**#2. Array Operations**

**Roll Number:CB.EN.P2EBS22005**

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**Aim:**

To perform following array operations using C Programming:

1. Create a 3-dimensional matrix of dimension 3x3x3. The entries inside the matrix can be as shown below,
2. Perform matrix multiplication of two 3x3 matrix. Matrix data shall be acquired from the user. User defined function can be used for matrix multiplication operation.

**Tools Required:**

Text editor with C Compiler.

**Experiment:**

1. Create a 3-dimensional matrix of dimension 3x3x3. The entries inside the matrix can be as shown below,

**Code:** #include<stdio.h>

int main()

{

int a[3][3][3],i,j,k;

printf("enter the elements of the matrices\n\n");

for(k=0;k<3;k++)

{

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

{

for(j=0;j<3;j++)

{

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

a[1][i][j]=a[k][i][j]\*2;

a[2][i][j]=a[k][i][j]\*4;

}

}

for(k=0;k<3;k++)

{

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

{

for(j=0;j<3;j++)

{

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

printf(" ");

}

printf("\n\n");

}

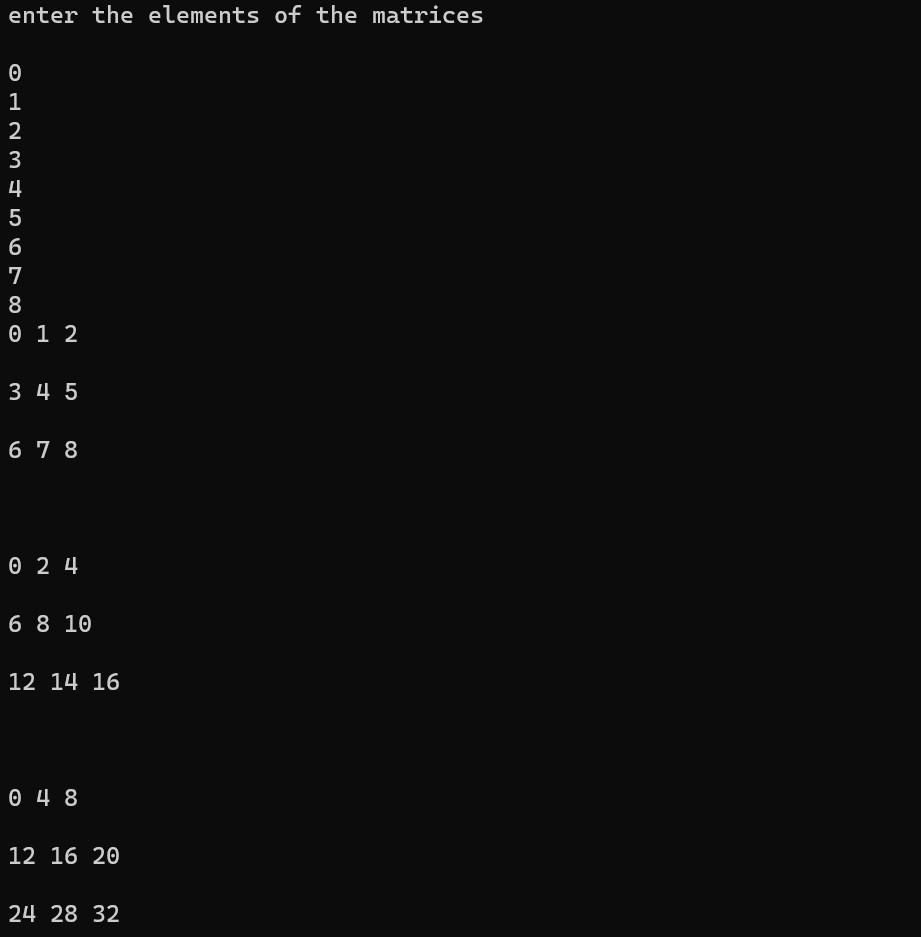
printf(" ");

printf("\n\n");

}

}

}

Result:

