```
#include<stdio.h>
int i,j,k,n;
int a[10][10];
int b[10][10];
int sum[10][10];
int sub[10][10];
int mul[10][10];
int tr[10][10];
int p sum=0;
int nonP sum=0;
int flag=1;
int row=0;
int column=0;
int add(int a[10][10],int b[10][10]){
  for(i=0;i< n;i++){
     for(j=0;j< n;j++){
        sum[i][j]=a[i][j]+b[i][j];
     }
  }
  printf("the sum matrix is:\n");
  for(i=0;i< n;i++)
  {
     for(j=0;j< n;j++)
        printf("%d\t",sum[i][j]);
     printf("\n");
  }
  printf("\n");
}
int subtract(int a[10][10],int b[10][10])
  for(i=0;i< n;i++)
  {
     for(j=0;j< n;j++)
        sub[i][j]=a[i][j]-b[i][j];
     }
  printf("the resultant matrix after subtraction is:\n");
  for(i=0;i< n;i++
{
     for(j=0;j< n;j++)
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printf("%d\t",sub[i][j]);
     printf("\n");
  }
  printf("\n");
int multiply(int a[10][10],int b[10][10])
  for(i=0;i< n;i++)
     for(j=0;j< n;j++)
        for(k=0;k< n;k++)
           mul[i][j]+= a[i][k]*b[k][j];
     }
  printf("the resultant matrix after multiplication is:\n");
  for(i=0;i< n;i++)
     for(j=0;j< n;j++)
        printf("%d\t",mul[i][j]);
     printf("\n");
  }
  printf("\n");
int add_principal(int a[10][10])
  for(i=0;i< n;i++)
  {
     for(j=0;j< n;j++)
        while(j<n)
           if(i==j)
              p_sum+=a[i][j];
           else{
              nonP_sum+=a[i][j];
```

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j++;
        break;
     }
  }
  printf("the sum of principal diagonal elements:\n");
  printf("%d\n",p_sum);
  printf("the sum of non principal diagonal elements:\n");
  printf("%d\n",nonP sum);
  printf("\n");
int add_row_column(int a[10][10])
  for(i=0;i< n;i++)
     for(j=0;j< n;j++)
        row += a[i][j];
  for(j=0;j< n;j++)
     for(i=0;i< n;i++)
        column += a[i][j];
     }
  printf("The sum of rows is %d\n",row);
  printf("the sum of column elements is %d",column);
  printf("\n");
}
int transpose(int a[10][10])
  for(i=0;i< n;i++)
     for(j=0;j< n;j++)
        tr[i][j]=a[j][i];
  printf("the transpose of A matrix:\n");
  for(i=0;i< n;i++)
  {
```

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for(j=0;j< n;j++)
        printf("%d\t",tr[i][j]);
     printf("\n");
  }
  printf("\n");
}
int symmetric(int a[10][10])
  transpose(a);
  for(i=0;i< n;i++)
     for(j=0;j< n;j++) {
        if(a[i][j]!=tr[i][j]) {
           flag = 0;
           break;
        }
     }
  if(flag==1) {
     printf("Given matrix is symetric\n");
  }
  else{
     printf("Given matrix is not symmetric\n");
  printf("\n");
void main()
{
  printf("Enter the size of n\n");
  scanf("%d",&n);
  printf("Enter the elements of A matrix\n");
  for(i=0;i< n;i++)
     for(j=0;j< n;j++)
        scanf("%d",&a[i][j]);
     }
  printf("Enter the elements of B matrix\n");
  for(i=0;i< n;i++){
     for(j=0;j< n;j++){
        scanf("%d",&b[i][j]);
```

```
}
  }
  printf("A matrix is\n");
  for(i=0;i< n;i++){
     for(j=0;j< n;j++)
        printf("%d\t",a[i][j]);
     printf("\n");
  }
  printf("B matrix is\n");
  for(i=0;i< n;i++){}
     for(j=0;j< n;j++)
        printf("%d\t",b[i][j]);
     printf("\n");
  int c;
  while(1){
  printf("1.Addition\n2.Subtraction\n3.multiplication\n4.sum of principal and non principal
diagonal\n5. sum of rows and columns\n 6.transpose\n7.Symmetric\n");
  printf("Enter your choice:\n");
  scanf("%d",&c);
  switch(c){
     case 1:add(a,b);
     break;
     case 2:subtract(a,b);
     break;
     case 3:multiply(a,b);
     break;
     case 4:add principal(a);
     break;
     case 5:add_row_column(a);
     break;
     case 6:transpose(a);
     break;
     case 7:symmetric(a);
     default:printf("Incorrect choice");
     exit(0);
  }
  }
}
```

Observation:

	(com 14 106 12013)
	part the matrices as parameters all there
The said	1) Addition Subtraction
	2) Matein multiplistion
	3) Sum of principal diagonal and no principal
	s) Transpose of a given matrix
	c) Check if a given matrix is symmetry or not

	(Date : /)
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[1, 2] [1 2]	2 4
10 3 4) 3 4	2 4
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1+6	
· Copy is	side of the same and the
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3 4 3 4	
	1.0000000000000000000000000000000000000
1+6 2+8	- 7 to:
3+12 6+16	
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int blio][10];	
int sum[10][10];	the contract of the contract o
int sub (10] (20];	2 2 2 15
int multiplication;	= DADAMA
int tricos (107:	
int p sum = 0;	3
ind nonPsum=0;	Stady (" for tearing
int flag=1:	Marine Carlos
int how =0:	
	Maria Secretaria
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for (i=0°, i2n; i+1)	
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4	

