Question 6:

(2 marks, file to be edit

Your program allows u
sorting of the array in
character.

Below is an example:

Question 6:

(2 marks, file to be edited: Q6.c)

Your program allows users to enter 5 person names into an array of strings. The program performs sorting of the array in ascending order then prints each element of the array followed by a space character.

Below is an example:

```
John
Joe
Due
Long
Ming

OUTPUT:
Due Joe John Long Ming
Press any key to continue . . .
```

```
                strcpy(tmp, str[i]);
```

5 of 5 Paper No: 3

(1 mark, file to be edited: Q7.c)

Your program allows users to enter a string with an odd number of characters (5<n<20). The program then displays the middle 5 characters of the string.

Below is an example:

```
hello7

OUTPUT:
hello
Press any key to continue . . .
```

```
strcpy(str[i], str[j]);        strcpy(str[j], tmp);
                                        }
                                      }
                                     }
                              for (i = 0; i < 5; i++)
                                printf("%s ", str[i]);

                        //--FIXED PART - DO NOT EDIT ANY THINGS HERE
                                       printf("\n");
                                     system("pause");
                                       return (0);
                                           }
```

#include <stdio.h>

```
1.  #include <stdlib.h>
2.  #include <string.h>
3.  #include <math.h>
4.
5.  int main()
6.  {
```

```
7.  system("cls");
8.  // INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
```

```
1.  char str[100];
2.  gets(str);
3.  int j = strlen(str);
4.  int i;
```

```
9.
10.  // Fixed Do not edit anything here.
11.  printf("\nOUTPUT:\n");
12.  //@STUDENT: WRITE YOUR OUTPUT HERE:
13.  for (i = j / 2 - 2; i <= j / 2 + 2; i++)
14.  {
15.  printf("%c", str[i]);=r3
16.  }
17.
18.  //--FIXED PART - DO NOT EDIT ANY THINGS HERE
19.  printf("\n");
20.  system("pause");
21.  return (0);
22.  }
23.
24.  #include <stdio.h>
25. #include <stdlib.h>
26. #include <string.h>
27. #include <math.h>
28.
29. int main()
30. {
31.  system("cls");
32.  // INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
33.  char [100];
34.  gets(ststr[100];
35.  gets(str);
36.  //@STUDENT: WRITE YOUR OUTPUT HERE:
37.  for (i = j / 2 - 2; i <= j / 2 + 2; i++)
38.  {
```

```
39.     printf("%c", str[i]);

40.   }

41.

42.   //--FIXED PART - DO NOT EDIT ANY THINGS HERE

43.   printf("\n");

44.   system("pause");

45.   return (0);

46.
```

Đảo ngược số

```
//đảo ngược số

include <stdio.h>
int reverse(int n)
{
int reNum = n % 10; // b1 láº¥y chá»¯ sá»‘ cuá»‘i cÃ¹ng
   n /= 10;            // bá» chá»¯ sá»‘ cuá»‘i cÃ¹ng
   int last;
  while (n > 0)
  {
last = n % 10;             // láº¥y chá»¯ sá»‘ cuá»‘i cÃ¹ng
 n /= 10;                   // bá» chá»¯ sá»‘ cuá»‘i cÃ¹ng
reNum = reNum * 10 + last; // vÃ²ng láº·p Ä‘á»ƒ thá»±c hiá»‡n bÆ°á»›c 2 3 4
  }
 return reNum;#
  }
 int main()
  {

   int n;
 printf("INPUT NUMBER: ");
  scanf("%d", &n);
printf("REVERSE NUMBER OF %d IS %d #incldue", n, reverse(n));
   return 0;
  }
```

```
// armstrong

#include <stdio.h>
 #include <math.h>

int countDigits(int num)
```

```
{
int count = 0;
while (num > 0)
{
num /= 10;
count++;
}
return count;
}

bool isArmstrong(int num)
{
int numDigit = countDigits(num);
int tmp = num;
int sum = 0;
int last;
while (tmp > 0)
{
last = tmp % 10;
tmp /= 10;
sum += pow(last, numDigit);
}
if (sum == num)
return true;
return false;
}

int main()
{
int num;
printf("input number: ");
scanf("%d", &num);

if (isArmstrong(num) == true)
```

```
47.   int j = strlen(str);

48.   int i;

49.

50.   // Fixed Do not edit anything here.

51.   printf("\nOUTPUT:\n");
```

```
{
printf("%d is Armstrong number.", num);
}
else
{
printf("%d is not Armstrong number.", num);
}
//getch();
}
```

Question 3:

(1 mark, file to be edited: Q3.c)

Your program allows users to enter an integer number 'n'.

If 'n' is a palindrome number, the program prints out: "*n is a palindrome number*"

else, the program prints out: "*n is not a palindrome number*". Here, 'n' is the entered number.

