

TASK#4:

main.c

```
1 #include<stdio.h>
2
3 int main() {
4     int a[3][3];
5     int i, j;
6     int upper = 1, lower = 1;
7
8     printf("Enter elements of 3x3 matrix:\n");
9     for(i=0;i<3;i++){
10         for(j=0;j<3;j++){
11             scanf("%d",&a[i][j]);
12         }
13     }
14
15     for(i=1;i<3;i++){
16         for(j=0;j<i;j++){
17             if(a[i][j] != 0)
18                 upper=0;
19         }
20     }
21
22     for(i=0;i<3;i++){
23         for(j=i+1;j<3;j++){
24             if(a[i][j] != 0)
25                 lower=0;
26         }
27     }
28
29     if(upper == 1)
30         printf("The matrix is an Upper Triangular Matrix.\n");
31     else if(lower == 1)
32         printf("The matrix is a Lower Triangular Matrix.\n");
33     else
34         printf("The matrix is Neither Upper nor Lower Triangular.\n");
35
36     return 0;
37 }
38
```

```
Enter elements of 3x3 matrix:
3
4
5
6
7
8
9
4
4
3
2

Result: The matrix is Neither Upper nor Lower Triangular.

...Program finished with exit code 0
Press ENTER to exit console.
```

TASK #5:

main.c

```
1 #include <stdio.h>
2
3 int main() {
4     int i, j, space,n;
5     printf("Enter number of rows:");
6     scanf("%d",&n);
7
8     for (i = 1; i <= n; i++) {
9         for (space = 5; space > i; space--) {
10             printf(" ");
11
12         }
13         for (j = 1; j <= (2 * i - 1); j++) {
14
15             printf("*");
16
17         }
18         printf("\n");
19     }
20
21     for (i = n; i >= 1; i--) {
22         for (space = 5; space > i; space--) {
23             printf(" ");
24
25         }
26         for (j = 1; j <= (2 * i - 1); j++) {
27             printf("*");
28
29         }
30         printf("\n");
31     }
32
33     return 0;
34 }
```

```
Enter number of rows:5
*
***
*****
*****
*****
*****
*****
***
*

...Program finished with exit code 0
Press ENTER to exit console.
```

TASK#6:

main.c

```
1  #include <stdio.h>
2
3  int main() {
4      int arr[3][3], trans[3][3];
5      int i, j;
6
7      printf("Enter elements of 3x3 matrix:\n");
8      for(i=0; i<3; i++){
9          for(j=0; j<3; j++){
10             scanf("%d", &arr[i][j]);
11         }
12     }
13
14     for(i=0; i<3; i++){
15         for(j=0; j<3; j++){
16             trans[j][i] = arr[i][j];
17         }
18     }
19
20     printf("\nOriginal Matrix:\n");
21     for(i=0; i<3; i++){
22         for(j=0; j<3; j++){
23             printf("%d ", arr[i][j]);
24         }
25         printf("\n");
26     }
27
28     printf("\nTransposed Matrix:\n");
29     for(i=0; i<3; i++){
30         for(j=0; j<3; j++){
31             printf("%d ", trans[i][j]);
32         }
33         printf("\n");
34     }
35
36     return 0;
37 }
38
```

```
Enter elements of 3x3 matrix:
4
3
5
7
4
8
6
4
8

Original Matrix:
4 3 5
7 4 8
6 4 8

Transposed Matrix:
4 7 6
3 4 4
5 8 8

...Program finished with exit code 0
Press ENTER to exit console.
```

