

## Some programs in C - Part 6

### Matrix Multiplication

#### The Program

```
#include <stdio.h>

#define MAX 10

main()
{
    int i, j, k, m1, m2, n1, n2;
    float A[MAX][MAX], B[MAX][MAX], C[MAX][MAX];

    printf("TO FIND A x B, INSERT ORDER OF A (row & column): ");
    scanf("%d%d",&m1,&n1);
    printf("\nINSERT ORDER OF B (row, column): ");
    scanf("%d%d",&m2,&n2);

    if(n1 != m2)
    {
        printf("\nA x B CANN'T BE COMPUTED");
        return 0;
    }

    printf("\nINPUT A MATRIX ROW-WISE\n\n");
    for(i=0; i<m1; i++)
    {
        printf("ROW-%d : ",i+1);
        for(j=0; j<n1; j++)
        {
            scanf("%f",&A[i][j]);
        }
    }

    printf("\nINPUT B MATRIX ROW-WISE\n\n");
    for(i=0; i<m2; i++)
    {
        printf("ROW-%d : ",i+1);
```

```

    for(j=0; j<n2; j++)
    {
        scanf("%f",&B[i][j]);
    }
}

printf("\nMATRIX C = A x B\n\n");
for(i=0; i<m1; i++)
{
    for(j=0; j<n2; j++)
    {
        C[i][j] = 0;
        for(k=0; k<n1; k++)
        {
            C[i][j] += A[i][k] * B[k][j];
        }
        printf("%g\t",C[i][j]);
    }
    printf("\n");
}

return 0;
}

```

## Output

TO FIND A x B, INSERT ORDER OF A (row & column): 3 4

INSERT ORDER OF B (row, column): 4 4

INPUT A MATRIX ROW-WISE

ROW-1 : 10 20 30 40

ROW-2 : 1 -4 0 12

ROW-3 : 0 0 8 7

INPUT B MATRIX ROW-WISE

ROW-1 : 1 2 3 4

ROW-2 : 9 0 0 7

ROW-3 : 5 4 3 1

ROW-4 : 11 3 7 0

MATRIX C = A x B

780	260	400	210
97	38	87	-24
117	53	73	8