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Lab 8
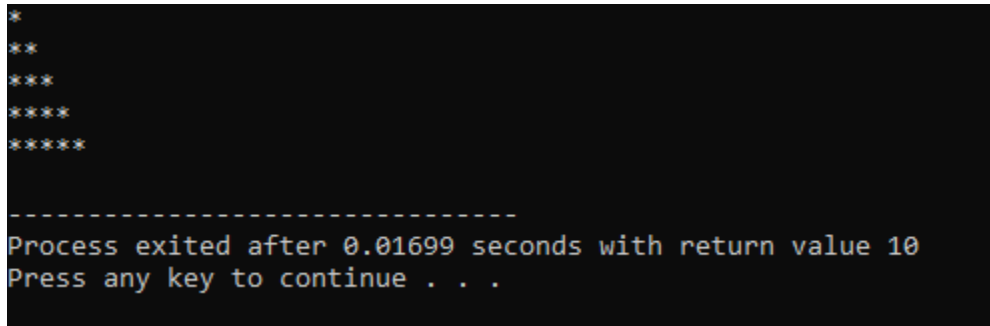
24k-0718

Example 1:

```c
# include <stdio.h>
int main(){
    int i ,j;
    for(i=1;i<=5;i++){
        for(j=1;j<=i;j++){
            printf("*");
        }
    printf("\n");
    }

}
```

```
*
**
***
****
*****

--------------------------------
Process exited after 0.01699 seconds with return value 10
Press any key to continue . . .
```

Example 2:

```c
# include <stdio.h>

int main(){

        int i ,j;

        for(i=1;i<=5;i++){

                for(j=1;j<=5;j++){

                        printf("%d\t",i*j);

                }

        printf("\n");

        }


}
```



```
C:\Users\k240718\Downloads\lab 8\example 2.exe
1       2       3       4       5
2       4       6       8       10
3       6       9       12      15
4       8       12      16      20
5       10      15      20      25

--------------------------------
Process exited after 0.01772 seconds with return value 0
Press any key to continue . . .
```

Example 3:

```c
#include <stdio.h>

int main() {

int rows = 5;

for (int i = rows; i >= 1; i--) {

        for (int j = 1; j <= i; j++) {

                printf("*");
```
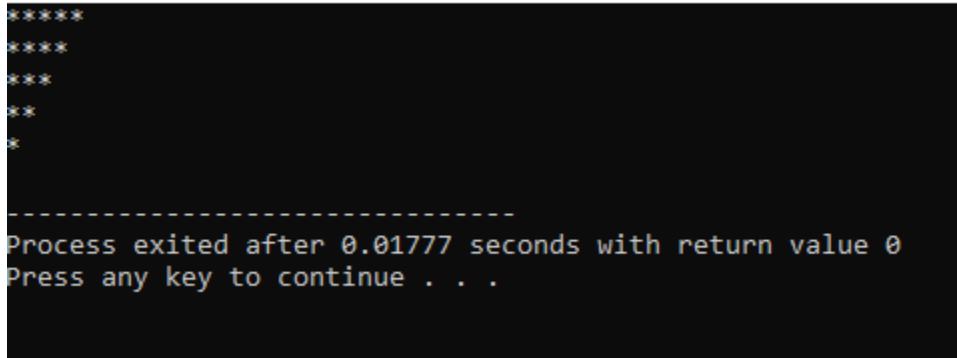
```
        }

            printf("\n");

        }

        return 0;

    }
```

```
*****
****
***
**
*

--------------------------------
Process exited after 0.01777 seconds with return value 0
Press any key to continue . . .
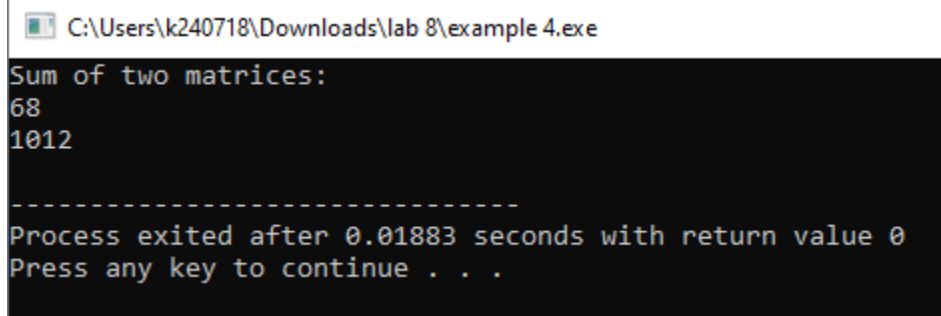```

# Example 4:

