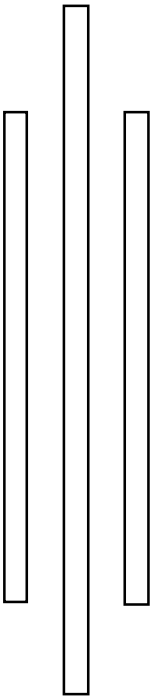
TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

Lab Sheet #7



PURWANCHAL CAMPUS

DHARAN-8

Submitted by:

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Faculty: BCT

Group: I/I 'A'

Date: .....

Submitted to:

Department of

Electronics & Computer

Engineering

Checked by: .....

Title:

Write a program to find separately the sum of the positive and negative integer elements of an array of size 10. Pass this array to a function called sortarray(int[]) and display the array elements into ascending order.

Objective:

- To understand the programming using Loop & nested loop Statements (for, while, do-while) and functions in C.

Problem Analysis:

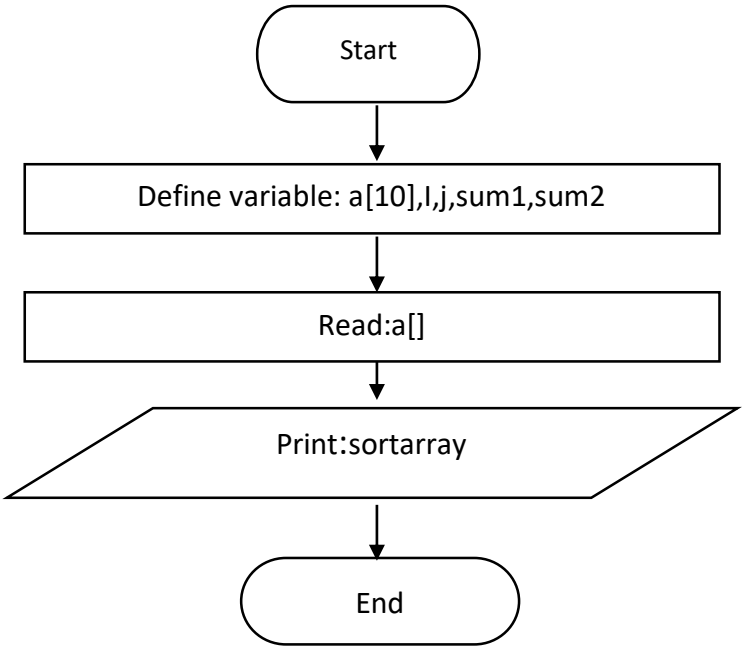
Based on problem, it is required to define a array and four integer variable. Different operation should performed using user defined function.

Input variables	Output variables	Necessary header files/functions/macros
a[10],j,i(int type)	Sum1,sum2(int type)	stdio.h coino.h scanf() printf() math.h display() read() sortarray()

Algorithm:

1. Start
2. Define variables: a[]
3. Print:sortarray
4. Stop

Flowchart:



