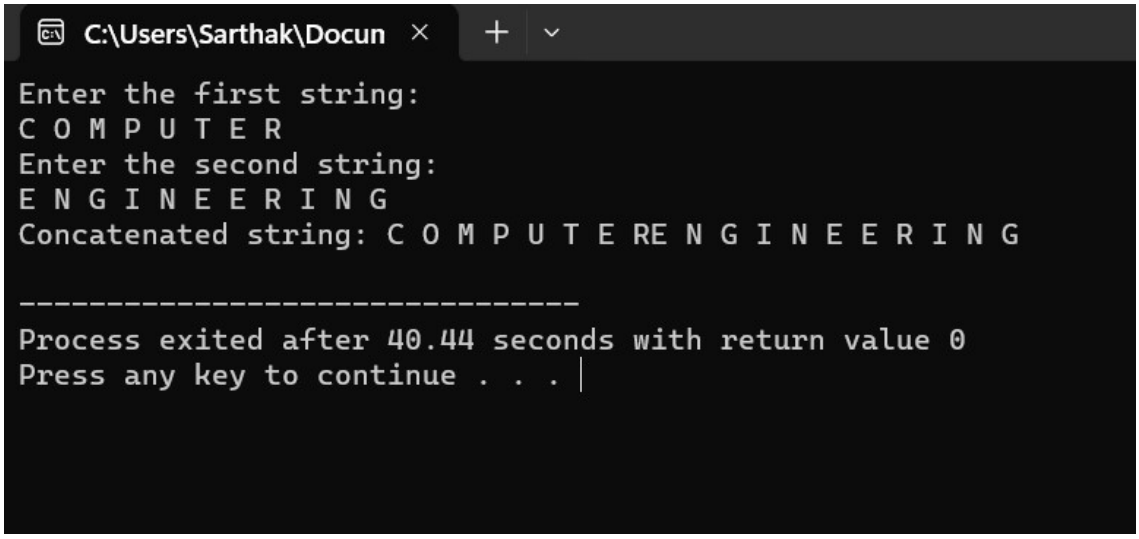
Q-3 Write a C program to concatenate two strings using pointers.

Ans-3.

```
#include <stdio.h> void
concatenate(char *str1, char *str2) {
while (*str1) { str1++;
```

```
}
while (*str2) {
*str1 = *str2;
str1++; str2++;
}
*str1 = '\0';
}
int main() { char string1[100],
string2[50]; printf("Enter the
first string:\n"); gets(string1);
printf("Enter the second string:\n");
gets(string2); concatenate(string1, string2);
printf("Concatenated string: %s\n",
string1); return 0;
}
```

Output:



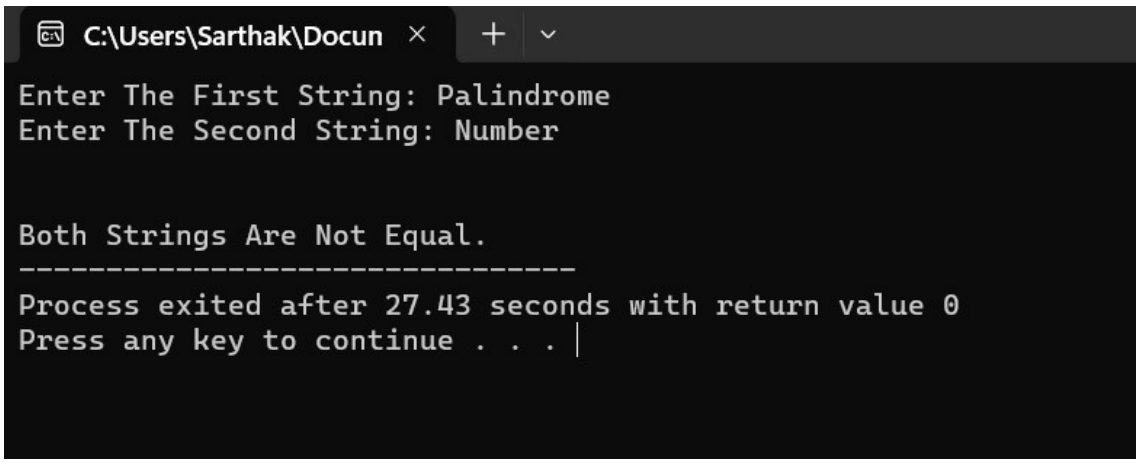
Q-4. Write a C program to compare two strings using pointers.

