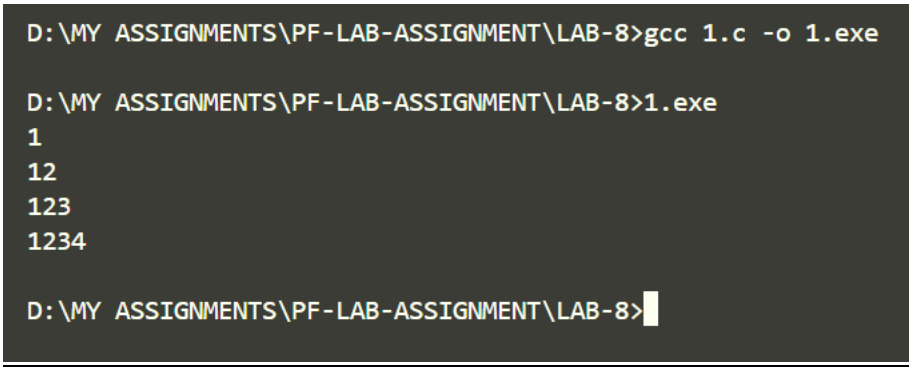
PF-LAB-7-ASSIGNMENT

PROBLEM:1

```c
#include <stdio.h>
void main() {
    for(int i=1; i<=4; i++) {
        for(int j=1; j<=i; j++) {
            printf("%d", j);
        }
        printf("\n");
    }
}
```



```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 1.c -o 1.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>1.exe
1
12
123
1234

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```

PROBLEM:2

```c
#include <stdio.h>
void main() {
    int matrix[2][2], transpose[2][2];
    printf("Enter elements of the 2X2 matrix:\n");
    for(int i=0; i<2; i++) {
        for(int j=0; j<2; j++) {
            printf("Elements [%d][%d]: ", i, j);
            scanf("%d", &matrix[i][j]);
        }
    }
    for(int i=0; i<2; i++) {
        for(int j=0; j<2; j++) {
            transpose[j][i] = matrix[i][j];
        }
    }
    printf("\nTransposeof matrix is:\n");
    for(int i=0; i<2; i++) {
        for(int j=0; j<2; j++) {
            printf("%d ", transpose[i][j]);
        }
        printf("\n");
    }
}
```

```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 2.c -o 2.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>2.exe
Enter elements of the 2X2 matrix:
Elements [0][0]: 3
Elements [0][1]: 1
Elements [1][0]: 5
Elements [1][1]: 7

Transposeof matrix is:
3 5
1 7

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```

PROBLEM:3

```c
#include <stdio.h>
void main() {
    int start, end;
    printf("Enter the start of the range: \n");
    scanf("%d", &start);
    printf("Prime numbers between %d and %d are:\n", start, end);

    for(int num=start; num<=end; num++) {
        if(num < 2) {
            continue;
        }
        int prime = 1;
        for(int i=2; i*i <=num; i++) {
            if(num % i == 0) {
                prime = 0;
                break;
            }
        }
        if(prime) {
            printf("%d  ", num );
        }
    }
}
```

```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 3.c -o 3.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>3.exe
Enter the start of the range:
1
Enter the end of the range:
19
Prime numbers between 1 and 19 are:
2  3  5  7  11  13  17  19
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```

PROBLEM:4

```c
#include <stdio.h>
void main() {
    int matrix[2][3][4] = {
        {
            {1,2,3},
            {4,5,6},
            {7,8,9}
        },
        {
            {10,11,12},
            {13,14,15},
            {16,17,18}
        }
    };
    int sumPg1=0, sumPg2=0;
    for(int pg=0; pg<2; pg++) {
        int sum=0;
        for(int i=0; i<3; i++) {
            for(int j=0; j<3; j++) {
                sum += matrix[pg][i][j];
            }
        }
        if(pg == 0) {
            sumPg1 = sum;
        } else {
            sumPg2 = sum;
        }
    }
    printf("Sum of elements on page 1: %d\n", sumPg1);
    printf("Sum of elements on page 2: %d\n", sumPg2);
}
```

```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 4.c -o 4.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>4.exe
Sum of elements on page 1: 45
Sum of elements on page 2: 126

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```

PROBLEM:5

```c
#include <stdio.h>
void main() {
    int num;
    printf("Enter a starting odd number: ");
    scanf("%d", &num);
    if (num % 2 == 0) {
        num--;
    }
    printf("Pattern of Odd Numbers in Decreasing order:\n");
    for (int i=num; i>=1; i-=2) {
        for (int j=i; j>=1; j-=2) {
            printf("%d ", j);
        }
        printf("\n");
    }
}
```

```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 5.c -o 5.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>5.exe
Enter a starting odd number: 22
Pattern of Odd Numbers in Decreasing order:
21 19 17 15 13 11 9 7 5 3 1
19 17 15 13 11 9 7 5 3 1
17 15 13 11 9 7 5 3 1
15 13 11 9 7 5 3 1
13 11 9 7 5 3 1
11 9 7 5 3 1
9 7 5 3 1
7 5 3 1
5 3 1
3 1
1

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```

PROBLEM:6

