DATA STRUCTURE AND ANALYSIS OF ALGORITHM
KCA 253 : Session 2020-21

PROGRAM OF MULTIPLICATION

```
#include<stdio.h>
void inputarray(int [][10],int,int);
void outputarray (int [][10],int,int);
void multiarray (int [][10],int [][10],int [][10],int,int,int);
void main()
{
  int array1[10][10], array2[10][10], array3[10][10],row1,col1,row2,col2;
  printf("enter the value of row and col for array 1...");
   scanf("%d %d",&row1,&col1);

  printf("enter the value of row and col for array 2...");
        scanf("%d %d",&row2,&col2);

 printf("enter the first array \n");
     inputarray (array1,row1,col1);

 printf("enter the second array \n");
inputarray (array2,row2,col2);

 printf("array1\n");
        outputarray (array1,row1,col1);

 printf ("array2\n");
        outputarray (array2,row2,col2);

        if(col1==row2)
        {

        multiarray (array1, array2, array3,row1,col1,col2);
        printf ("multiplication of array\n");
              outputarray (array3,row1,col2);
        }
        else
         {
                printf ("multiplication can't be possible \n");
        }

}
void inputarray (int x[][10],int r, int c)
{
        int i,j;
        for(i =0;i<r ; i++)
        {
```

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

                printf("enter the value %d,%d ",i,j);
                scanf("%d",&x[i][j]);
                 }
        }
}
void outputarray (int x[][10],int r, int c)
{
        int i , j;
        for (i =0;i<r; i++)
         {
           for(j=0;j<c ; j++ )
      {
           printf("%d ",x[i][j]);
       }
     }

                printf("\n");

}
void multiarray(int x[][10],int y[][10],int z[][10],int r1,int c1,int c2)
 {
   int i,j,k;
        for(i=0;i<r1;i++)
        {
                for(j=0;j<c2;j++)
                {
                   z[i][j]=0;
                   for(k=0;k<c1;k++)
                   {
                              z[i][j] += x[i][k]*y[k][j];
                       }
                }
        }
}
```

OUTPUT:

```
enter the value of row and col for array 1...2
2
enter the value of row and col for array 2...2
2
enter the first array
enter the value 0,0 2
```

```
enter the value 0,1 3
enter the value 1,0 2
enter the value 1,1 3
enter the second array
enter the value 0,0 2
enter the value 0,1 3
enter the value 1,0 2
enter the value 1,1 3
array1
2 3 2 3
array2
2 3 2 3
multiplication of array
10 15 10 15
```

PROGRAM OF ADDITION

```
#include <stdio.h>
int insert_array(); int display_array(); int addition();
int arr1[5][5],arr2[5][5],arr3[5][5]; int i,j;
int main()
{
int choice,repeat;
   do
    {
     printf("enter your choice \n 1.insertion of matrices.\n2.display of an
matrices.\n3.addition of a matrices." );
     scanf("%d",&choice);
     switch(choice)
     {
        case 1:insert_array();break;
        case 2:display_array();break;
        case 3:addition();break;
   }
     printf("enter 1 to do more operation\n");
     scanf("%d",&repeat);
    } while(repeat==1);

  return 0;

}
int insert_array()
{ printf("Enter the elements of array1\n");
```

```
for(i=0; i<3; i++)
 {   for(j=0;j<3;j++)
   {      printf("Enter value for arr1[%d][%d]:", i, j);
          scanf("%d", &arr1[i][j]);
   }

 }  printf("Enter the elements of array2\n");
    for(i=0; i<3; i++)
 {   for(j=0;j<3;j++)
   {      printf("Enter value for arr2[%d][%d]:", i, j);
          scanf("%d", &arr2[i][j]);
   }
 }      return 0;
}
int display_array()
{

      printf("elements of array1 are:\n");
      for(i=0;i<3; i++)
      {
         for(j=0;j<3;j++)
       {
          printf("%d ", arr1[i][j]);
          printf(" ");

       }
       printf("\n");  }

      printf("elements of array2 are :\n");
      for(i=0;i<3; i++)
      {
         for(j=0;j<3;j++)
          {
             printf("%d ", arr2[i][j]);
             printf(" ");

          }
          printf("\n");
      }

}
int addition()
{
   printf("addition of array elements are : \n");
   for(i=0;i<3;i++)
```

```
        {
        for(j=0;j<3;j++)
         {
            arr3[i][j] = arr1[i][j] + arr2[i][j];
             printf("%d",arr3[i][j]);
             printf(" ");
         }
         printf("\n");
    }

}
```

OUTPUT:

```
enter your choice
 1.insertion of matrices.
2.display of an matrices.
3.addition of a matrices.1
Enter the elements of array1
Enter value for arr1[0][0]:1
Enter value for arr1[0][1]:2
Enter value for arr1[0][2]:1
Enter value for arr1[1][0]:2
Enter value for arr1[1][1]:1
Enter value for arr1[1][2]:2
Enter value for arr1[2][0]:1
Enter value for arr1[2][1]:2
Enter value for arr1[2][2]:1
2Enter the elements of array2
Enter value for arr2[0][0]:
Enter value for arr2[0][1]:1
Enter value for arr2[0][2]:2
Enter value for arr2[1][0]:1
Enter value for arr2[1][1]:2
Enter value for arr2[1][2]:1
Enter value for arr2[2][0]:2
Enter value for arr2[2][1]:1
Enter value for arr2[2][2]:2
enter 1 to do more operation
1
enter your choice
 1.insertion of matrices.
2.display of an matrices.
3.addition of a matrices.2
elements of array1 are:
```

```
1  2  1
2  1  2
1  2  1
elements of array2 are :
2  1  2
1  2  1
2  1  2
enter 1 to do more operation
1
enter your choice
 1.insertion of matrices.
2.display of an matrices.
3.addition of a matrices.3
addition of array elements are :
3 3 3
3 3 3
3 3 3
enter 1 to do more operation
```