Ans-4.

```
#include <iostream> using

namespace std; int main()

{

char

string1[50],string2[50],*str1,*str2; int

i,equal = 0; printf("Enter The First

String: "); scanf("%s",string1);

printf("Enter The Second String: ");

scanf("%s",string2); str1 = string1; str2

= string2; while(*str1 == *str2)

{
```

```
if ( *str1 == '\0' || *str2 == '\0' )
break; str1++; str2++;
}
if( *str1 == '\0' && *str2 == '\0' )
printf("\n\nBoth Strings Are Equal.");
else
printf("\n\nBoth Strings Are Not Equal.");
}
```

Output:



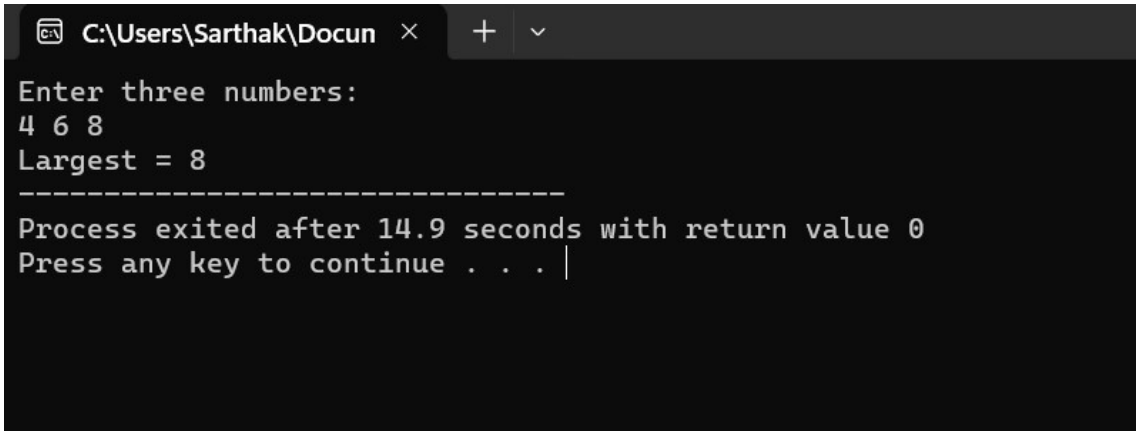
Q-5 WAP to find largest among three numbers using pointer.

Q-6 WAP to find largest among three numbers using pointer.

Ans-5 & 6.

```
#include<stdio.h> int
main()
{
int a,b,c,*pa, *pb, *pc;
printf("Enter three numbers:\n");
scanf("%d%d%d", &a,&b,&c); /*
Referencing */ pa= &a; pb= &b; pc=
&c; if(*pa > *pb && *pa > *pc)
{
printf("Largest is: %d", *pa);
}
else if(*pb > *pc && *pb > *pc)
{
printf("Largest is : %d", *pb);
}
else
{
printf("Largest = %d", *pc);
}
return 0;
}
```

Output:



Q-7. WAP to find factorial of a number using pointer.

Ans-7.

```
#include<stdio.h> void findFactorial(int,int
*);  int main(){ int i,factorial,n;
printf("Enter a number: ");
scanf("%d",&n);
findFactorial(n,&factorial);
printf("Factorial of %d is: %d",n,*factorial);
return 0;
}
void findFactorial(int n,int *factorial){
int i;
*factorial =1; for(i=1;i<=n;i++)
```

```
*factorial=*factorial*i;
}
```

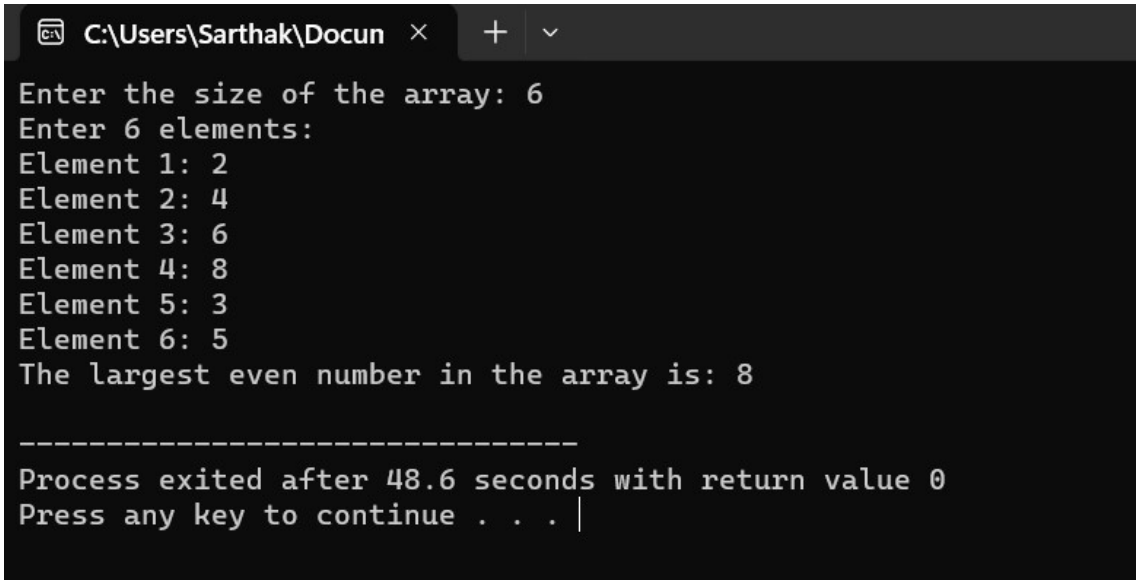
Q-8. Write a program to print largest even number present in an array using pointer to an array.