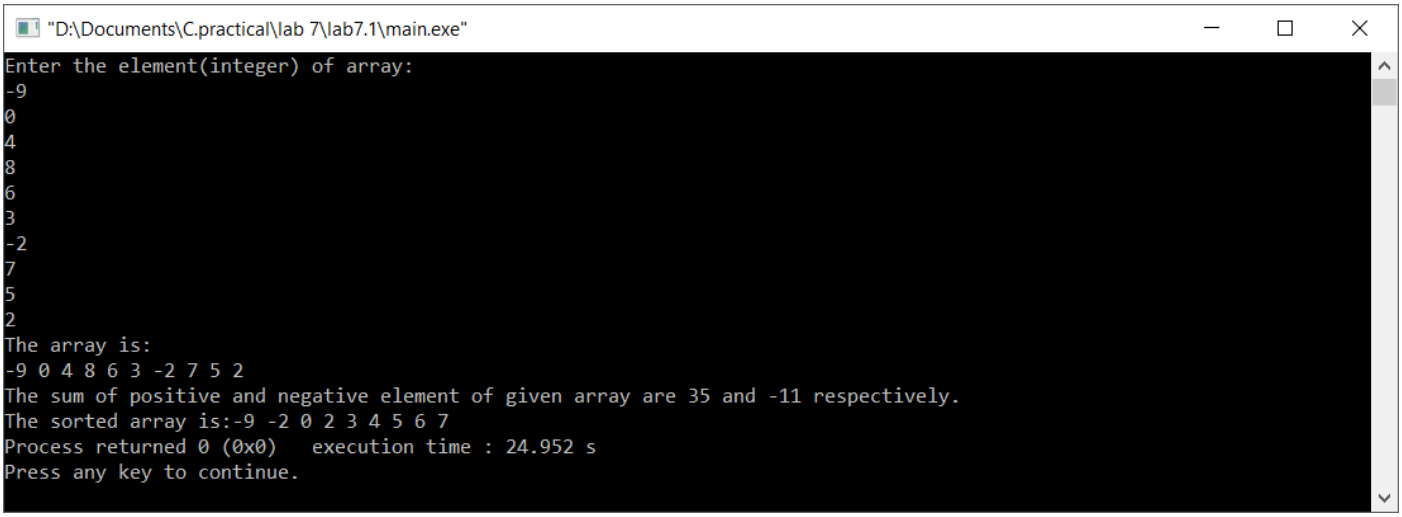
Code:

```
#include <stdio.h>
#include <stdlib.h>
void read(int a[])
{
   int i;
   for(i=0;i<10;i++)
   {
      scanf("%d",&a[i]);
   }
}

void display(int a[])
{
   int i;
```

```
    for(i=0;i<10;i++)
    {
        printf("%d ",a[i]);
    }
}

void sortarray(int a[])
{
    int i,j,temp;
    for(i=0;i<10-1;i++)
   {
      for(j=i+1;j<10;j++)
    {
          if(a[i]>a[j])
          {
              temp=a[i];
              a[i]=a[j];
              a[j]=temp;
          }
          }
    printf("%d ",a[i]);
   }

}

int main()
{
    int a[10],i,j,sum1=0,sum2=0;
```

```
    printf("Enter the element(integer) of array:\n");
    read(a);
    printf("The array is:\n");
    display(a);

    for(i=0;i<10;i++)
    {
        if(a[i]<0)
            sum1=sum1-a[i];
        else
            sum2=sum2+a[i];
    }

    printf("\nThe sum of positive and negative element of given array are %d and -%d respectively.\n",sum2,sum1);
    printf("The sorted array is:");
    sortarray(a);

    return 0;
}
```

Output (Compilation, Debugging and Testing):



Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with formatted input/output functions with user defined functions.

Title:

Write a program to enter 10 floating numbers in an array and display it.

Objective:

- To understand the programming using Loop & nested loop Statements (for, while, do-while) and to be familier with array operation in C.

Problem Analysis:

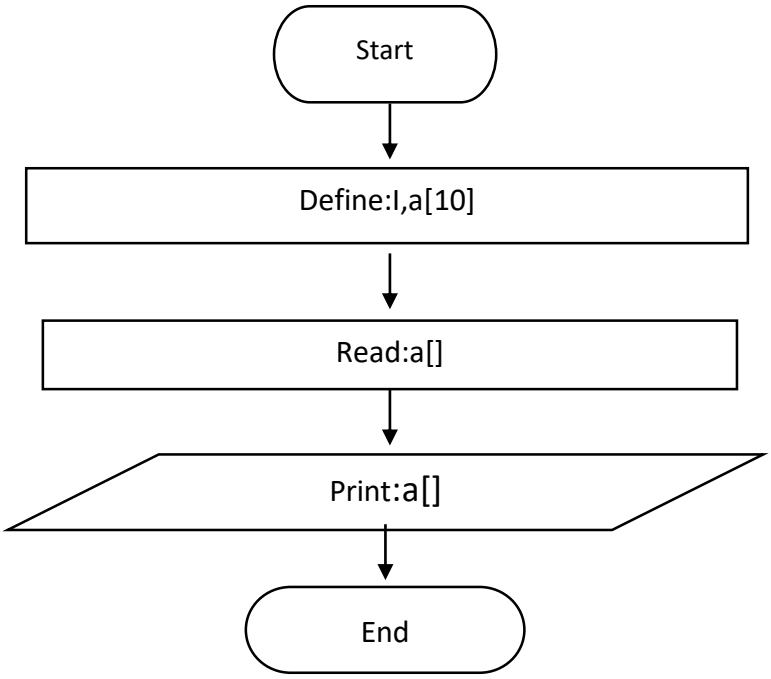
Based on problem, it is required to define one integer variable and one floating array of size 10. Different operation should performed using for loop.

