OS LAB WEEK 1

➔ **Zayd Ahmed (1BM21CS254)**

➔ **08/06/23**

Q: Write a program in C on Matrices using Functions.

Code:-

```
#include<stdio.h>
#include<stdlib.h>
int A[3][3];
int B[3][3];
int C[3][3];
void add(int a[3][3],int b[3][3]){
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
C[i][j]=a[i][j]+b[i][j];
}
}
printf("Resultant matrix\n");
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
printf("%d\t",C[i][j]);
}
printf("\n");
}
```

```
}
void subtract(int a[3][3],int b[3][3]){
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
C[i][j]=a[i][j]-b[i][j];
}
}
printf("Resultant matrix\n");
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
printf("%d\t",C[i][j]);
}

printf("\n");
}
}
void transpose(int a[3][3]){
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
C[i][j]=a[j][i];
}
printf("\n");
}
printf("Resultant matrix\n");
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
printf("%d\t",C[i][j]);
}
printf("\n");
```

```
}
}
void multiply(int a[3][3],int b[3][3]){
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
C[i][j]=0;
for(int k=0;k<3;k++){
C[i][j]+=a[i][k]*b[k][j];
}
}
}
printf("Resultant matrix\n");
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
printf("%d\t",C[i][j]);
}
printf("\n");
}
}
int main(){

printf("enter the elements for matrix A\n");
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
scanf("%d",&A[i][j]);
}
}
printf("enter the elements for matrix B\n");
for(int i=0;i<3;i++){
```

```
for(int j=0;j<3;j++){
scanf("%d",&B[i][j]);
}
}
printf("matrix A\n");
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
printf("%d\t",A[i][j]);
}
printf("\n");
}
printf("matrix B\n");
for(int i=0;i<3;i++){
for(int j=0;j<3;j++){
printf("%d\t",B[i][j]);
}
printf("\n");
}
int ch=0;
while(ch!=5){
printf("1.add\n2.subtract\n3.transpose\n4.multiply\n5.exit\n")
;
scanf("%d",&ch);
switch(ch){
case 1:
add(A,B);
break;
case 2:
subtract(A,B);
```

```
break;

case 3:
printf("enter matrix to transpose(A->1/B->2)\n");
int c1;
scanf("%d",&c1);
if(c1==1){
transpose(A);
break;
}
else{
transpose(B);
break;
}
break;
case 4:
multiply(A,B);
break;
case 5:
exit(0);
break;
default:
printf("wrong choice entered\n");
break;
}
}
}
```

Output:-

```
enter the elements for matrix A
1  2  3
4  5  6
7  8  9
enter the elements for matrix B
9  8  7
6  5  4
3  2  1
matrix A
1          2          3
4          5          6
7          8          9
matrix B
9          8          7
6          5          4
3          2          1
1.add
2.subtract
3.transpose
4.multiply
5.exit
1
Resultant matrix
10         10         10
10         10         10
10         10         10
1.add
2.subtract
3.transpose
4.multiply
5.exit
2
Resultant matrix
-8         -6         -4
-2         0          2
4          6          8
1.add
2.subtract
3.transpose
4.multiply
5.exit
```

```
1.add
2.subtract
3.transpose
4.multiply
5.exit
3
enter matrix to transpose(A->1/B->2)
1



Resultant matrix
1        4        7
2        5        8
3        6        9
1.add
2.subtract
3.transpose
4.multiply
5.exit
4
Resultant matrix
30       24       18
84       69       54
138      114      90
1.add
2.subtract
3.transpose
4.multiply
5.exit
5
```