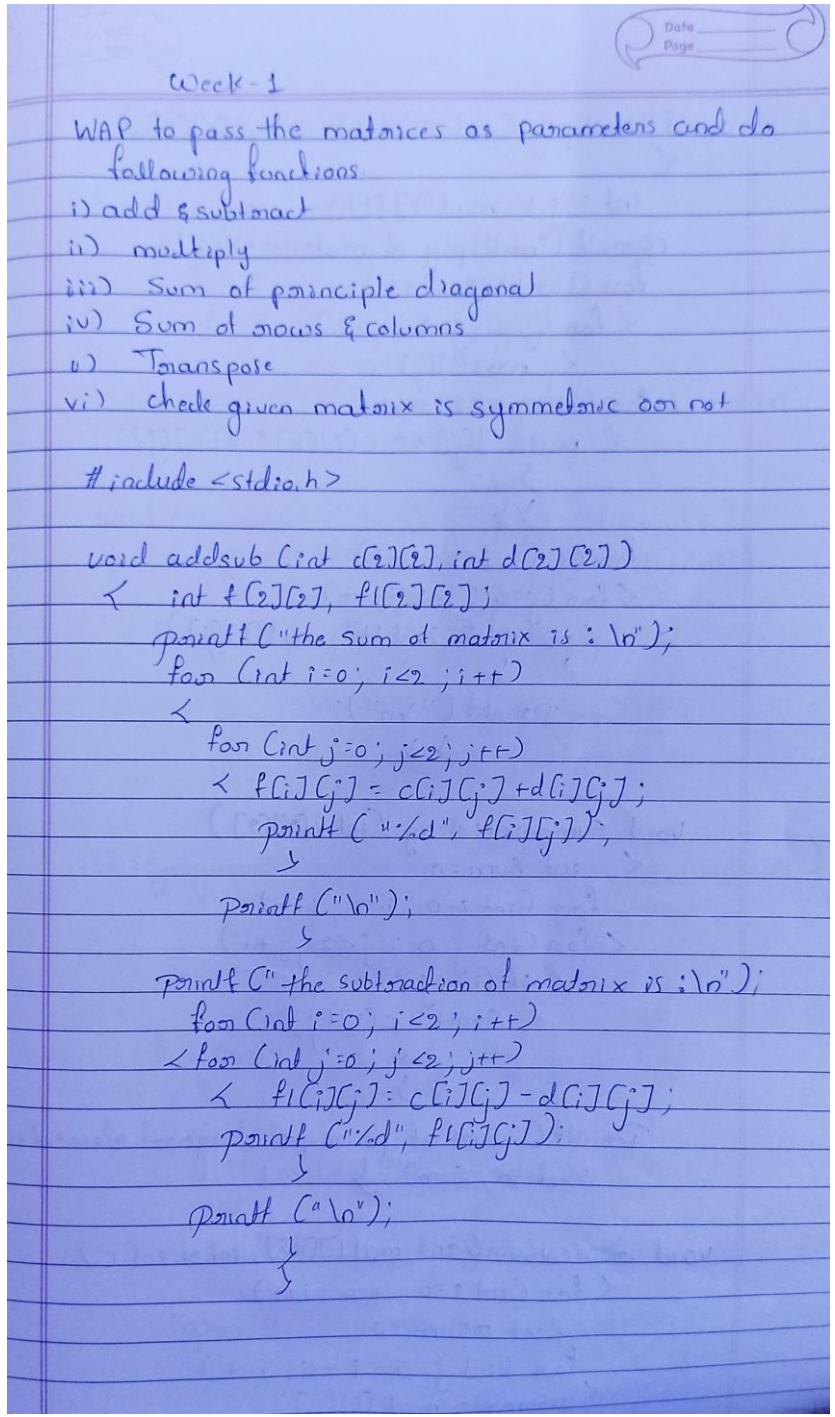
Week 1

Q)Write a C program to do the following by passing matrix as parameter:

1) Matrix addition and subtraction.
2) Matrix multiplication.
3) Sum of principle and non principle diagonal of matrix.
4) Sum of rows and columns.
5) Print the transpose
6) Check if a given matrix is symmetric or not.