Ans-8.

```
#include <stdio.h> int findLargestEven(int
*arr, int size) { int largestEven = -1;  for
(int i = 0; i < size; i++) { if (arr[i] % 2 == 0
&& arr[i] > largestEven) { largestEven =
arr[i];
}
}
return largestEven;
}
int main() { int size; printf("Enter the
size of the array: "); scanf("%d",
&size); int arr[size]; printf("Enter %d
elements:\n", size); for (int i = 0; i <
```

```
size; i++) { printf("Element %d: ", i +
1); scanf("%d", &arr[i]);
}
int *ptr = arr; int largestEven = findLargestEven(ptr, size); if (largestEven != -1) { printf("The largest even number in the array is: %d\n", largestEven);
} else { printf("No even numbers found in the
array.\n");
}
return 0;
}
```

Output:



Q-9. WAP to find sum of elements of an array using array of pointer.

Ans-9.

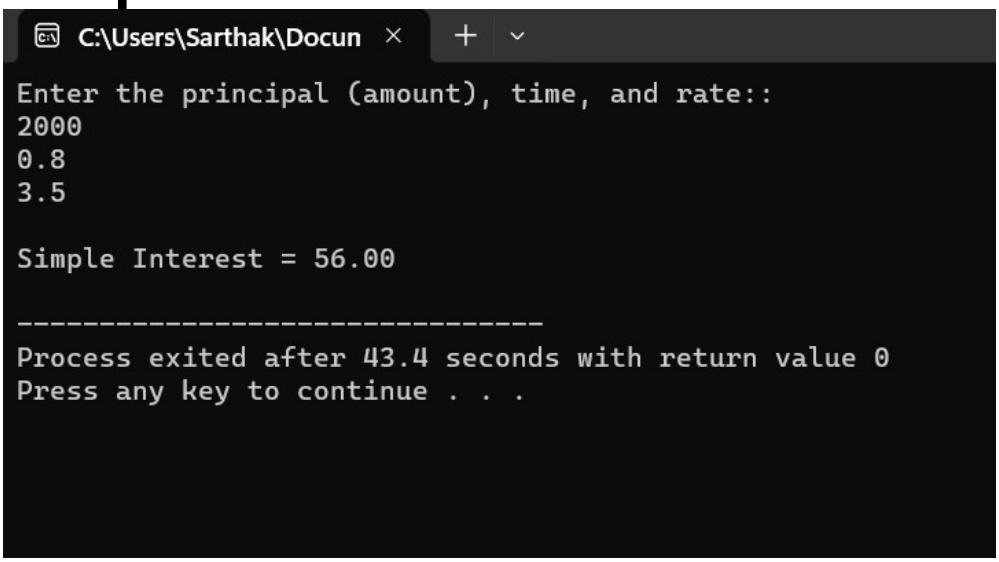
```
#include <stdio.h>
#include <malloc.h> void
main()
{
int i, n, sum = 0; int *a; printf("Enter
the size of array A \n"); scanf("%d",
&n);
a = (int *) malloc(n * sizeof(int));
printf("Enter Elements of the List \n");
for (i = 0; i < n; i++)
{
scanf("%d", a + i);
} for (i = 0; i < n;
i++)
{
sum = sum + *(a + i);  printf("Sum of all elements
in array = %d\n", sum); return 0;
}
```

Q-10. WAP to compute simple interest using pointers.