Below is an example of how the program will run:

```
33

OUTPUT:
33 is a palindrome number
Press any key to continue . . .
```

```
127

OUTPUT:
127 is not a palindrome number
Press any key to continue . . .
```

```c
#include <stdio.h>
int main()
{
int n, reversed = 0, remainder, original;
printf("Enter an integer: ");
scanf("%d", &n);
original = n;

// reversed integer is stored in reversed variable
while (n != 0 && n >= 0)
{
remainder = n % 10;
reversed = reversed * 10 + remainder;
n /= 10;
}

// palindrome if orignal and reversed are equal
// ve hinh tam giac can chieu dai 2 canh = n nhu vi du

//Vi du n=4
/*
 *
 **
 ***
****
 ***
 **
*
 */
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <math.h>
#include <ctype.h>


int main() {
system("cls");
//INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
```

```
                                        int n;
                                    scanf("%d", &n);




                            // Fixed Do not edit anything here.
                                  printf("\nOUTPUT:\n");
                            //@STUDENT: WRITE YOUR OUTPUT HERE:
                                          int i,j;


      for(i = 0; i < 2*n - 1;i++)//In cot dung de in 2*n so cot chua sao nhu n=4 thi co 8 cot
                                        chua sao
                                            {
                                    //Trong vong for nay dung de in hang
                                 for(j = 0; j < n;j++)//Trong 1 hang toi da la n sao
                                                {
                                          if(i >= n -1 - j && i <= n -1 +j)
                                    /*i>= n -1 - j: Dieu kien in ra so sao hang phia duoi*/
                                   /*i <= n -1 +j: Dieu kien in ra so sao o hang phia tren*/
                  Qq                                        printf("*");

                                        else printf(" ");
                                            }
                                          printf("\n");
                                            }




                          //--FIXED PART - DO NOT EDIT ANY THINGS HERE
                                        printf("\n");
                                     system ("pause");
                                        return(0);
                                            }
```

```
//Nhap vao so nguyen duong n va n so nguyen. Tim so xuat hien nhieu nhat
```

```
                                    #include <stdio.h>
                                    #include <stdlib.h>
                                    #include <string.h>
                                     #include <math.h>
                                    #include <ctype.h>
```

```
                                    int main() {
                                    system("cls");
                            //INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
                                          int n;
                  int arr[1000], b[1000] = {0}, c[1000] = {0}; //Khoi tao 3 mang so nguyen
```

```
                                int i;
    scanf("%d", &n); //Nhap so phan tu cua mang arr
                    for(i = 0; i < n;i++)
                                {
scanf("%d", &arr[i]);         // Nhap n phan tu mang so nguyen arr
                                }
                    for(i = 0; i < n;i++)
                                {
 if(arr[i] > 0) //Mang so nguyen b[] ghi lai so lan xuat hien cua
                b[arr[i]]++;  //cac phan tu lon hon 0 trong day arr
 if(arr[i] < 0) //Mang so nguyen c[] ghi lai so lan xuat hien cua
                c[-arr[i]]++; //cac phan tu nho hon 0 trong day arr
                                }
                            int max = 0;
                    for(i = 0; i <n ;i++)
                                {
                             if(arr[i] > 0)
                                    {
                               if(b[arr[i]] > max)
                                      max = b[arr[i]];
                                    }
                                else
                                    {
                               if(c[-arr[i]] > max)
                                      max = c[-arr[i]];
                                    }
}// Vong lap tra ra so lan xuat hien nhieu nhat cua mot phan tu trong arr




          // Fixed Do not edit anything here.
                printf("\nOUTPUT:\n");
          //@STUDENT: WRITE YOUR OUTPUT HERE:
                   for(i = 0; i <1000 ;i++)
                                {
                             if(b[i] == max)
                                    {
                                printf("%d", i);
                                    }
                             if(c[i] == max)
                                 printf("%d", -i);
        } //In ra phan tu co lan xuat hien nhieu nhat trong day




  //--FIXED PART - DO NOT EDIT ANY THINGS HERE
                printf("\n");
              system ("pause");
                 return(0);
                     }
```

```
//Tinh tong sum = 1/x + 1/x^2 + 1/x^3 +... + 1/x^n
    //Voi x va n la so nguyen nhap tu ban phim

                #include <stdio.h>
                #include <stdlib.h>
                #include <string.h>
                 #include <math.h>
                #include <ctype.h>


                   int main() {
                   system("cls");
      //INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
                        int x,n;
       scanf("%d%d", &x, &n); //Nhap vao hai so nguyen x va n
       double sum = 0; //Khoi tao gia tri cua tong bang khong
                         int i;
                  for(i = 0;i <= n;i++)
                           {
sum+= 1 / (pow(x,i));        //pow(x,i) la ham tinh luy thua bac i cua x
                           }


          // Fixed Do not edit anything here.
                printf("\nOUTPUT:\n");
          //@STUDENT: WRITE YOUR OUTPUT HERE:
                    printf("%.2lf\n", sum);


     //--FIXED PART - DO NOT EDIT ANY THINGS HERE
                    printf("\n");
                  system ("pause");
                     return(0);
                        }
// nhap vao mot chuoi bat ki, xoa het cac ki tu và so, chi giu lai cac chu cai

                #include <stdio.h>
                #include <stdlib.h>
                #include <string.h>
                 #include <math.h>
                 #include <ctype.h>
                #include <stdbool.h>

                   int main() {
                   system("cls");
      //INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
                       char str[100];
                    scanf("%[^\n]", str);
                          int i,j;
                    bool all_al = false;
 while(all_al == false) // lap de xoa ki tu khong phai chu cai
                           {
                            all_al = true;
                  for(i = 0; i < strlen(str);i++)
                                {
       if(!isalpha(str[i])) // kiem tra xem str[i] co phai la chu cai khong
                                {
                    for(j = i; j < strlen(str) ; j++)      // xoa str[i] neu
            str[i] khong phai chu cai
                                    {
                                str[j] = str[ j + 1];
                                 }
                                }
                                }
```

```
for( i = 0; i < strlen(str);i++)       // kiem tra trong str co ki tu nao khong
                        phai chu cai khong
                                        {
                                     if(!isalpha(str[i]))
                                            all_al = false;
                                        }
                                     }




                    // Fixed Do not edit anything here.
                          printf("\nOUTPUT:\n");
                    //@STUDENT: WRITE YOUR OUTPUT HERE:
                                printf("%s\n", str);




                  //--FIXED PART - DO NOT EDIT ANY THINGS HERE
                                 printf("\n");
                               system ("pause");
                                  return(0);
                                     }
//nhap vao mot so tu nhien n, in ra 4 so nguyen to gan nhat lon hon n

                              #include <stdio.h>
                              #include <stdlib.h>
                              #include <string.h>
                               #include <math.h>
                              #include <ctype.h>
                             #include <stdbool.h>

                bool isPrime(int n) // ham kiem tra so nguyen to
                                    {
                                     if( n < 2)
                                         return false;
                                       int i;
                             for(i = 2; i <= sqrt(n);i++)
                                         {
                                        if(n % i == 0)
                                             return false;
                                         }
                                    return true;
                                     }

                                int main() {
                                system("cls");
                         //INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
                                    int count = 4;
                                        int n;
                                   scanf("%d", &n);
                                      int i = 1;
```

```
    // Fixed Do not edit anything here.
          printf("\nOUTPUT:\n");
    //@STUDENT: WRITE YOUR OUTPUT HERE:
while(count > 0)    // in ra 4 so nguyen to lon hon n
                    {
                  if(isPrime(n + i))
                          {
                     printf("%d\n", n + i);
                           count--;
                          }
                        i++;
                     }



//--FIXED PART - DO NOT EDIT ANY THINGS HERE
              system ("pause");
                 return(0);
                    }
```

