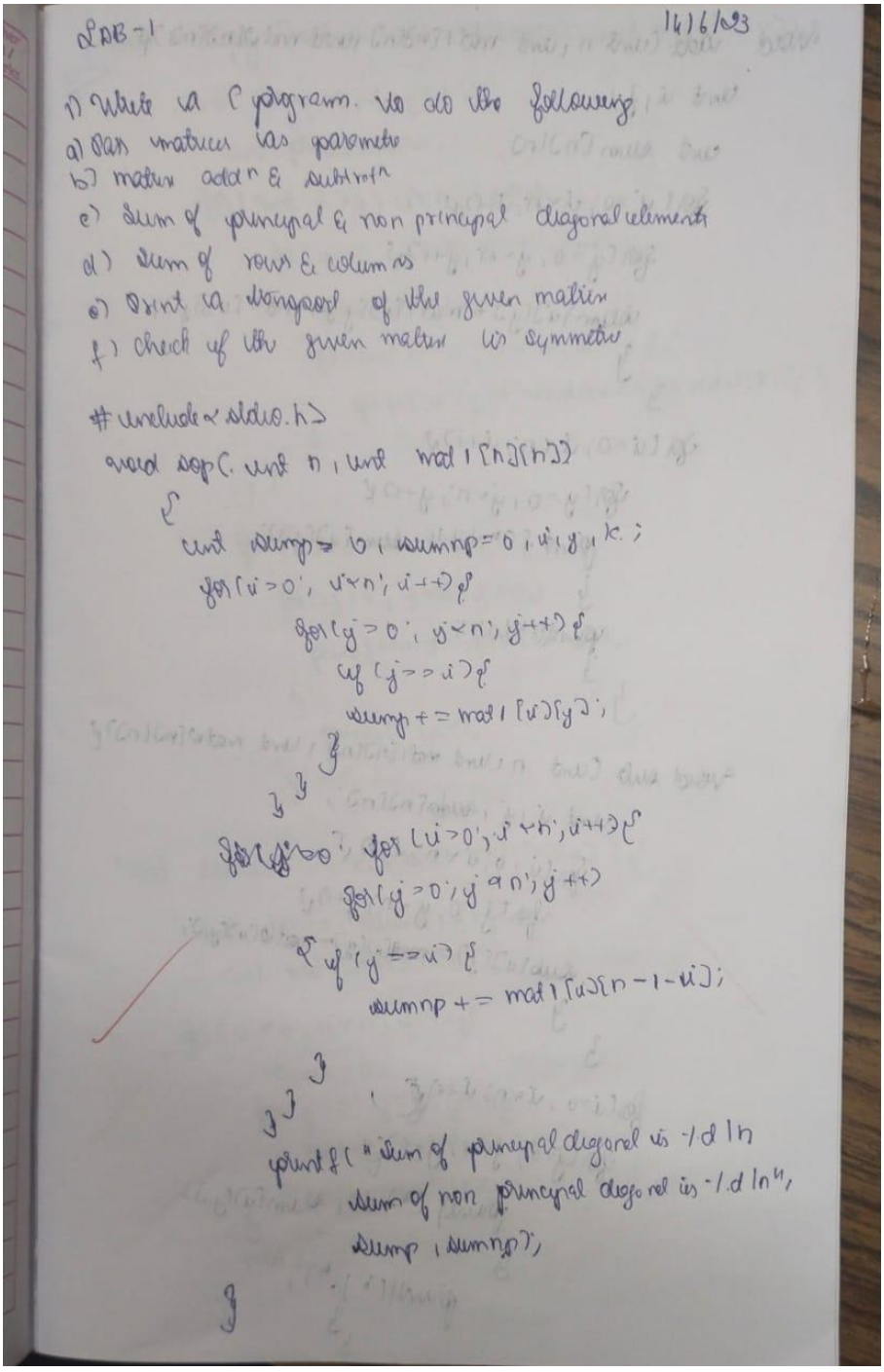
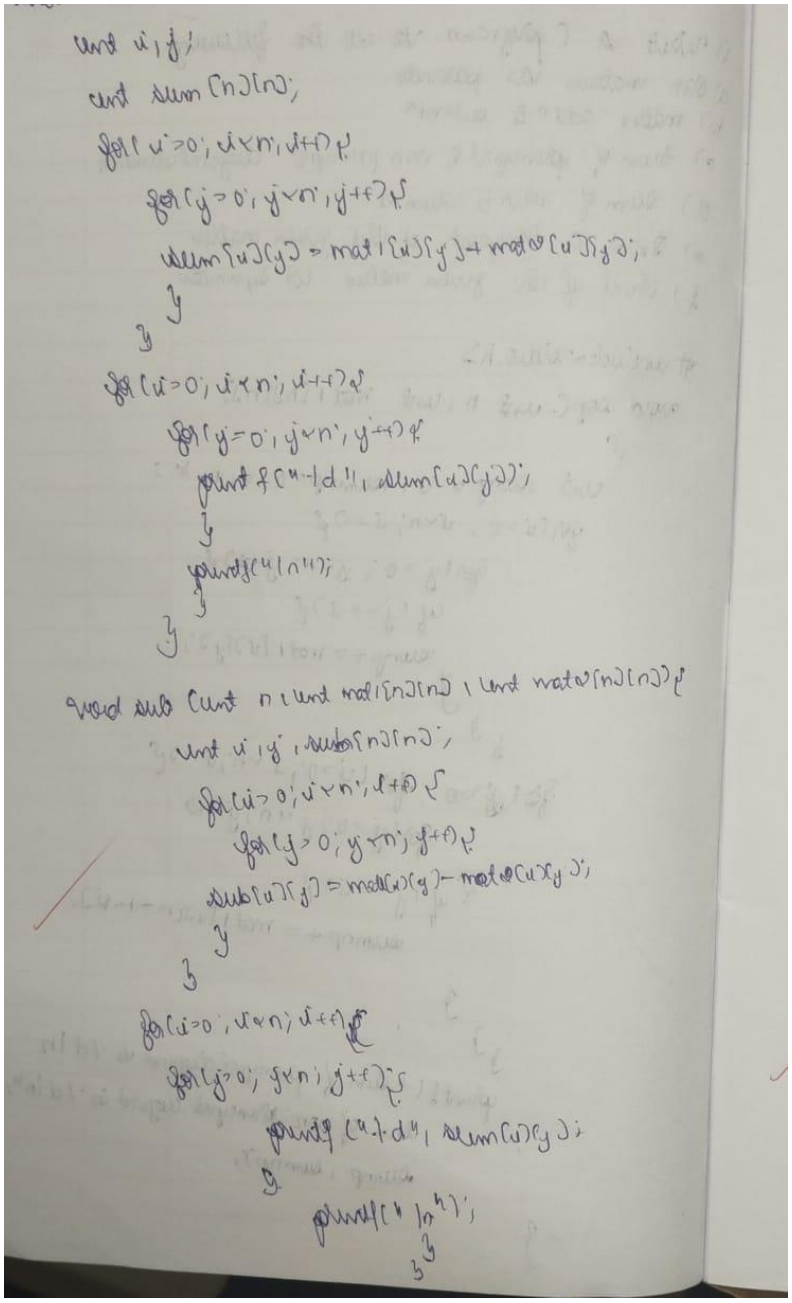
OS LAB-1

Q)Write a C program to do the following-

a)Pass matrices as paramteres
b)Matrix addition and subtraction
c)Sum of principal and non principal diagonal elements
d)Sum of rows and columns
e)Print transpose of given matrix
d)check if symmetric or note

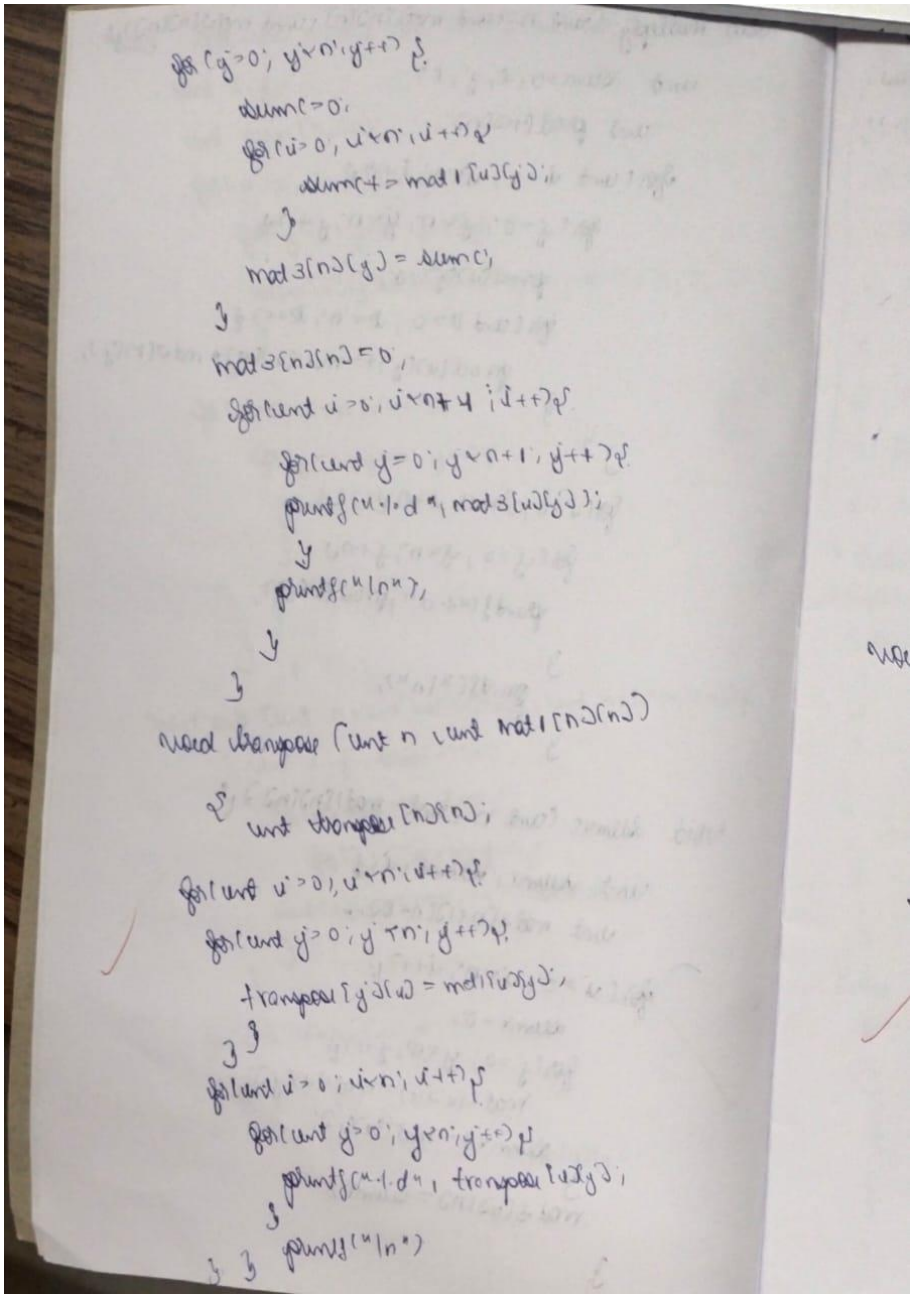
CODE





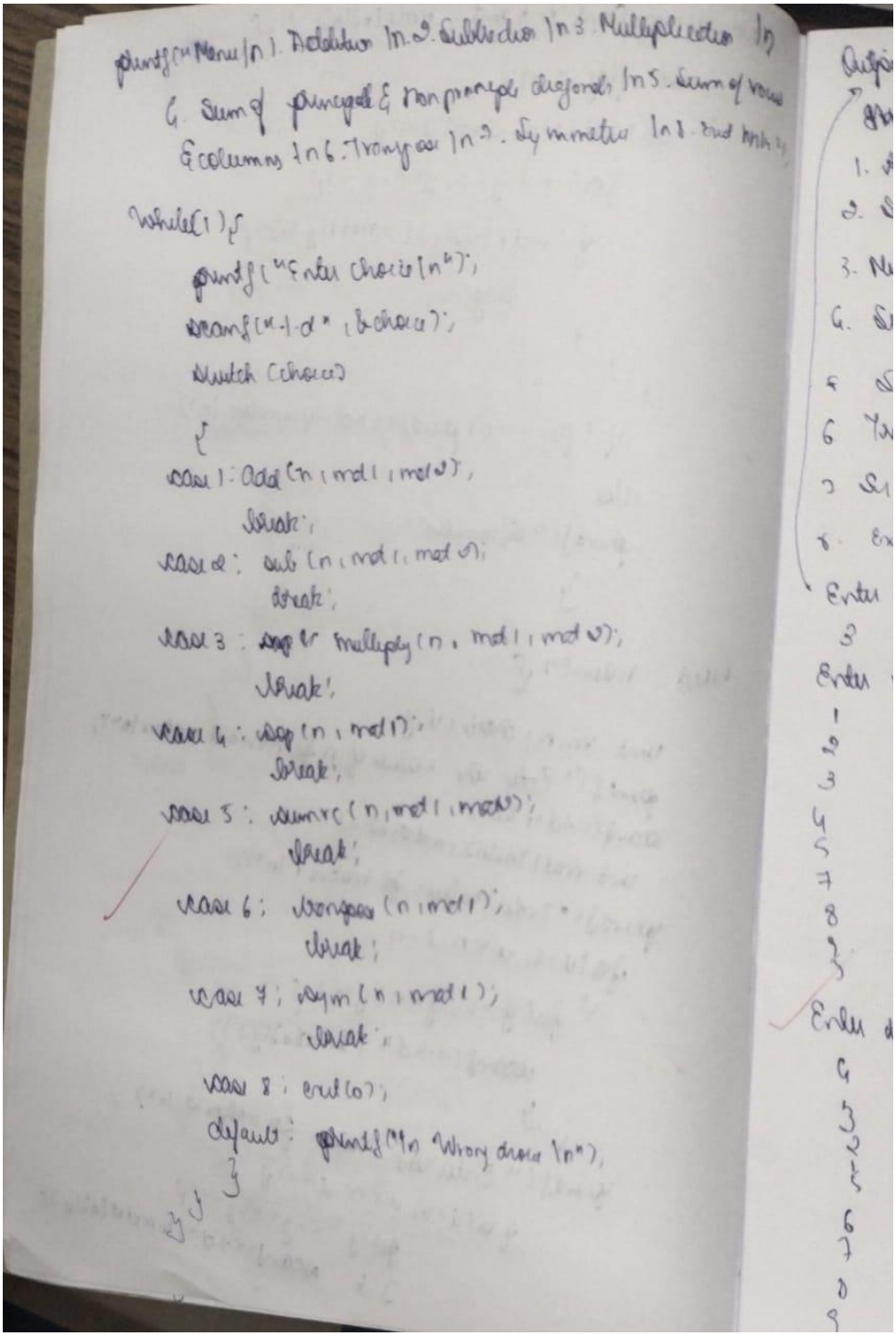
```
int i, j;
int sum[n][n];
for(i=0; i<n; i++){
    for(j=0; j<n; j++){
    sum[i][j] = mat1[i][j] + mat2[i][j];
    }
}
for(i=0; i<n; i++){
    for(j=0; j<n; j++){
    printf("%d ", sum[i][j]);
    }
    printf("\n");
}

void sub(int n, int mat1[n][n], int mat2[n][n]){
    int i, j, sub[n][n];
    for(i=0; i<n; i++){
        for(j=0; j<n; j++){