```c
#include <stdio.h>

int main() {

    int mat1[2][2] = {{1, 2}, {3, 4}};
    int mat2[2][2] = {{5, 6}, {7, 8}};

    int result[2][2];

    for (int i = 0; i < 2; i++) {

        for (int j = 0; j < 2; j++) {

            result[i][j] = mat1[i][j] + mat2[i][j];
```

```
    }
}
```

```
printf("Sum of two matrices:\n");
```

```
for (int i = 0; i < 2; i++) {
        for (int j = 0; j < 2; j++) {
                printf("%d", result[i][j]);
}
printf("\n");
}
return 0;
}
```

C:\Users\k240718\Downloads\lab 8\example 4.exe

```
Sum of two matrices:
68
1012

-------------------------------
Process exited after 0.01883 seconds with return value 0
Press any key to continue . . .
```

Example 5:

```
#include<stdio.h>
int main() {
int arr[2][2][2] = {
{{1, 2}, {3, 4}},
{{5, 6}, {7, 8}}
```
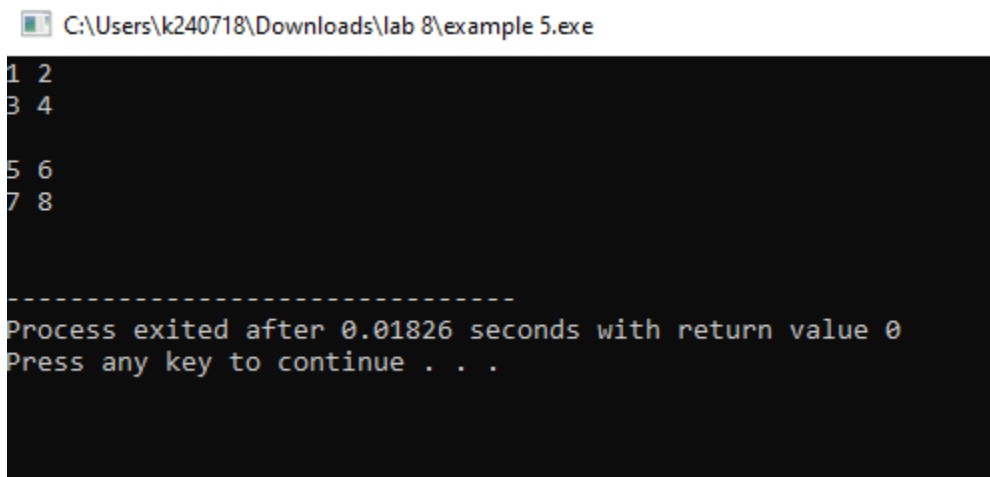
```c
    };

    for (int i = 0; i < 2; i++) {

            for (int j = 0; j < 2; j++) {

                    for (int k = 0; k < 2; k++) {

                            printf("%d ", arr[i][j][k]);

    }

    printf("\n");

    }

    printf("\n");

    }

    return 0;

    }
```

C:\Users\k240718\Downloads\lab 8\example 5.exe

```
1 2
3 4

5 6
7 8


------------------------------
Process exited after 0.01826 seconds with return value 0
Press any key to continue . . .
```

CLASS TASK 1:

```c
# include<stdio.h>

int main(){
```

```c
int i,j,num;

printf("Enter Rows: ");

scanf("%d",&num);


for(i=0;i<=num;i++){


    for(j=1; j<=i; j++){

            printf(" ");

    }

    for(j=0;j<num-i;j++){

            printf("*");

    }

    printf("\n");