Week - 1

WAP to pass the matrices as parameters and do following functions

i) add & subtract
ii) multiply
iii) Sum of principle diagonal
iv) Sum of rows & columns
v) Transpose
vi) check given matrix is symmetric or not

```
#include <stdio.h>

void addsub (int c[2][2], int d[2][2])
{   int f[2][2], fl[2][2];
    printf("the sum of matrix is : \n");
    for (int i=0; i<2 ; i++)
    {
      for (int j=0; j<2; j++)
      { f[i][j] = c[i][j] +d[i][j];
        printf ("%d", f[i][j]);
      }
      printf ("\n");
    }
printf("the subtraction of matrix is :\n");
  for (int i=0; i<2 ; i++)
{ for (int j=0 ; j<2; j++)
    { fl[i][j] = c[i][j] - d[i][j];
    printf ("%d", fl[i][j]);
    }
printf ("\n");
    }
```

```
void multiply (int c[2][2], int d[2][2])
{
    int i, j, k, mul[2][2];
    printf("multiply of matrix:\n");
    for(i=0; i<2; i++)
    {  for(j=0; j<2; j++)
       {  mul[i][j]=0;
          for(k=0; k<2; k++)
          {  mul[i][j] += c[i][k] * d[k][j];
          }
       }
    }
    for(i=0; i<2; i++)
    {  for(j=0; j<2; j++)
       {  printf("%d\t", mul[i][j]);
       }
       printf("\n");
    }
}

void sumprincidiag (int c[2][2])
{  int sum=0;
   for(int i=0; i<2; i++)
   {  for(int j=0; j<2; j++)
      {  if(i==j)
         {  sum += c[i][j];
         }
      }
   }
   Printf("sum of principal diagonal elements is
      %d\n", sum); }

void rowcolsum(int mat[][100], int r, int c)
{  for(int i=0; i<r; i++)
   {  int rsum=0;
      for(int j=0; j<c; j++)
      {  rsum += mat[i][j];
      }
```

```
      printf("sum of elements in row %d : %d\n", i+1, rsum);
   }
   for(int j=0; j<c; j++)
   {  int csum=0;
      for(int i=0; i<r; i++)
      {  csum += mat[i][j];
      }
      printf("sum of elements in column %d : %d\n",
                  j+1, csum);
   }
}
void transpose(int mat[][100], int r, int c)
{  printf("transpose of matrix:\n");
   for(int j=0; j<c; j++)
   {  for(int i=0; i<r; i++)
      {
         Printf("%d\t", mat[i][j]);
      }
      Printf("\n");
   }
int issymmetric(int mat[][20], int rows, int cols)
{
   if(rows != cols)
   {  printf("not symmetric");
   }
   for(int i=0; i<rows; i++)
   {  for(int j=0; j<cols; j++)
      {
         if(matrix[i][j] != matrix[j][i])
         {
            Printf("not symmetric");
         }
      }
   }
   Printf("matrix is symmetric");
}
```