```c
#include <stdio.h>
void main() {
    int matrix[3][3];
    printf("Enter elements of the 3x3 matrix:\n");
    for (int i=0; i<3; i++) {
        for (int j=0; j<3; j++) {
            printf("Element [%d][%d]: ", i, j);
            scanf("%d", &matrix[i][j]);
        }
    }
    printf("Saddle point(s) in the matrix:\n");
    for (int i=0; i<3; i++) {
        int min = matrix[i][0];
        int colNo = 0;
        for (int j=0; j<3; j++) {
            if (matrix[i][j] < min) {
                min = matrix[i][j];
                colNo = j;
            }
        }
        int Saddle = 1;
        for (int k = 0; k < 3; k++) {
            if (matrix[k][colNo] > min) {
                Saddle = 0;
                break;
            }
        }
        if (Saddle) {
            printf("Saddle point found: %d at position [%d][%d]\n", min, i, colNo);
        }
    }
}
```

```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 6.c -o 6.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>6.exe
Enter elements of the 3x3 matrix:
Element [0][0]: 2
Element [0][1]: 4
Element [0][2]: 2
Element [1][0]: 4
Element [1][1]: 65
Element [1][2]: 23
Element [2][0]: 3
Element [2][1]: 1
Element [2][2]: 21
Saddle point(s) in the matrix:
Saddle point found: 4 at position [1][0]

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```

PROBLEM:7

```c
void main() {
    int matrix1[3][3], matrix2[3][3], product[3][3];
    printf("Enter elements of the first 3x3 matrix:\n");
    for (int i=0; i<3; i++) {
        for (int j=0; j<3; j++) {
            printf("Element [%d][%d]: ", i, j);
            scanf("%d", &matrix1[i][j]);
        }
    }
    printf("Enter elements of the second 3x3 matrix:\n");
    for (int i=0; i<3; i++) {
        for (int j=0; j<3; j++) {
            printf("Element [%d][%d]: ", i, j);
            scanf("%d", &matrix2[i][j]);
        }
    }
    for (int i=0; i<3; i++) {
        for (int j=0; j<3; j++) {
            product[i][j] = 0;
            for (int k = 0; k < 3; k++) {
                product[i][j] += matrix1[i][k] * matrix2[k][j];
            }
        }
    }
    printf("Product of Matrix Multiplication:\n");
    for (int i=0; i<3; i++) {
        for (int j=0; j<3; j++) {
            printf("%d\t", product[i][j]);
        }
        printf("\n");
    }
}
```

```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 7.c -o 7.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>7.exe
Enter elements of the first 3x3 matrix:
Element [0][0]: 23
Element [0][1]: 42
Element [0][2]: 1
Element [1][0]: 2
Element [1][1]: 43
Element [1][2]: 4
Element [2][0]: 2
Element [2][1]: 4
Element [2][2]: 9
Enter elements of the second 3x3 matrix:
Element [0][0]: 1
Element [0][1]: 2
Element [0][2]: 2
Element [1][0]: 13
Element [1][1]: 4
Element [1][2]: 54
Element [2][0]: 12
Element [2][1]: -2
Element [2][2]: 4
Product of Matrix Multiplication:
581     212     2318
609     168     2342
162     2       256

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```

PROBLEM:8

```c
#include <stdio.h>
void main() {
    int rows;
    printf("Enter the number of rows for the upper half of the diamond: ");
    scanf("%d", &rows);
    for (int i=1; i<=rows; i++) {
        for (int j=i; j<rows; j++) {
            printf(" ");
        }
        for (int j=1; j<=(2 * i -1); j++) {
            printf("*");
        }
        printf("\n");
    }
    for (int i=rows-1 ; i>=1; i--) {
        for (int j=rows; j>i; j--) {
            printf(" ");
        }
        for (int j=1; j<=(2 * i - 1); j++) {
            printf("*");
        }
        printf("\n");
    }
}

```

```
D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>gcc 8.c -o 8.exe

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>8.exe
Enter the number of rows for the upper half of the diamond: 7
      *
     ***
    *****
   *******
  *********
 ***********
*************
 ***********
  *********
   *******
    *****
     ***
      *

D:\MY ASSIGNMENTS\PF-LAB-ASSIGNMENT\LAB-8>
```