}

}
```
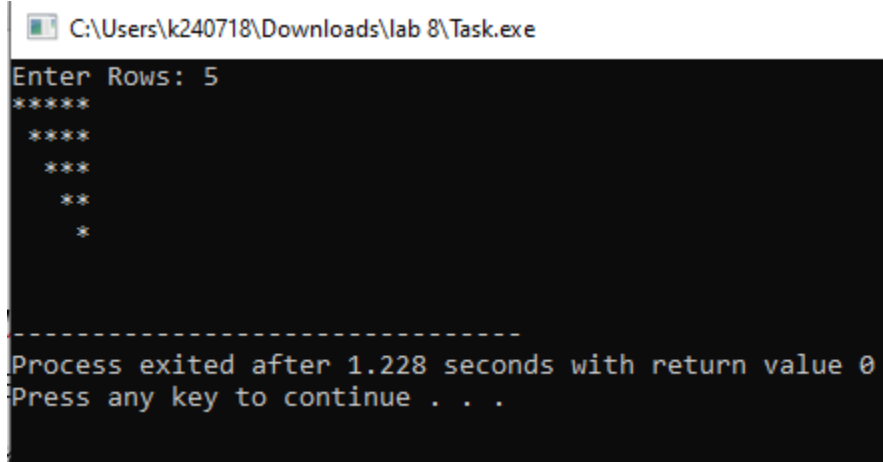

CLASS TASK 2:

```c
# include <stdio.h>
int main (){
        int mat1[2][2] = {{1, 2}, {3, 4}};
        int i,j,max;
        max = mat1[0][0];
        for(i=0;i<2;i++){
                for(j=0;j< 2;j++){
                        if (mat1[i][j]> max){
                                max = mat1[i][j];
                        }
                }
        }
        printf("The greatest in this array: %d",max);
}
```



```
C:\Users\k240718\Downloads\lab 8\task 2.exe
The greatest in this array: 4
--------------------------------
Process exited after 0.01786 seconds with return value 0
Press any key to continue . . .
```

CLASS TASK 3:

```c
# include<stdio.h>
int main(){
        int i ,j,num;
        printf("Enter Num: ");
```
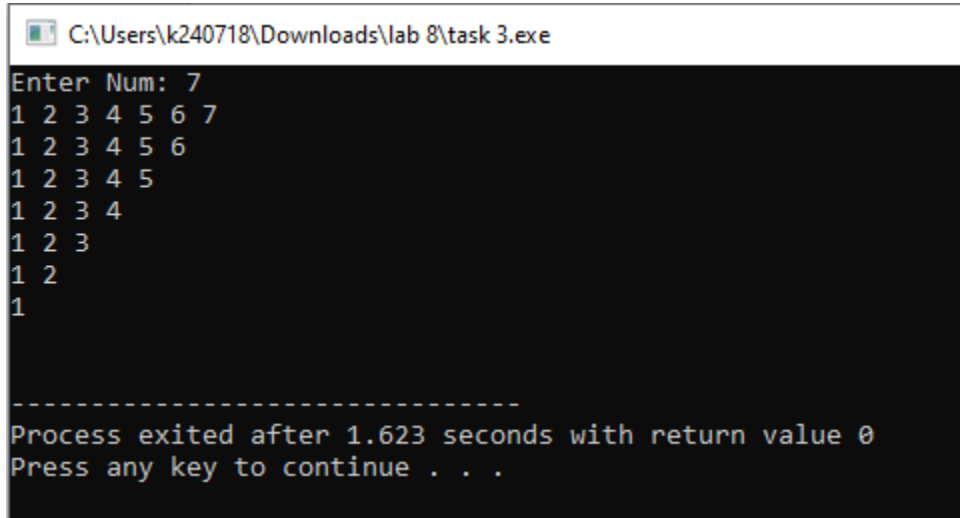
```c
scanf("%d",&num);

for (i=0;i<=num;i++){

    for(j=1;j<=num-i;j++){

        printf("%d ",j);

    }

printf("\n");

}


}
```

```
C:\Users\k240718\Downloads\lab 8\task 3.exe

Enter Num: 7
1 2 3 4 5 6 7
1 2 3 4 5 6
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1


--------------------------------
Process exited after 1.623 seconds with return value 0
Press any key to continue . . .
```

CLASS TASK 4:

```c
#include <stdio.h>


#define ROWS 3

#define COLS 4
```

```c
int main() {
    int array[ROWS][COLS] = {
        {1, 2, 3, 4},
        {5, 6, 7, 8},
        {9, 10, 11, 12}
    };

    printf("Original Array:\n");
    for (int i = 0; i < ROWS; i++) {
        for (int j = 0; j < COLS; j++) {
            printf("%d ", array[i][j]);
        }
        printf("\n");
    }

int temp[ROWS][COLS];

    for (int i = 0; i < ROWS; i++) {
        for (int j = 0; j < COLS; j++) {
            temp[i][j]=array[ROWS-1-i][COLS-1-j];
        }
    }
    printf("Reversed Array:\n");
    for (int i = 0; i < ROWS; i++) {
```