**Code:** #include<stdio.h>

void multiply(int a[10][10],int b[10][10],int ,int ,int );

void main()

{

int a[10][10],b[10][10],mul[10][10];

int i,j,k,m,n,p;

printf("Enter the number of rows and columns for 1st matrix\n");

scanf("%d%d",&m,&n);

printf("Enter the elements of the 1st matrix\n");

for(i=0;i<m;i++)

{

for(j=0;j<n;j++)

{

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

}

}

printf("Enter the number of columns for 2nd matrix\n");

scanf("%d",&p);

printf("Enter the elements of the 2nd matrix\n");

for(i=0;i<n;i++)

{

for(j=0;j<p;j++)

{

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

}

}

multiply(a,b,m,n,p );

}

void multiply(int a[10][10],int b[10][10],int m,int n,int p)

{

int mul[10][10],i,j,k;

for(i=0;i<m;i++)

{

for(j=0;j<p;j++)

{

mul[i][j]=0;

for(k=0;k<n;k++)

{

mul[i][j]=mul[i][j]+a[i][k]\*b[k][j];

}

}

}

printf("The resultant matrix \n");

for(i=0;i<m;i++)

{

for(j=0;j<p;j++)

{

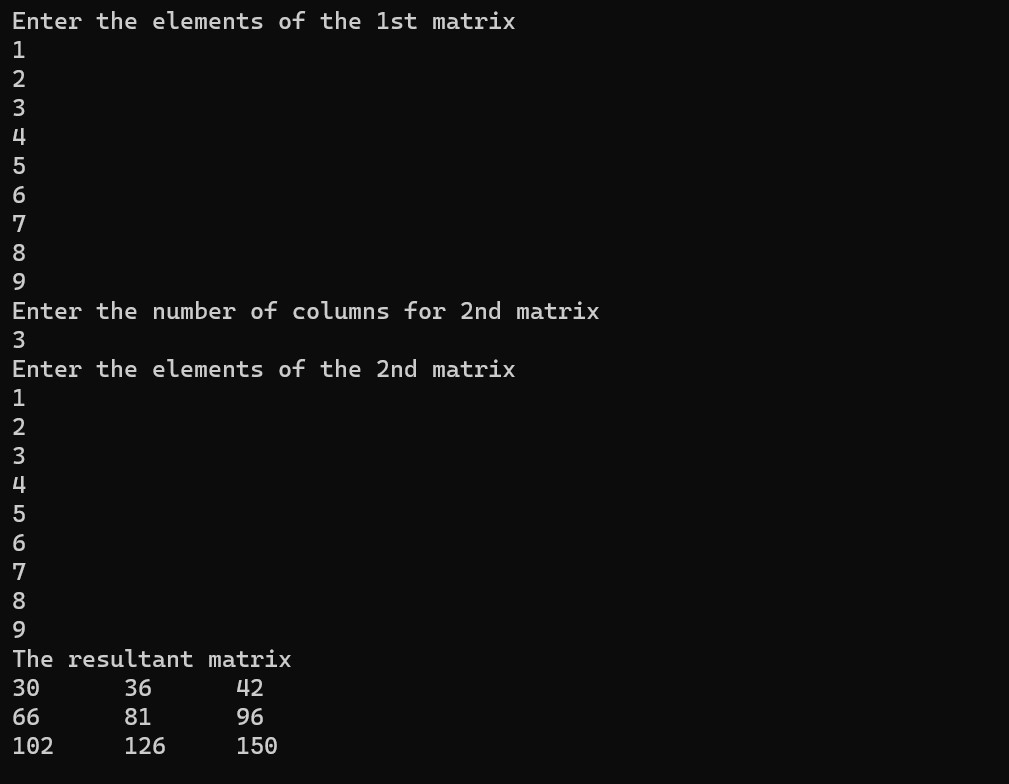
printf("%d\t",mul[i][j]);

}

printf("\n");

}

}

Result:

**Inference and Result:**

Hence, we have practiced how to call functions from the main and to take values from user into arrays to do multiplication of matrices.