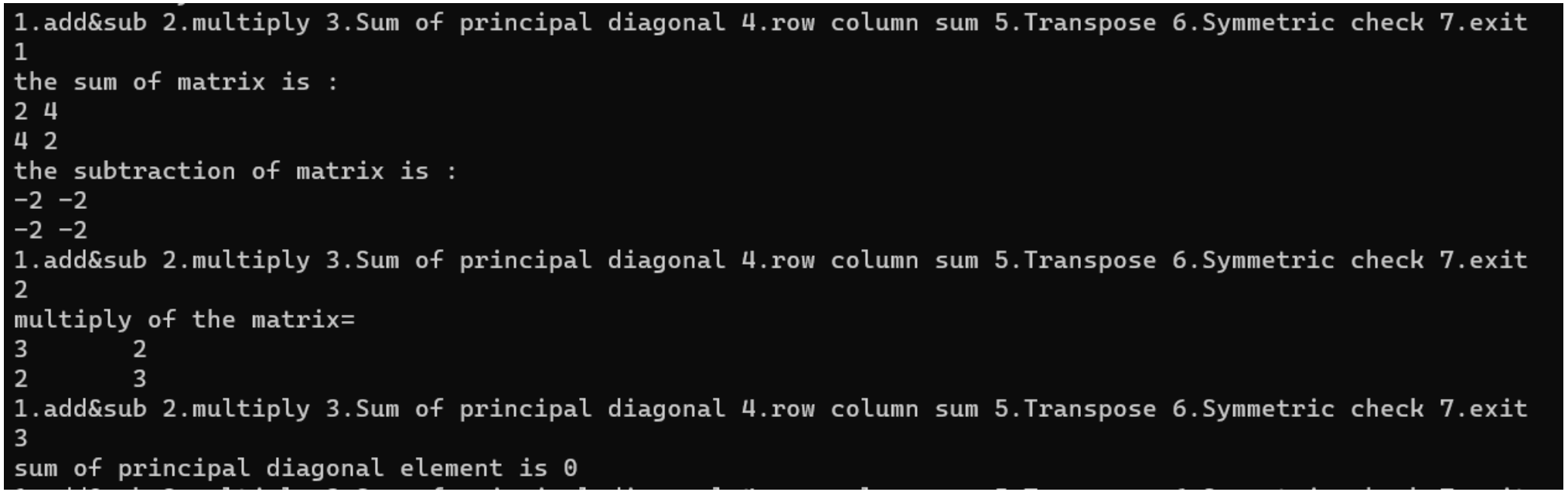
output

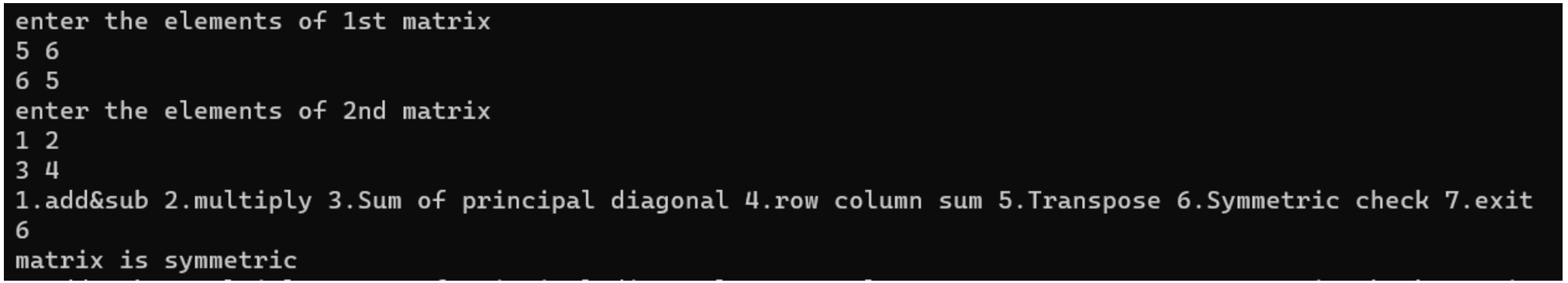
```
Enter elements of 1st matrix
0 1
1 0
Enter the elements of 2nd matrix
2 3
3 2
1.add 2.sub 2.multiply 3.Sum of principle diagonal
4.row column sum 5.Transpose 6.Symmetric
check 7.exit
1
the sum of matrix is:
2 4
4 2
the subtraction of matrix is:
-2 -2
-2 -2
2
multiply of matrix=
3 2
2 3
3
Sum of principal diagonal element is 0
4
Sum of elements in row 1 : 1
Sum of elements in row 2 : 1
Sum of elements in column 1 : 1
Sum of elements in column 2 : 1
```

```
5
0 1
1 0
6
matrix is symmetric.
```

Output:


C:\Users\Chinmay Hegde\Dov
enter the elements of 1st matrix
0 1
1 0
enter the elements of 2nd matrix
2 3
3 2


1.add&sub 2.multiply 3.Sum of principal diagonal 4.row column sum 5.Transpose 6.Symmetric check 7.exit
1
the sum of matrix is :
2 4
4 2
the subtraction of matrix is :
-2 -2
-2 -2
1.add&sub 2.multiply 3.Sum of principal diagonal 4.row column sum 5.Transpose 6.Symmetric check 7.exit
2
multiply of the matrix=
3 2
2 3
1.add&sub 2.multiply 3.Sum of principal diagonal 4.row column sum 5.Transpose 6.Symmetric check 7.exit
3
sum of principal diagonal element is 0


enter the elements of 1st matrix
5 6
6 5
enter the elements of 2nd matrix
1 2
3 4
1.add&sub 2.multiply 3.Sum of principal diagonal 4.row column sum 5.Transpose 6.Symmetric check 7.exit
6
matrix is symmetric