Input variables	Necessary header files/functions/macros
i(int type) a[10](float)	stdio.h coino.h scanf() printf()

Algorithm:

1. Start
2. Define :a[],i
3. Read:a[]
4. print: a[]
5. Stop

Flowchart:

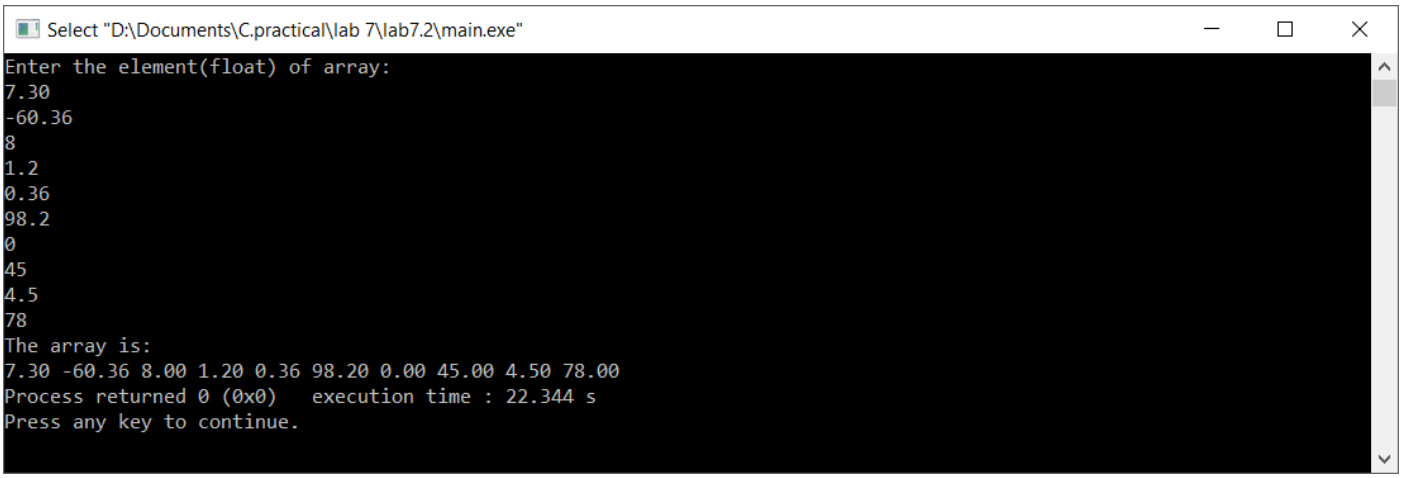


Code:

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

int main()
{
   float a[10];
   int i;

   printf("Enter the element(float) of array:\n");