```c
        for (int j = 0; j < COLS; j++) {

            printf("%d ",temp[i][j]);

    }

    printf("\n");

    }



    }
```

```
Original Array:
1 2 3 4
5 6 7 8
9 10 11 12
Reversed Array:
12 11 10 9
8 7 6 5
4 3 2 1

---------------------------------
Process exited after 0.01877 seconds with return value 0
Press any key to continue . . .
```

Section 1 Problem 1:

```c
# include<stdio.h>
int main(){
        int i ,j,num;
        printf("Enter Num: ");
        scanf("%d",&num);
        for (i=1;i<=num;i++){
                for(j=1;j<=i;j++){
```
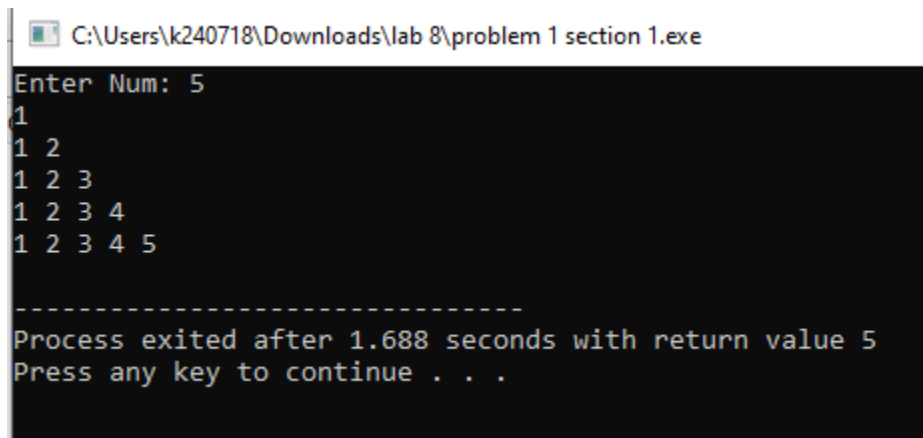
```c
                printf("%d ",j);

            }

        printf("\n");

        }



}
```


Section 2 Problem 1:

```c
# include <stdio.h>

int main (){

        int r,c;

        printf("Rows: ");

        scanf("%d",&r);

        printf("Cols: ");

        scanf("%d",&c);


        int arr[r][c];

        int i,j;
```

```c
        for(i=0;i<r;i++){
                for(j=0;j<c;j++){
                        printf("enter element of %d row and %d column: ",i,j);
                        scanf("%d",&arr[i][j]);
                }
        }
        printf("Before:\n");
        for(i=0;i<r;i++){
                for(j=0;j<c;j++){
                        printf("%d ",arr[i][j]);
                }
                printf("\n");
}

        printf("Transpose:\n");
        for(i=0;i<c;i++){
                for(j=0;j<r;j++){
                        printf("%d ",arr[j][i]);
                }
                printf("\n");
        }
        printf("\n");
}
```

```
C:\Users\k240718\Downloads\lab 8\Problem 1 section 2.exe

Rows: 2
Cols: 3
enter element of 0 row and 0 column: 1
enter element of 0 row and 1 column: 2
enter element of 0 row and 2 column: 3
enter element of 1 row and 0 column: 4
enter element of 1 row and 1 column: 5
enter element of 1 row and 2 column: 6
Before:
1 2 3
4 5 6
Transpose:
1 4
2 5
3 6