Ans-10.

```
#include<stdio.h> int main() { float p, t, r, SI;
float *x, *y, *z; // These are the pointer
variables printf("Enter the principal (amount),
time, and rate::\n"); scanf("%f%f%f", &p, &t,
&r); x = &p; y = &t; z = &r;


SI = (*x * *y * *z) / 100; printf("\nSimple
Interest = %.2f\n", SI); return 0;
}
```

Output:



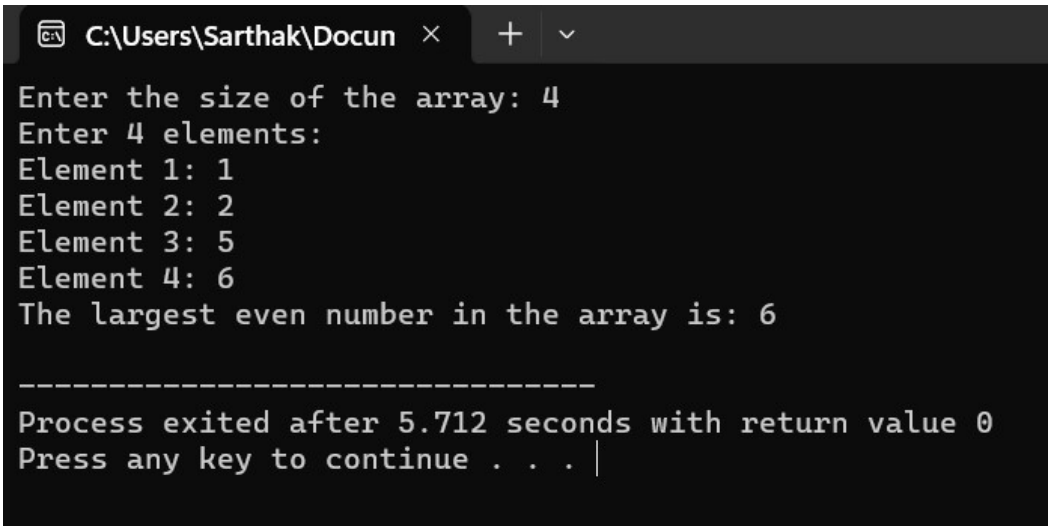
Q-11. Write a program to print largest even number present in an array using pointer to an array.

Ans-11.

```
#include <stdio.h> int findLargestEven(int *arr, int
size) { int largestEven = -1; // Assuming all elements
are nonnegative
for (int i = 0; i < size; i++) { if (arr[i] % 2 ==
0 && arr[i] > largestEven) { largestEven =
arr[i];
}
}
return largestEven;
}
int main() { int
size;

printf("Enter the size of the array: ");
scanf("%d", &size); int arr[size];
printf("Enter %d elements:\n",
size); for (int i = 0; i < size; i++) {
```

```
printf("Element %d: ", i + 1);
scanf("%d", &arr[i]);
}
int *ptr = arr; int largestEven = findLargestEven(ptr, size); if (largestEven != -1) { printf("The largest even number in the array is: %d\n", largestEven);
} else { printf("No even numbers found in the
array.\n");
}
return 0;
}
```

Output:



Week-11 Questions:

Q-1. Write a C function to return the maximum of three integers.

Ans-1.

```
#include<stdio.h> double max3(double
x,double y,double z); void main () {
double i; double a,b,c; clrscr();
printf("Enter the value of x,y,z:\n");
scanf("%lf%lf%lf",&a,&b,&c); i=
max3(a,b,c) ; printf("%lf",i); getch();
}
```

```
double max3(double x,double y,double z) {
double max;
if (x > y) max
= x; else max
= y; if (z >
max) max =
z; return
max;
}
```

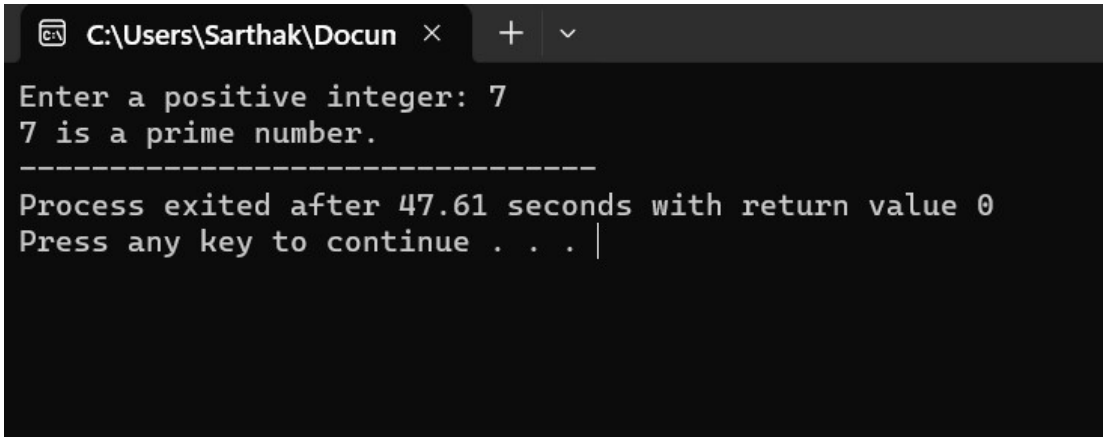
Q-2. **Write a C function to check if a given number is prime or not.**

