**ASSIGNMENT NO:9** **DATE:18/11/2014**

**PROGRAM TITLE: Given two matrices perform matrix multiplication. The order of the matrices will be given by the user.**

**PROGRAM ALGORITHM:**

```
algo matrixmul()
{
      /*a is 1st matrix, b is 2nd matrix and c is resultant matrix*/
      input size of a
      input size of b
      if(column size of a not equal to row size of b)
      {
            print "Multiplication not possible"
            stop program
      }
      input elements of a
      input elements of b
      for(i=1 to row size of a)
      {
            for(j=1 to column size of b)
            {
                  set s to zero
                  for(k=1 to column size of a)
                  {
                        add a[i][k] multiplied with b[k][j] to s
                  }
                  put s into c[i][j]
            }
      }
      print c
}
```

**PROGRAM CODE:**

```
/*C Program to Multiply two 2D Matrices*/
#include <stdio.h>
#include <stdlib.h>
int main()
{
      int i,j,s=0,k,m,n,x,y;

      /*Read size of Matrices*/
      printf("Enter size of A separated by space:");
      scanf("%d %d",&m,&n);
      printf("Enter size of B separated by space:");
      scanf("%d %d",&x,&y);

      /*Check if Matrices are compatible for Multiplication*/
      if(n!=x)
      {
            printf("The arrays cannot be multiplied.\n");
            exit(0);
```

```
	}
	int a[m][n],b[x][y],c[m][y];

	/*Read the Matrices*/
	printf("Enter A of size %d by %d\n",m,n);
	for(i=0;i<m;i++)
	{
		for(j=0;j<n;j++)
		{
			scanf("%d",&a[i][j]);
		}
	}
	printf("Enter B of size %d by %d\n",x,y);
	for(i=0;i<x;i++)
	{
		for(j=0;j<y;j++)
		{
			scanf("%d",&b[i][j]);
		}
	}

	/*Multiply the Matrices and store it in a third Matrix*/
	for(i=0;i<m;i++)
	{
		for(j=0;j<y;j++)
		{
			s=0;
				for(k=0;k<n;k++)
				{
					s=s+(a[i][k]*b[k][j]);
				}
			c[i][j]=s;
		}
	}

	/*Print the Result*/
	printf("The Answer is\n");
	for(i=0;i<m;i++)
	{
		for(j=0;j<y;j++)
		{
			printf("%d\t",c[i][j]);
		}
		printf("\n");
	}
	return 0;
}
```

**OUTPUT:**

**Set 1:**

```
Enter size of A separated by space:2 3
Enter size of B separated by space:3 2
Enter A of size 2 by 3
1 2 3 4 5 6
```

```
Enter B of size 3 by 2
9 8 7 6 5 4
The Answer is
38    32
101   86
```

**Set 2:**

```
Enter size of A separated by space:2 3
Enter size of B separated by space:4 5
The Matrices cannot be multiplied.
```

**DISCUSSION:**

The Program works for integer matrices. While compiling the program in the initial stages, we found that the exit function would not work until we included stdlib.h