--------------------------------
Process exited after 4.592 seconds with return value 10
Press any key to continue . . .
```

Section 3 Problem 1:

#include <stdio.h>

int main() {

   int array_3d[2][3][3] = {

    {

      {1, 2, 3},

      {4, 5, 6},
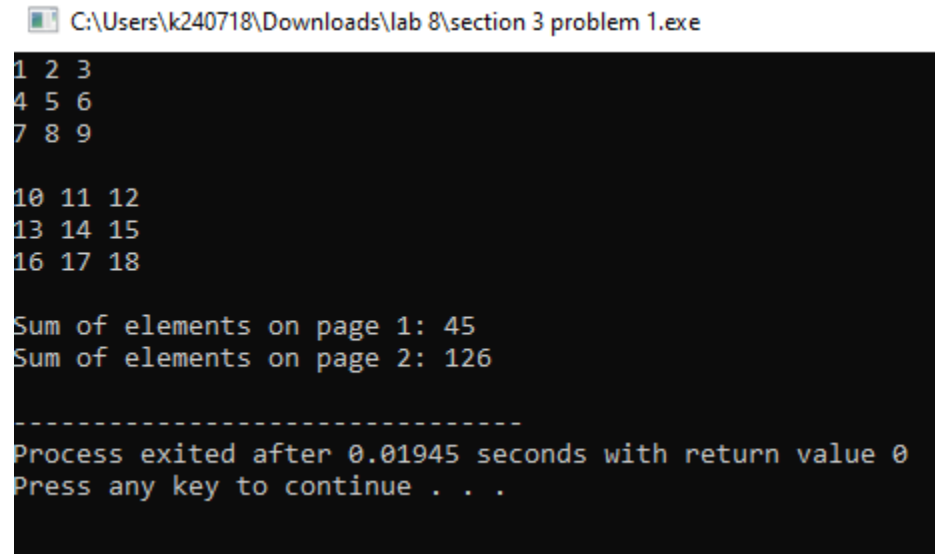
      {7, 8, 9}

    },

```c
    {
        {10,11,12},
        {13,14,15},
        {16,17,18}
    }
};

int sum[2] = {0};

for (int page = 0; page < 2; page++) {
    for (int row = 0; row < 3; row++) {
        for (int col = 0; col < 3; col++) {
            printf("%d ",array_3d[page][row][col]);
            sum[page] += array_3d[page][row][col];
        }
        printf("\n");
    }
    printf("\n");
    printf("")
}

for (int page = 0; page < 2; page++) {
    printf("Sum of elements on page %d: %d\n", page + 1, sum[page]);
}
```

```
    return 0;

}
```



```
C:\Users\k240718\Downloads\lab 8\section 3 problem 1.exe

1 2 3
4 5 6
7 8 9

10 11 12
13 14 15
16 17 18

Sum of elements on page 1: 45
Sum of elements on page 2: 126

---------------------------------
Process exited after 0.01945 seconds with return value 0
Press any key to continue . . .
```

More Problem's:

Q1.

```
#include <stdio.h>

int main(){
        int n,i,j;
        printf("Enter a number: ");
        scanf("%d",&n);
        int prime=1;

        printf("The sequence is: ");
        for (i=2;i<=n;i++){
```

```c
                prime = 1;
                j=2;
                while(j<i){
                        if (i%j==0)
                                prime=0;
                        j++;
                }
                if (prime){
                        printf("%d ",i);
                }
        }
        return 0;
}
```
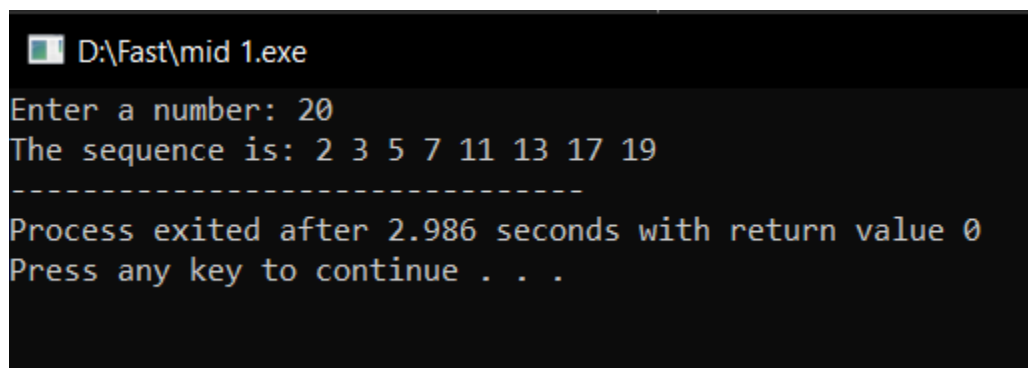
Q2.

