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BRANCH:	SY CSE DS
BATCH:	D4
SUBJECT	DAA
EXPERIMENT No.	3
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AIM:	Experiment based on Strassen's matrix multiplication.
Program 1	
PROBLEM STATEMENT :	Input 2 matrices. Multiply them using Strassen's algorithm and print result. Calculate for 2*2 Matrcies only

PROGRAM:	```#include <stdio.h>```
	```int main()```
	```{```
	```int i,j;```
	```int a[2][2],b[2][2],c[2][2];```
	```int s1,s2,s3,s4,s5,s6,s7;```
	
	```printf("Enter 4 elements of 1st matrix: ");```
	``` for(i=0;i<2;i++)```
	``` for(j=0;j<2;j++)```
	``` {```
	``` scanf("%d",&a[i][j]);```
	``` }```
	```printf("Enter the 4 elements of 2nd matrix: ");```
	``` for(i=0;i<2;i++)```
	``` for(j=0;j<2;j++)```
	``` {```
	``` scanf("%d",&b[i][j]);```
	``` }```
	
	```printf("\nThe 1st matrix is\n");```
	```for(i=0;i<2;i++)```
	```{```
	```printf("\n");```
	```for(j=0;j<2;j++)```
	```printf("%d\t",a[i][j]);```
	```}```
	
	```printf("\nThe 2nd matrix is\n");```
	```for(i=0;i<2;i++){```
	```printf("\n");```

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

s1= (a[0][0] + a[1][1])*(b[0][0]+b[1][1]);
s2= (a[1][0]+a[1][1])*b[0][0];
s3= a[0][0]*(b[0][1]-b[1][1]);
s4= a[1][1]*(b[1][0]-b[0][0]);
s5= (a[0][0]+a[0][1])*b[1][1];
s6= (a[1][0]-a[0][0])*(b[0][0]+b[0][1]);
s7= (a[0][1]-a[1][1])*(b[1][0]+b[1][1]);

c[0][0]=s1+s4-s5+s7;
c[0][1]=s3+s5;
c[1][0]=s2+s4;
c[1][1]=s1-s2+s3+6;

printf("\n After performing multiplication \n");
for(i=0;i<2;i++){
printf("\n");
for(j=0;j<2;j++)
printf("%d\t",c[i][j]);
}




return 0;
}
```

OUTPUT	**Enter 4 elements of 1st matrix: 5 7 8 1** **Enter the 4 elements of 2nd matrix: 6 7 2 4** **The 1st matrix is** **5 7** **8 1** **The 2nd matrix is** **6 7** **2 4** ** After performing multiplication** **44 63** **50 27**
CONCLUSION	**Successfully studied multiplication of 2nd order matrices in C.**