Ans-2.

```
#include <stdio.h> int main() { int
n, i, flag = 0; printf("Enter a
positive integer: "); scanf("%d",
&n); if (n == 0 || n == 1) flag = 1;
for (i = 2; i <= n / 2; ++i) { if (n % i
== 0) {
flag = 1; break;
}
```

```
} if (flag == 0) printf("%d is a prime
number.", n); else printf("%d is not a
prime number.", n); return 0;
}
```

Output:



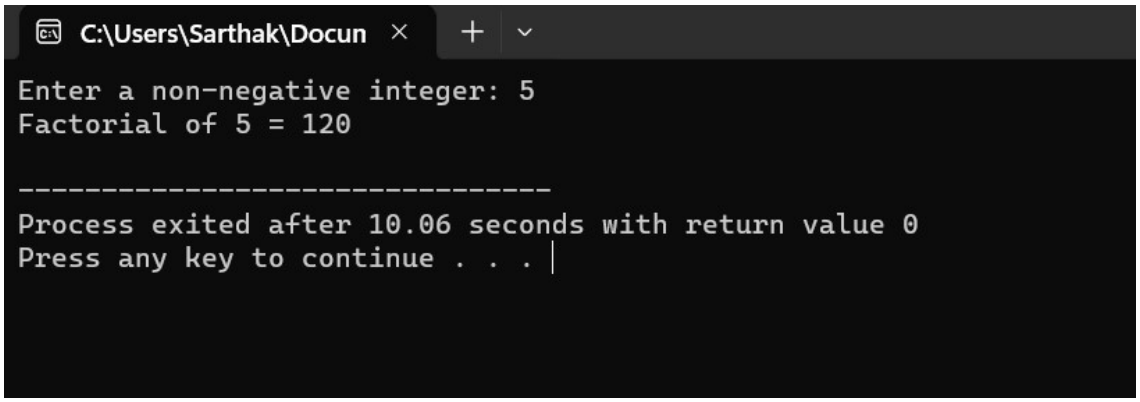
Q-3 Write a C function to compute the factorial of a non-negative integer.

Ans-3.

```
#include <stdio.h> unsigned long
long factorial(int n) {     if (n == 0 | |
n == 1) {         return 1;     } else {
return n * factorial(n - 1);
    }
}
```

```
int main() {     int num;     printf("Enter a non-
negative integer: ");     scanf("%d", &num);     if
(num < 0) {         printf("Factorial is not defined
for negative numbers.\n");
    } else {         unsigned long long result =
factorial(num);         printf("Factorial of %d =
%llu\n", num, result);
    }
    return 0;
}
```

Output:



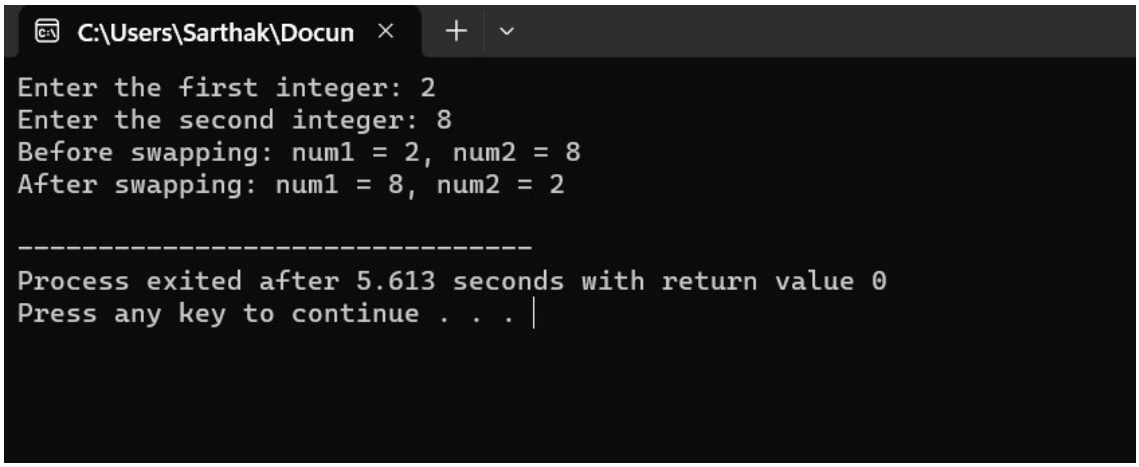
Q-4 Write a C function to swap the values of two integers in actual arguments.