   for(i=0;i<10;i++)
   {
      scanf("%f",&a[i]);
   }
```

```
    printf("The array is:\n");
    for(i=0;i<10;i++)
    {
        printf("%.2f ",a[i]);
    }
    return 0;
}
```

Output (Compilation, Debugging and Testing):



Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand array operations in C.

Title:

Write a program to initialize one dimensional array of size 8 and display the sum and average of array elements

Objective:

- To understand the use of functions and array operation in C.

Problem Analysis:

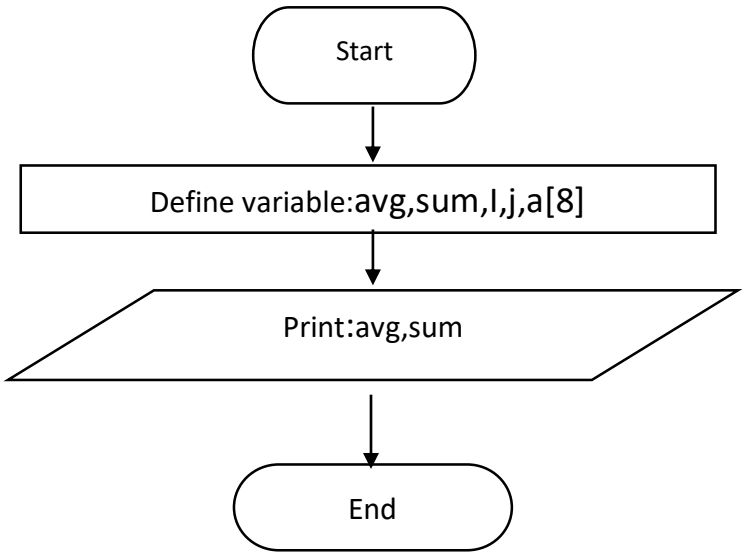
Based on problem, it is required to define three integer variable and two float variables. Different operation are performed using for loop.

Input variables	Necessary header files/functions/macros
I,j,a[8](int type) Avg,sum(float type)	stdio.h coino.h scanf() printf()

Algorithm:

1. Start
2. Define variables: avg, sum,I,j,a[8]
3. Read:a[]
4. Print:avg,sum
5. Stop

Flowchart:

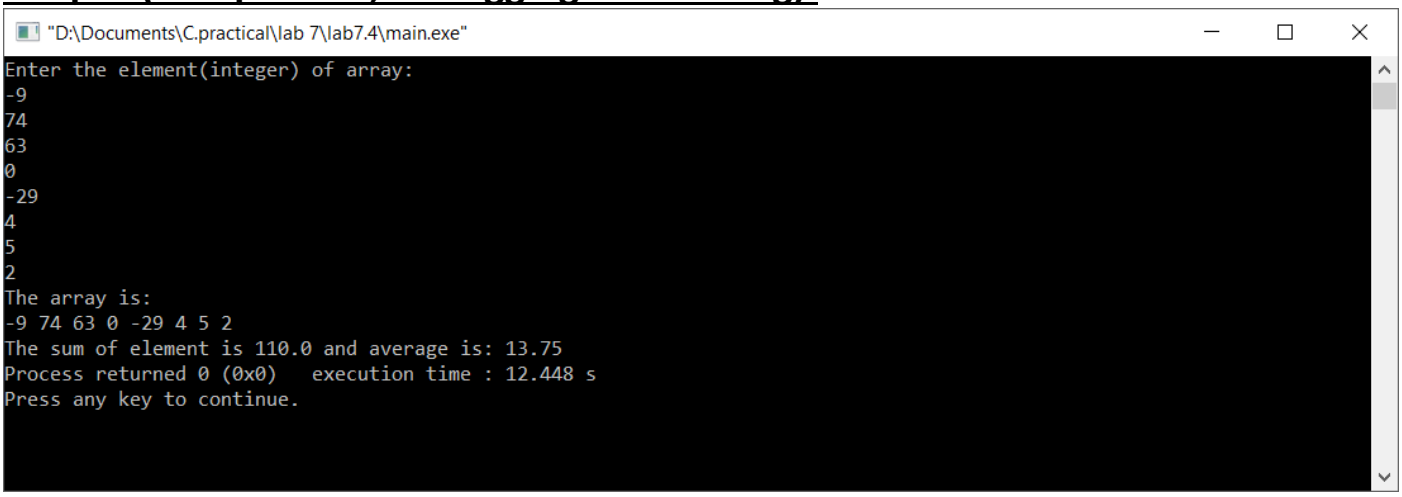


Code:

```
#include <stdio.h>

#include <stdlib.h>


int main()
```

```
{
   float avg,sum=0;
   int j,i,a[8];

   printf("Enter the element(integer) of array:\n");

   for(i=0;i<8;i++)
   {
      scanf("%d",&a[i]);
   }

   printf("The array is:\n");
   for(i=0;i<8;i++)
   {
      printf("%d ",a[i]);
   }

   for(i=0;i<8;i++)
  {
     sum=sum+a[i];
  }
   avg=(float)(sum/8);