```c
#include <stdio.h>

int main() {
    int num, i, j;
```
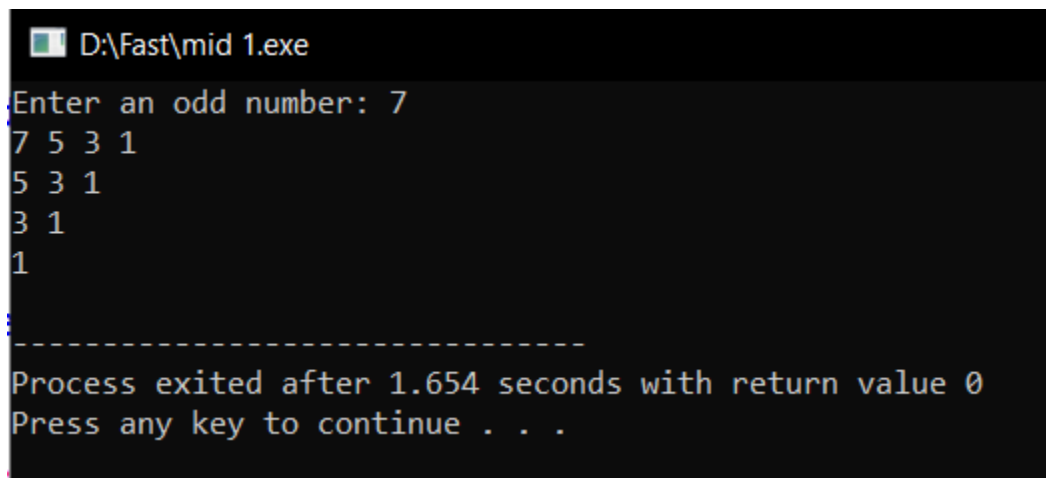
```c
printf("Enter an odd number: ");
scanf("%d", &num);

if (num % 2 == 0) {
    printf("Please enter an odd number.\n");
    return 1;
}
for (i = num; i > 0; i = i - 2) {
    for (j = i; j > 0; j =j- 2) {
        printf("%d ", j);
    }
    printf("\n");
}
return 0;
}
```

```
D:\Fast\mid 1.exe

Enter an odd number: 7
7 5 3 1
5 3 1
3 1
1

-------------------------------
Process exited after 1.654 seconds with return value 0
Press any key to continue . . .
```

Q3.

```c
#include <stdio.h>

int main() {
    int matrix[3][3];
    int i, j, k;
    int saddlePointFound = 0;

    printf("Enter the elements of a 3x3 matrix:\n");
    for (i = 0; i < 3; i++) {
        for (j = 0; j < 3; j++) {
            printf("Enter element in row %d and col %d: ",i+1,j+1);
            scanf("%d", &matrix[i][j]);
        }
    }

    for (i = 0; i < 3; i++) {
        int rowMin = matrix[i][0];
        int colIndex = 0;

        for (j = 1; j < 3; j++) {
            if (matrix[i][j] < rowMin) {
                rowMin = matrix[i][j];
                colIndex = j;
            }
```

```c
        }

        int isSaddlePoint = 1;
        for (k = 0; k < 3; k++) {
            if (matrix[k][colIndex] > rowMin) {
                isSaddlePoint = 0;
                break;
            }
        }

        if (isSaddlePoint) {
            printf("Saddle point found at (%d, %d): %d\n", i+1, colIndex+1, rowMin);
            saddlePointFound = 1;
        }
    }
    if (!saddlePointFound) {
        printf("No saddle point found.\n");
    }

    return 0;
}
```

```
D:\Fast\mid 1.exe

Enter the elements of a 3x3 matrix:
Enter element in row 1 and col 1: 3
Enter element in row 1 and col 2: 8
Enter element in row 1 and col 3: 4
Enter element in row 2 and col 1: 9
Enter element in row 2 and col 2: 7
Enter element in row 2 and col 3: 6
Enter element in row 3 and col 1: 5
Enter element in row 3 and col 2: 1
Enter element in row 3 and col 3: 2
Saddle point found at (2, 3): 6

---------------------------------
Process exited after 14.92 seconds with return value 0
Press any key to continue . . .
```

Q4.

```c
#include <stdio.h>

int main() {
    int mat1[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
    int mat2[3][3] = {{10, 11, 12}, {13, 14, 15}, {16, 17, 18}};
    int result[3][3], i, j, k;