Ans-4.

```
#include <stdio.h> void
swapIntegers(int *a, int *b) {
int temp = *a;     *a = *b;
   *b = temp;
}
int main() {     int
num1, num2;
printf("Enter the
first integer: ");
scanf("%d",
&num1);
printf("Enter the
second integer: ");
scanf("%d",
&num2);
printf("Before
swapping: num1 =
%d, num2 =
%d\n", num1,
num2);
swapIntegers(&nu
```

```
m1, &num2);
printf("After
swapping: num1 =
%d, num2 =
%d\n", num1,
num2);
   return 0;
}
```

Output:



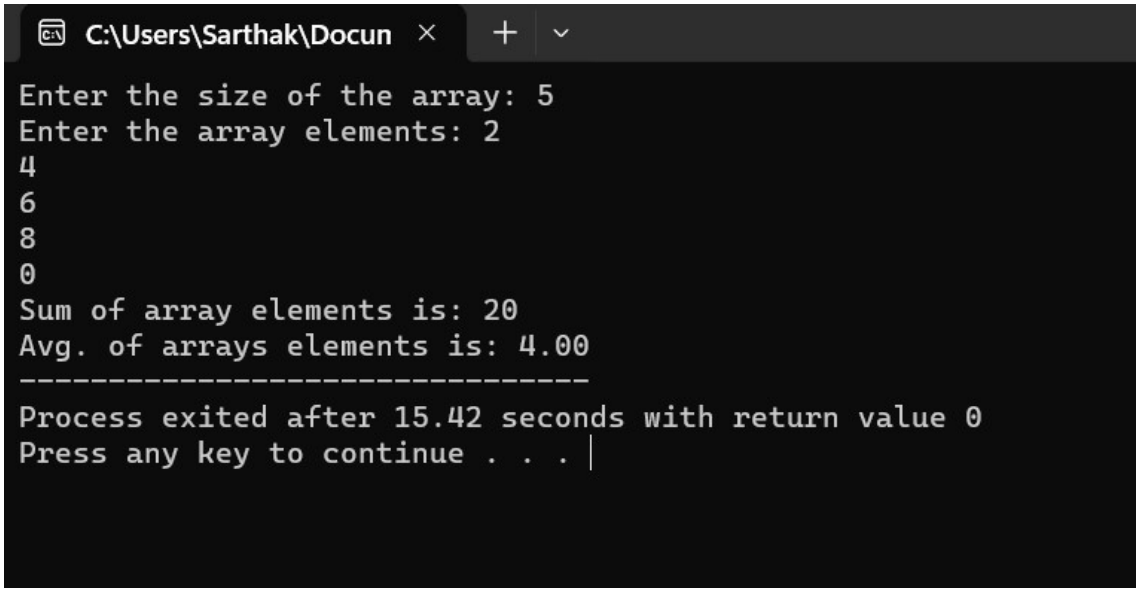
Q-5. Write a C function to compute the sum and average of an array of integers.

Ans-5.

```
#include <stdio.h> int main(){ int
arr[100], size, sum; float avg;
```

```
printf("Enter the size of the array:
"); scanf("%d", &size); printf("Enter
the array elements: "); for(int i = 0; i
< size; i++){ scanf("%d", &arr[i]);
}
sum = 0;
for(int i = 0; i < size; i++){
sum = sum + arr[i];
}
avg = sum / size;
printf("Sum of array elements is: %d", sum);
printf("\nAvg. of arrays elements is: %.2f", avg);
return 0;
}
```

Output:



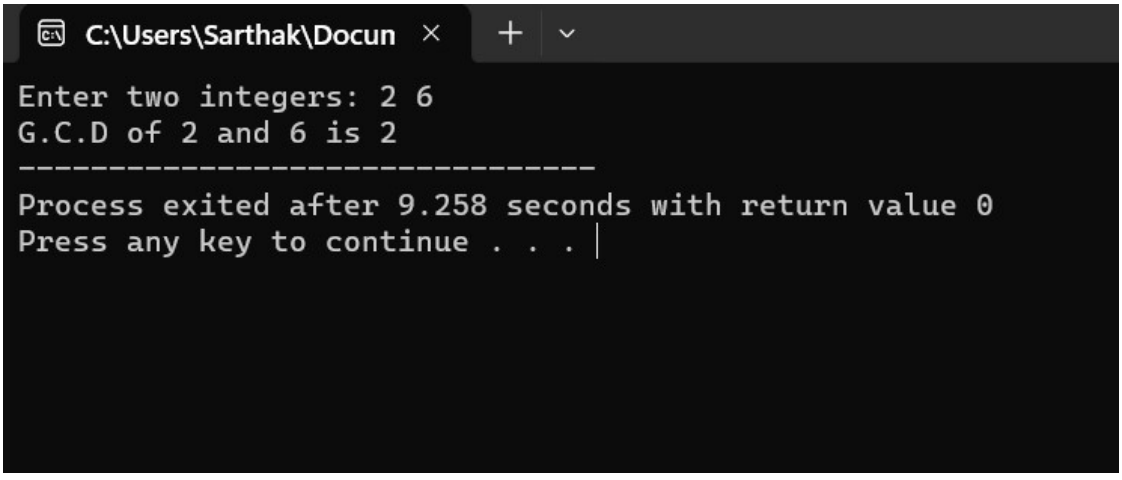
Q-6. Write a C function to find the GCD (Greatest Common Divisor) of two non negative integers using Euclid's algorithm.

Ans-6.

```
#include <stdio.h> int

main()

{

int n1, n2, i, gcd; printf("Enter

two integers: "); scanf("%d

%d", &n1, &n2); for(i=1; i <=

n1 && i <= n2; ++i)

{
```

```
if(n1%i==0 && n2%i==0)
gcd = i;
}
printf("G.C.D of %d and %d is %d", n1, n2, gcd);
return 0;
}
```

Output:



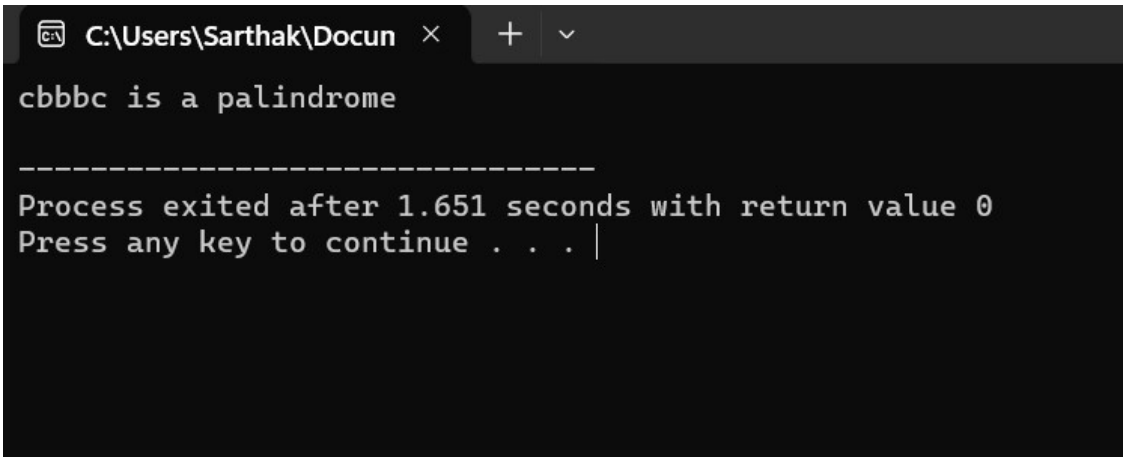
Q-7. Write a C function to check if a given string is a valid palindrome, considering only alphanumeric characters and ignoring cases.

Ans-7.

```
#include <stdio.h>
#include <string.h>
int main()
```

```
{
char str[] = { "cbbbc" }; int l = 0; int h =
strlen(str) - 1; while (h > l) { if (str[l++]
!= str[h--]) { printf("%s is not a
palindrome\n", str); return 0;
}
}
printf("%s is a palindrome\n", str);
return 0;
}
```

Output:

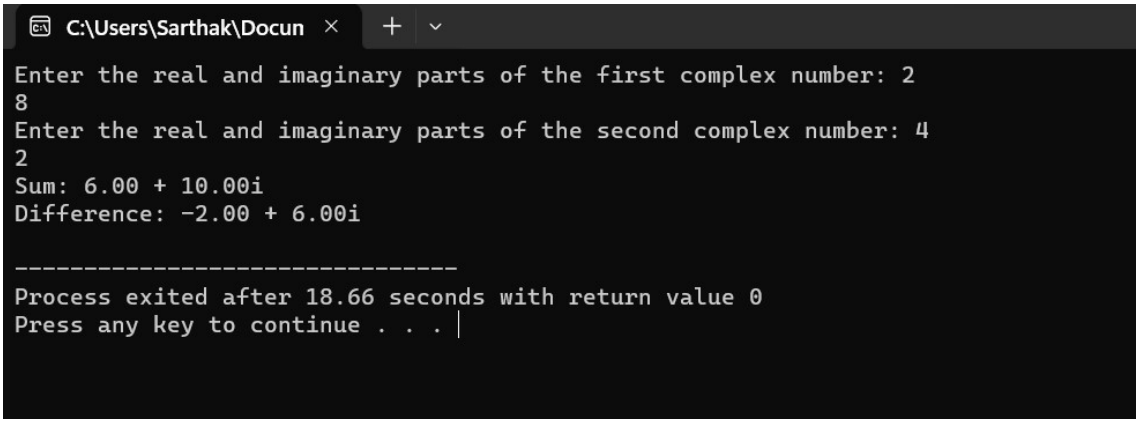


Q-8. Write a C function to calculate the sum and difference of two complex numbers.

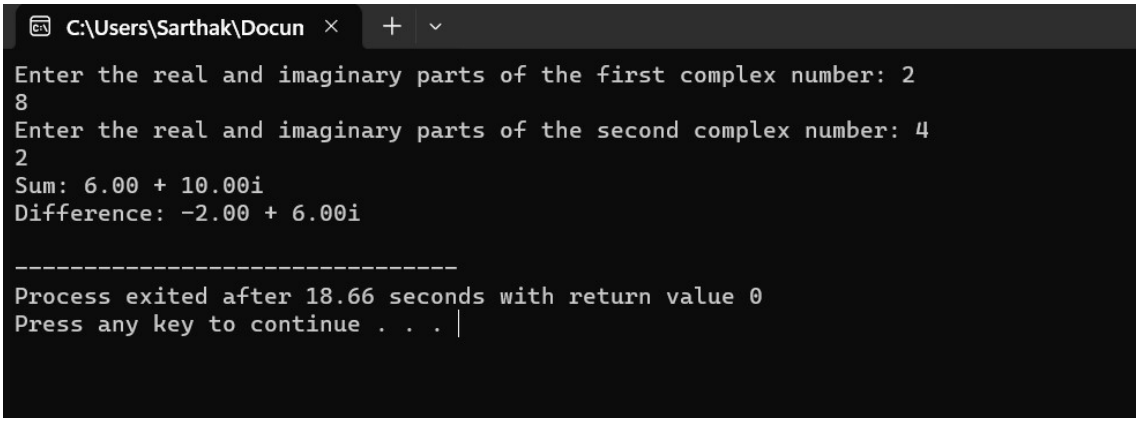
Ans-8.

```
#include <stdio.h> void addComplex(float real1,
float imaginary1, float real2, float imaginary2, float
*resultReal, float *resultImaginary) {
    *resultReal = real1 + real2;
    *resultImaginary = imaginary1 + imaginary2;
}


int main() {     float real1, imaginary1, real2,
imaginary2;     printf("Enter the real and imaginary
parts of the first complex number: ");     scanf("%f %f",
&real1, &imaginary1);     printf("Enter the real and
imaginary parts of the second complex number: ");
scanf("%f %f", &real2, &imaginary2);     float sumReal,
sumImaginary;     addComplex(real1, imaginary1,
real2, imaginary2,
&sumReal, &sumImaginary);     printf("Sum: %.2f
+ %.2fi\n", sumReal, sumImaginary);
printf("Difference: %.2f + %.2fi\n", real1 - real2,
imaginary1 - imaginary2);


    return 0;
}
```

Output:


C:\Users\Sarthak\Docun
Enter the real and imaginary parts of the first complex number: 2
8
Enter the real and imaginary parts of the second complex number: 4
2
Sum: 6.00 + 10.00i
Difference: -2.00 + 6.00i

Process exited after 18.66 seconds with return value 0
Press any key to continue . . .


C:\Users\Sarthak\Docun
Enter the real and imaginary parts of the first complex number: 2
8
Enter the real and imaginary parts of the second complex number: 4
2
Sum: 6.00 + 10.00i
Difference: -2.00 + 6.00i

Process exited after 18.66 seconds with return value 0
Press any key to continue . . .