TASK#7:

main.c

```
1  #include <stdio.h>
2
3  int main() {
4      int a[3][3], b[3][3], c[3][3];
5      int i, j, k;
6
7      printf("Enter elements of first 3x3 matrix:\n");
8      for(i=0;i<3;i++)
9          for(j=0;j<3;j++)
10             scanf("%d",&a[i][j]);
11
12     printf("Enter elements of second 3x3 matrix:\n");
13     for(i=0;i<3;i++)
14         for(j=0;j<3;j++)
15             scanf("%d",&b[i][j]);
16
17     for(i=0;i<3;i++){
18         for(j=0;j<3;j++){
19             c[i][j]=0;
20             for(k=0;k<3;k++){
21                 c[i][j] =c[i][j] + a[i][k] * b[k][j];
22             }
23         }
24     }
25
26     printf("\nResultant Matrix:\n");
27     for(i=0;i<3;i++){
28         for(j=0;j<3;j++){
29             printf("%d ", c[i][j]);
30         }
31         printf("\n");
32     }
33     return 0;
34 }
35
```

```
Enter elements of first 3x3 matrix:
5
6
5
9
4
7
3
9
6

Enter elements of second 3x3 matrix:
4
9
7
4
8
6
7
2
1

Resultant Matrix:
79 103 76
101 127 94
90 111 81

...Program finished with exit code 0
Press ENTER to exit console.
```

TASK#8:

main.c

```
1 #include <stdio.h>
2
3 int main() {
4     int a[3][3];
5     int i, j, even=0, odd=0, Positive=0, Negative=0, zero=0;
6
7     printf("Enter 3x3 matrix elements:\n");
8     for(i=0;i<3;i++){
9         for(j=0;j<3;j++){
10             scanf("%d",&a[i][j]);
11         }
12     }
13
14     for(i=0;i<3;i++){
15         for(j=0;j<3;j++){
16             if(a[i][j] % 2 == 0)
17                 even++;
18             else
19                 odd++;
20
21             if(a[i][j] > 0)
22                 Positive++;
23             else if(a[i][j] < 0)
24                 Negative++;
25             else
26                 zero++;
27         }
28     }
29
30     printf("\nEvencount: %d\nOddcount: %d\nPositive number: %d\nNegative number: %d\nZero: %d\n", even, odd, Positive, Negative, zero);
31
32     return 0;
33 }
34
```

Enter 3x3 matrix elements:

4
8
7
5
6
4
9
3
5

Evencount: 4
Oddcount: 5
Positive number: 9
Negative number: 0
Zero: 0

...Program finished with exit code 0
Press ENTER to exit console.

TASK#9:

main.c

```
1 #include <stdio.h>
2
3 int main() {
4     int a[3][3], r[3][3];
5     int i, j;
6     int same = 1;
7
8     printf("Enter 3x3 matrix:\n");
9     for(i=0;i<3;i++)
10         for(j=0;j<3;j++)
11             scanf("%d",&a[i][j]);
12
13     for(i=0;i<3;i++){
14         for(j=0;j<3;j++){
15             r[j][2-i] = a[i][j];
16         }
17     }
18
19     printf("\nRotated Matrix is 90 Degree Clockwise:\n");
20     for(i=0;i<3;i++){
21         for(j=0;j<3;j++){
22             printf("%d ", r[i][j]);
23         }
24         printf("\n");
25     }
26
27     for(i=0;i<3;i++)
28         for(j=0;j<3;j++)
29             if(a[i][j] != r[i][j])
30                 same = 0;
31
32     if(same)
33         printf("\nRotated matrix is SAME! \n");
34     else
35         printf("\nRotated matrix is DIFFERENT! \n");
36
37     return 0;
38 }
39
```

Enter 3x3 matrix:

3
5
7
5
9
6
3
6
8

Rotated Matrix is 90 Degree Clockwise:
3 5 3
6 9 5
8 6 7

Rotated matrix is DIFFERENT!

...Program finished with exit code 0
Press ENTER to exit console.

TASK#10:

main.c

```
1
2 #include <stdio.h>
3
4 int main() {
5     int n, i, j, num=1;
6
7     printf("Enter number of rows: ");
8     scanf("%d", &n);
9
10    for(i = 0; i < n; i++) {
11        for(j = 0; j < n-i-1; j++) {
12            printf(" ");
13        }
14        num=1;
15        for(j = 0; j <= i; j++) {
16            printf("%4d", num);
17            num = num * (i - j) / (j + 1);
18        }
19        printf("\n");
20    }
21
22    return 0;
23 }
```

```
Enter number of rows: 5
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1

...Program finished with exit code 0
Press ENTER to exit console.
```