        sub[i][j] = mat1[i][j] - mat2[i][j];
        }
    }
    for(i=0; i<n; i++){
        for(j=0; j<n; j++){
            printf("%d ", sum[i][j]);
        }
        printf("\n");
    }
```

```
int sum=0,i,j,k;
  int prod[n][n];
for(int i=0;i<n;i++){
    for(j=0;j<n;j++){
      prod[i][j]=0;
      for(int k=0;k<n;k++){
        prod[i][j]+=mat1[i][k]*mat2[k][j];
      }
    }
}
for(i=0;i<n;i++){
  for(j=0;j<n;j++)
  printf("%d",prod[i][j]);
  }
  printf("\n");
}

void sumr(int n,int mat1[n][n]){
  int sumr,sumc,i,j;
  int mat3[n+1][n+1];
for(i=0;i<n;i++){
    sumr=0;
    for(j=0;j<n;j++){
      mat3[i][j]=mat1[i][j];
      sumr+=mat1[i][j];
    }
    mat3[i][n]=sumr;
}
```



```
for(j=0; j<n; j++){
    sum=0;
    for(i=0; i<n; i++){
        sum+=mat1[i][j];
    }
    mat3[n][j] = sum;
}
mat3[n][n]=0;
for(int i=0; i<n+1; i++){
    for(int j=0; j<n+1; j++){
        printf("%d ", mat3[i][j]);
    }
    printf("\n");
}
}
void transpose(int n, int mat1[n][n])
{
    int transpose[n][n];
for(int i=0; i<n; i++){
    for(int j=0; j<n; j++){
        transpose[j][i] = mat1[i][j];
    }}
for(int i=0; i<n; i++){
    for(int j=0; j<n; j++){
        printf("%d ", transpose[i][j]);
    }
} printf("\n")
```

```
void symm(int n, int mat1[n][n]) {
    int flag = -1;
    for(int i=0; i<n; i++){
        for(int j=0; j<n; j++){
            if(mat1[i][j] != mat1[j][i]){
                flag=0;
            }
        }
    }
    if(flag==0) printf("not symmetric\n")
    else
    printf("symmetric");
    }

void main(){
    int m,n, choice,i,j;
    printf("Enter the value of n for nxn and matrix\n");
    scanf("%d", &n);