    for (i = 0; i < 3; i++) {
        for (j = 0; j < 3; j++) {
            result[i][j] = 0;
            for (k = 0; k < 3; k++) {
                result[i][j] += mat1[i][k] * mat2[k][j];
```
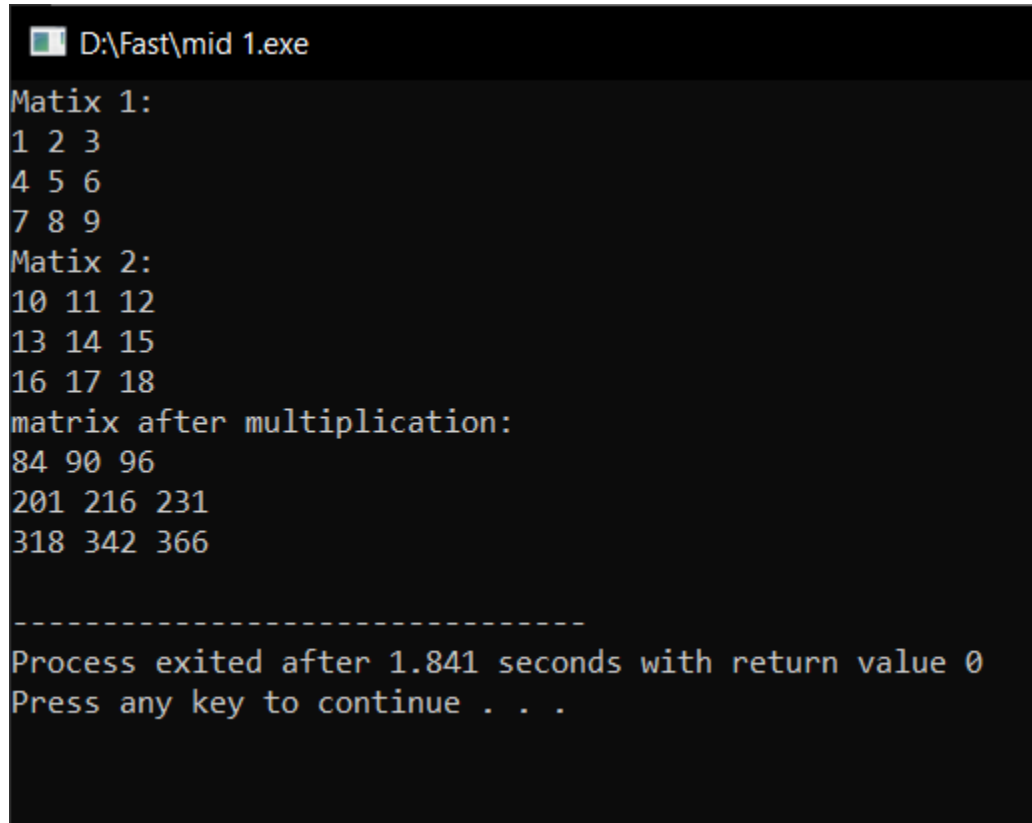
```c
        }
    }
}
printf("Matix 1:\n");
for (i = 0; i < 3; i++) {
    for (j = 0; j < 3; j++) {
        printf("%d ",mat1[i][j]);
        }
            printf("\n");
    }


    printf("Matix 2:\n");
for (i = 0; i < 3; i++) {
    for (j = 0; j < 3; j++) {
        printf("%d ",mat2[i][j]);
        }
            printf("\n");
    }


    printf("matrix after multiplication:\n");
for (i = 0; i < 3; i++) {
    for (j = 0; j < 3; j++) {
        printf("%d ", result[i][j]);
    }
```

```c
        printf("\n");
    }
    return 0;
}
```

```
D:\Fast\mid 1.exe

Matix 1:
1 2 3
4 5 6
7 8 9
Matix 2:
10 11 12
13 14 15
16 17 18
matrix after multiplication:
84 90 96
201 216 231
318 342 366

--------------------------------
Process exited after 1.841 seconds with return value 0
Press any key to continue . . .
```

Q5.

```c
#include <stdio.h>

int main() {
    int size, i, j, space;
```

```c
printf("Enter the number of rows: ");
scanf("%d", &size);


for (i = 1; i <= size; i++) {
    for (space = 1; space <= size - i; space++) {
        printf(" ");
    }
    for (j = 1; j <= i; j++) {
        printf("* ");
    }
    printf("\n");
}


for (i = size - 1; i >= 1; i--) {
    for (space = 1; space <= size - i; space++) {
        printf(" ");
    }
    for (j = 1; j <= i; j++) {
        printf("* ");
    }
    printf("\n");
}
```

```
D:\Fast\mid 1.exe

Enter the number of rows: 4
    *
   * *
  * * *
 * * * *
  * * *
   * *
    *


--------------------------------
Process exited after 2.713 seconds with return value 0
Press any key to continue . . .
```