   printf("\nThe sum of element is %.1f and average is: %.2f",sum,avg);
   return 0;
}
```

Output (Compilation, Debugging and Testing):



Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand array operations in C.

Title:

Write a program to read two matrices of order 3 * 2, add them and display the resultant matrix in matrix form.

Objective:

- To understand the programming using for loop and array operations in C.

Problem Analysis:

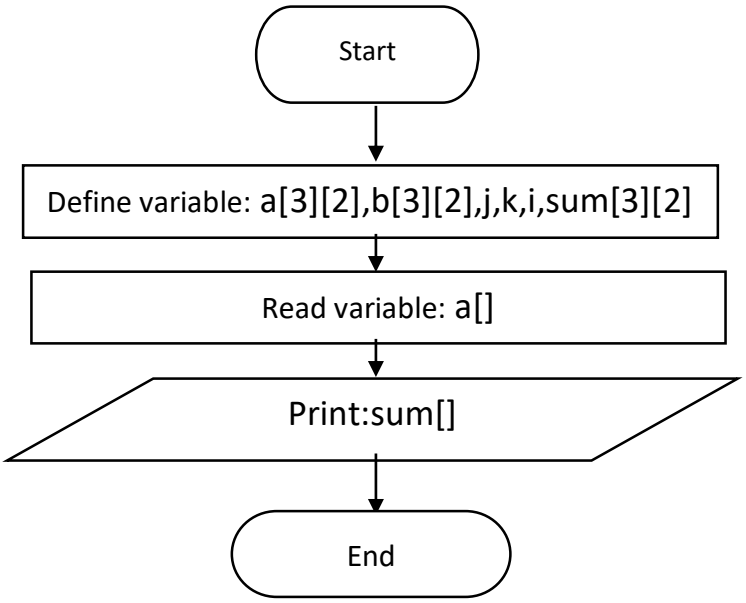
Based on problem, it is required to define five integer variable and two array of size [3][2]. Different operation should performed using if statement.

Input variables	Necessary header files/functions/macros
a[3][2],b[3][2],j,k,i,sum[3][2] (int type)	stdio.h coino.h scanf() printf()

Algorithm:

1. Start
2. Define variables: a[3][2],b[3][2],j,k,i,sum[3][2]
3. Read:a[]
4. Print:sum[]
5. Stop

Flowchart:



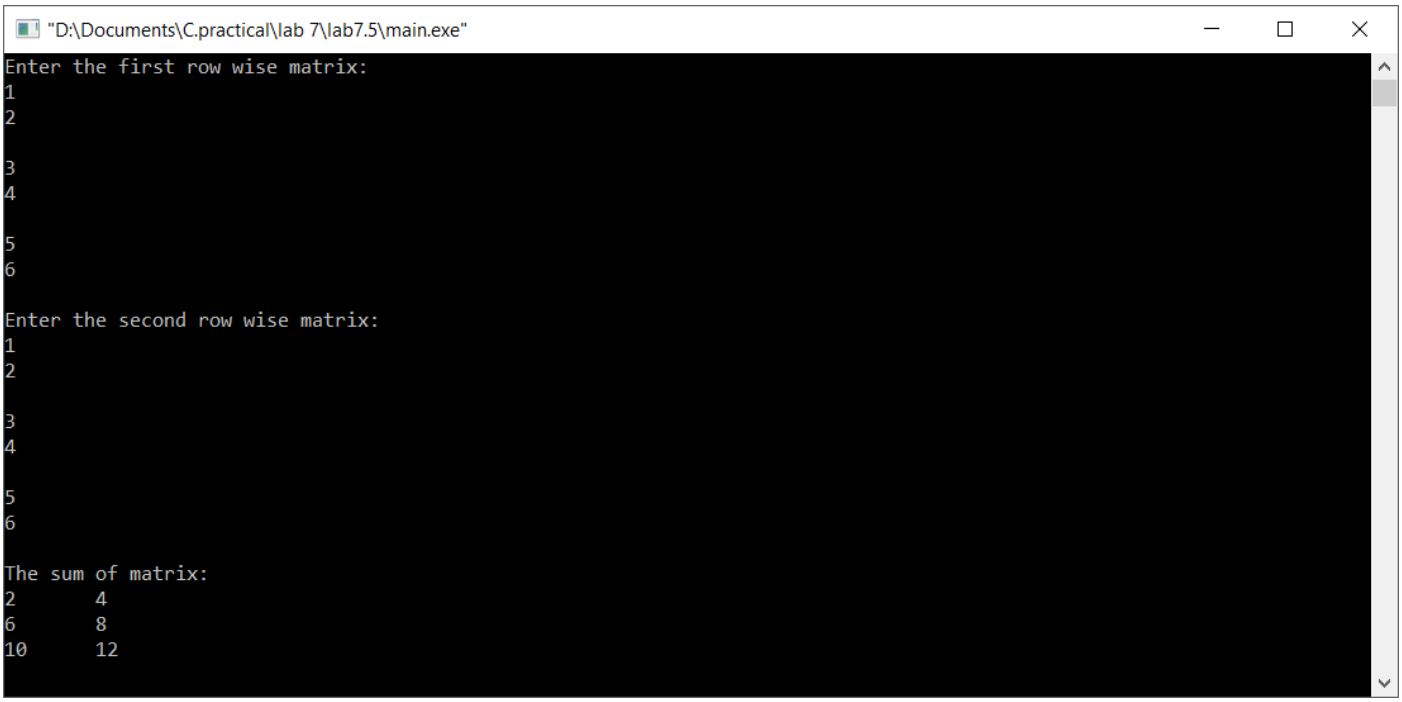
Code:

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

int main()
{
   int a[3][2],b[3][2],j,k,i,sum[3][2];

   printf("Enter the first row wise matrix:\n");

   for(i=0;i<3;i++)
```

```
{
   for(j=0;j<2;j++)
   {

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

   }
   printf("\n");
}

 printf("Enter the second row wise matrix:\n");

for(i=0;i<3;i++)
{
   for(j=0;j<2;j++)
   {
      scanf("%d",&b[i][j]);
   }
   printf("\n");
}

 printf("The sum of matrix:\n");

for(i=0;i<3;i++)
{
   for(j=0;j<2;j++)
   {
      printf("%d\t",a[i][j]+b[i][j]);
   }
```