    int mat1[n][n], mat2[n][n];
    printf("Enter value for matrix1\n");
    for(i=0; i<n; i++)
    {
        for(j=0; j<n; j++){
            scanf("%d", &mat1[i][j]);
        }
    }
    printf("Enter the values for matrix2\n");
        for(i=0; i<n; i++){
            for(j=0; j<n; j++)
            scanf("%d", &mat2[i][j]);
```



printf("\nMenu\n1. Addition \n2. Subtraction \n3. Multiplication \n4. Sum of principal & non principal diagonals \n5. Sum of rows & columns \n6. Transpose \n7. Symmetric \n8. Exit \n");

while(1){
printf("\nEnter choice\n");
scanf("%d", &choice);
switch(choice)
{
case 1: add(m, mat1, mat2);
break;
case 2: sub(m, mat1, mat2);
break;
case 3: multiply(m, mat1, mat2);
break;
case 4: sop(m, mat1);
break;
case 5: sumrc(m, mat1, mat2);
break;
case 6: transpose(m, mat1);
break;
case 7: sym(m, mat1);
break;
case 8: exit(0);
default: printf("\n Wrong choice \n");
}
}

OUTPUT-

```
Enter the values of n for nxn and matrix
3
Enter the values for matrix 1
3
4
3
1
7
9
1
2
1
Enter the values for matrix 2
2
3
7
9
4
1
4
6
7
```

```
Menu
1.Addition
2.Subtraction
3.Multiplication
4.Sum of principle and non principle diagonals
5.Sum of rows and columns
6.Transpose matrix
7.Check if the matrix is symmetric
8.Exit

Enter your choice
1
5 7 10
10 11 10
5 8 8
Enter your choice
2
1 1 -4
-8 3 8
-3 -4 -6
Enter your choice
3
54 43 46
101 85 77
24 17 16
Enter your choice
4
sum of principle diagonal is 11
 sum of non principle diagonal is 11
```

```
Enter your choice
5
3 4 3 10
1 7 9 17
1 2 1 4
5 13 13 0
Enter your choice
6
3 1 1
4 7 2
3 9 1
Enter your choice
7
not symmetric
```