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	sum [i][j] = a[i][j] +b[i][j];
	3
	y
	phint (" the sum matrix ex; \n"); for (i=0; i <n; i+1)<="" th=""></n;>
_	fut (1:0; 1' <n; 1'+1)<="" th=""></n;>
_	
	(j=0;j <n:j+1)< th=""></n:j+1)<>
	V
	Print (*-1:d/t", sum[i] [j]):
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	ent rubbeat (int a [10] [10], int b[10][10])
	ind i the
-	for (i=0°, i <n°, i+t)<="" th=""></n°,>
	for (j=o;j'cn;j++)
	Some Francisco Control of the Contro
	y sub[i][j] = a[i][j] - b[i][j];
	4
	print ("The secultary malrix catter, subtraction is: 10"
	(1) (1=0: (2n;1+1)
	2
	for (j=0; j <n-, j++)<="" th=""></n-,>
	David Carl All
	pring ("Y-alt", sub [i] (j]);
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	for (k=0; ken; k+1)
-	mul[i][j]+=a(i][i] + b(E][j];
	& FRIENDS SAME
	7.
	Drivit ("The recottant mother alter multiplication of: 10")
2.5	print ("The resultant matrix after multiplication is: \n")
	7
-	for (j=0;j <n; ("ydt",="" (ij(j));<="" grent="" j++)?="" med="" td=""></n;>
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-	for (j=0-j <n;j++){ (16i){<="" td="" whole(j<n){=""></n;j++){>
-	f(i==j){
	punt alisij:
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	nonf_um+ = aliJcjJ;
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and the manager of the states touther it I have
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ent transpose (int a CootGod)
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	Page:
of limite	int symmetric (int a first trat)
Singles	transfore (a);
	for(i=03 ixn; i++) L
	(os (i=0; i <n; i++))<="" td=""></n;>
	if (a(i)(j) 1 = tr(i)(j))
	4
1	flag=0;
	y y break;
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	print (Genen matrix it signification 17)
	Diet (chien to it is not remeteria (0");
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	prints ("Enter the claments of A matrix (n"); for (i=0; i <n; i++)!<="" td=""></n;>
	for (j=0; j <n; j++)<="" td=""></n;>
	scanf ("tol", Galis(j));
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	print ("Enter the elements of B matrix (n");
	(8(= 0; 1 kn; 1+4)
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	while (1)
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	- allo 5. sum of rown and column elements in G.
	transport of T. Symmetric of:
	print ("Enter your choice: In").
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	break;
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	break;
	case 4: add-principal (a):
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-(0)	exitto);
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	Enter the size of matrix
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	(Date :
	Enter the elements of B matrix
	5 6
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	1. Addition
	2 Subtraction
	3. Multiplication
	3. Multiplication 4. Sum of principal and non principal diagonal 5. Sum of rower and columns.
	5. Sum of hour and columns.
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	Enter your choice:
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	G 8
	9. 4.
	8 6
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OUTPUT:

```
Enter the size of n
Enter the elements of A matrix
1 2
3 4
Enter the elements of B matrix
5 6
6 0
 matrix is
        2
        4
 matrix is
        6
        0
1.Addition
2.Subtraction
3.multiplication
4.sum of principal and non principal diagonal
5. sum of rows and columns
6.transpose
7.Symmetric
Enter your choice:
the sum matrix is:
        8
6
        4
1.Addition
2.Subtraction
3.multiplication
4.sum of principal and non principal diagonal
5. sum of rows and columns
6.transpose
7.Symmetric
Enter your choice:
the resultant matrix after subtraction is:
-4
        -4
-3
1.Addition
Subtraction
3.multiplication
4.sum of principal and non principal diagonal
5. sum of rows and columns
6.transpose
7.Symmetric
Enter your choice:
the resultant matrix after multiplication is:
17
39
        18
1.Addition
Subtraction
3.multiplication

    sum of principal and non principal diagonal
    sum of rows and columns

6.transpose
7.Symmetric
```

```
Enter your choice:
the sum of principal diagonal elements:
the sum of non principal diagonal elements:

    Addition

2.Subtraction
multiplication
4.sum of principal and non principal diagonal
5. sum of rows and columns
6.transpose
7.Symmetric
Enter your choice:
The sum of rows is 10
the sum of column elements is 10
1.Addition
2.Subtraction
3.multiplication
4.sum of principal and non principal diagonal
sum of rows and columns
6.transpose
7.Symmetric
Enter your choice:
the transpose of A matrix:
        3
        4
1.Addition
2.Subtraction
3.multiplication
4.sum of principal and non principal diagonal
5. sum of rows and columns
6.transpose
7.Symmetric
Enter your choice:
the transpose of A matrix:
        3
        4
Given matrix is not symmetric

    Addition

2.Subtraction
3.multiplication

    sum of principal and non principal diagonal

sum of rows and columns
6.transpose
7.Symmetric
Enter your choice:
Incorrect choice
Process returned 0 (0x0)
                           execution time : 57.859 s
Press any key to continue.
```