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


    getch();
    return 0;
}
```

Output (Compilation, Debugging and Testing):



Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand use of for loop and array operation in C.

Title:

Write a program to multiply two 3*3 matrix.

Objective:

- To understand the programming using array operation, for loop and if statement in C.

Problem Analysis:

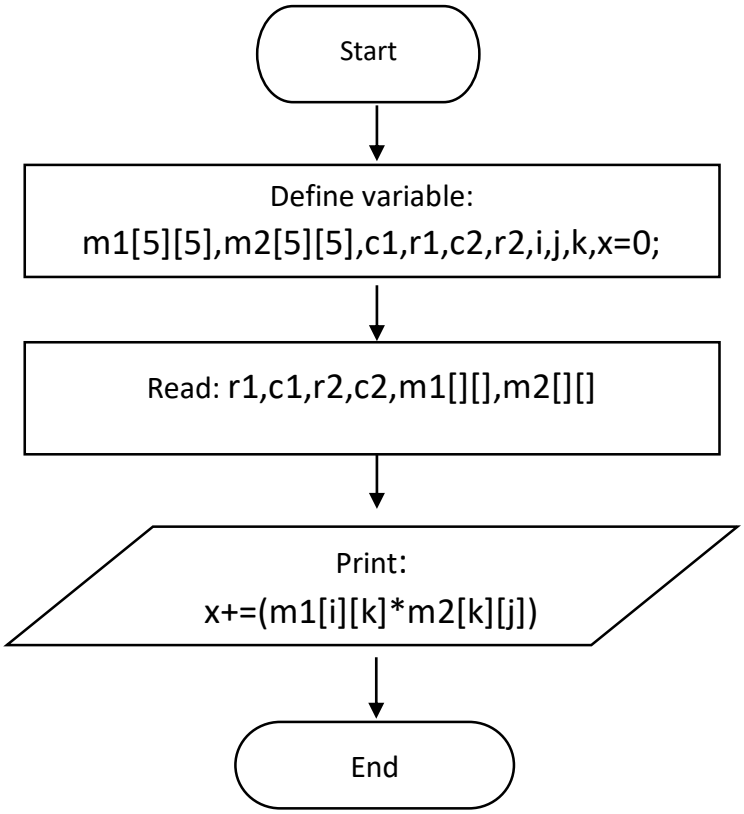
Based on problem, it is required to define two array of type integer. Different operation should performed using if statement and for loop.

Input variables	Necessary header files/functions/macros
m1[5][5],m2[5][5],c1,r1,c2,r2,i,j,k,x=0 (int type)	stdio.h coino.h printf()

Algorithm:

1. Start
2. Define variables: m1[5][5],m2[5][5],c1,r1,c2,r2,i,j,k,x=0
3. Read: r1,c1,r2,c2,m1[][],m2[][]
4. Print: x+=(m1[i][k]*m2[k][j])
5. Stop

Flowchart:



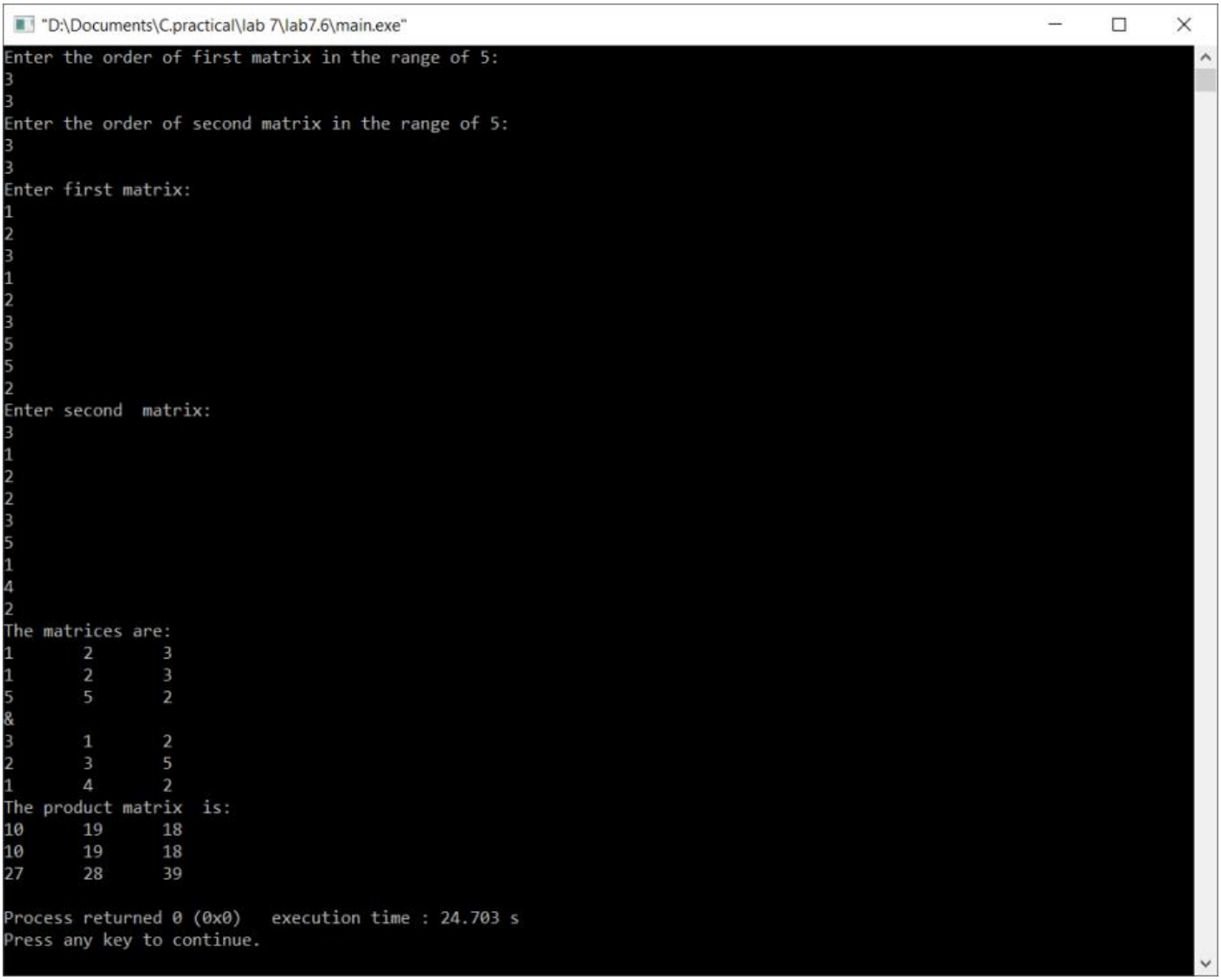
Code:

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

int main()
{
   int m1[5][5],m2[5][5],c1,r1,c2,r2,i,j,k,x=0;

   printf("Enter the order of first matrix in the range of 5:\n");
   scanf("%d%d",&r1,&c1);

   printf("Enter the order of second matrix in the range of 5:\n");
   scanf("%d%d",&r2,&c2);

   if(c1!=r2)
   {
      printf("Multiplication is not possible!!!");
      exit(0);
   }

   printf("Enter first matrix:\n");
   for(i=0;i<r1;i++)
   {
      for(j=0;j<c1;j++)
      {
         scanf("%d",&m1[i][j]);
      }
```

```
    }

    printf("Enter second  matrix:\n");
    for(i=0;i<r2;i++)
    {
       for(j=0;j<c2;j++)
       {
          scanf("%d",&m2[i][j]);
       }
    }
    printf("The matrices are:\n");

    for(i=0;i<r1;i++)
    {
       for(j=0;j<c1;j++)
       {
          printf("%d\t",m1[i][j]);
       }
       printf("\n");
    }

printf("&\n");
    for(i=0;i<r2;i++)
    {
       for(j=0;j<c2;j++)
       {
          printf("%d\t",m2[i][j]);
       }
```

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

   printf("The product matrix  is:\n");
   for(i=0;i<r1;i++)
   {
      for(j=0;j<c2;j++)
      {
        for(k=0;k<c1;k++)
        {

        x+=(m1[i][k]*m2[k][j]);
      }
      printf("%d\t",x);
      x=0;
   }
   printf("\n");
   }
getch();
}
```

Output (Compilation, Debugging and Testing):



Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to understand about C data types with use for loop and array operations in C.

Title:

Write a program to read a string and check for palindrome without using string related function

Objective:

- To understand use of for loop, if statement and array operation in C.

Problem Analysis:

Based on problem, it is required to define four integer and one character variables. Different array operation should perform using for loop and if statement in C.

Algorithm:

1. Start
2. Define variables: ch[],len,j,I,flag=0
3. Read:ch[]
   len=strlen(ch);

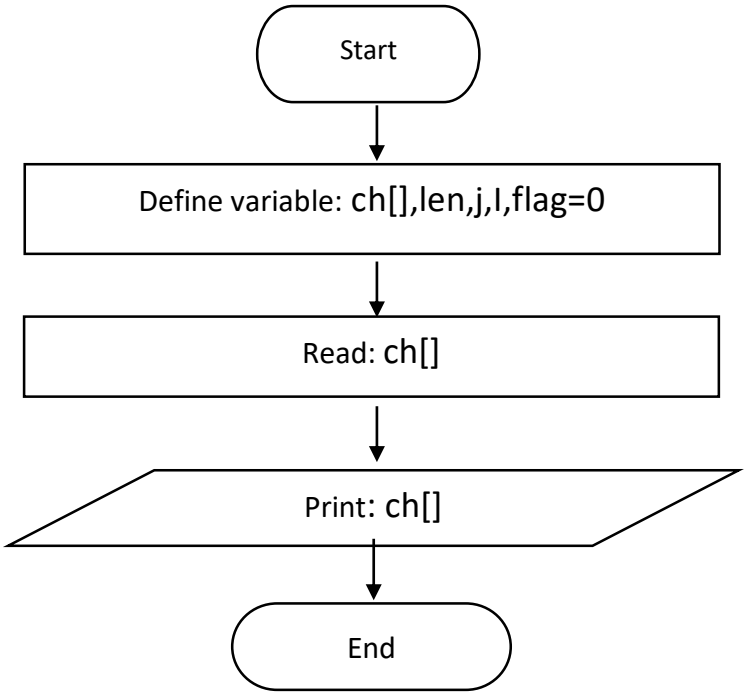
```
for(i=0;i<(len/2);i++)
{

   if(ch[i]!=ch[len-1])
   {

      flag=1;

   }
      len--;

}
```

4. Print:
   if(flag==1)

```
printf("\n%s is not palidrome!!!",ch);

if(flag==0)
   printf("\n%s is palidrome",ch);
```

5. Stop

Flowchart:

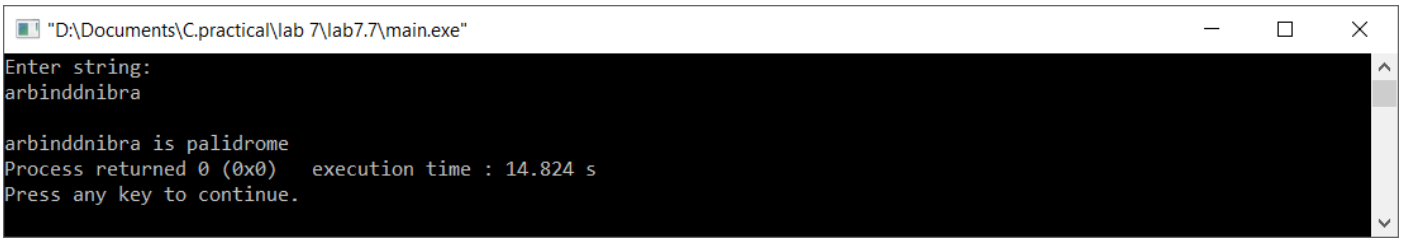


Code:

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

int main()
{
   char ch[100];
   int len,i,j,flag=0;

   printf("Enter string:");
   gets(ch);

   len=strlen(ch);

   for(i=0;i<(len/2);i++)
   {
```

```
    if(ch[i]!=ch[len-1])
    {

       flag=1;

    }
       len--;

  }

  if(flag==1)
    printf("\n%s is not palidrome!!!",ch);
  if(flag==0)
    printf("\n%s is palidrome",ch);
 return 0;
}
```

Output (Compilation, Debugging and Testing):



Discussion & Conclusion:

In this lab of C programming, based on the focused objective(s) to array operation, uses of for loop and if statement in C.

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