Users are required to enter five integer numbers using the keyboard (STDIN). The program needs to find the maximum even number among the entered values. The program then displays this number on screen.

Input Format

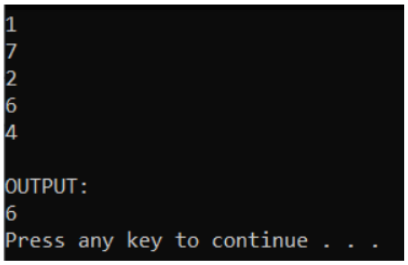
Below

Constraints

Below

Output Format

Below is an example of how the program will run:




```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
 #include <math.h>
int sochan_max(int a[], int n)
                {
              int max;
             int i = 0;
          while (a[i] % 2 != 0)
                    i++;
               max = a[i];
    for (int j = i + 1; j < n; j++)
            if (a[j] % 2 == 0)
               if (max < a[j])
```

```
                max = a[j];
            return max;
               }

            int main()
               {
             system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
              int arr[5];
          for (int i = 0; i < 5; i++)
               {
          scanf("%d", &arr[i]);
               }

      // Fixed Do not edit anything here.
           printf("\nOUTPUT:\n");
      //@STUDENT: WRITE YOUR OUTPUT HERE:
       printf("%d", sochan_max(arr, 5));


 //--FIXED PART - DO NOT EDIT ANY THINGS HERE
            printf("\n");
          system("pause");
            return (0);
               }
```

Your program allows users to enter 5 “integer” numbers. The system sorts the entered numbers in ascending order. The system then displays only the even numbers to screen. There is a newline character between any two adjacent numbers.

Input Format

above

Constraints

above

Output Format

Below is an example of how the program will run:

```
3
2
8
6
7

OUTPUT:
2
6
8
Press any key to continue . . .
```

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
```

```c
#include <math.h>


int main()
{
// system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
int arr[5];
int i, j;
for (i = 0; i < 5; i++)
{
scanf("%d", &arr[i]);
}

// Fixed Do not edit anything here.
printf("OUTPUT:\n");
//@STUDENT: WRITE YOUR OUTPUT HERE:
for (i = 0; i < 5; i++)
{
for (j = 4; j > i; j--)
{
if (arr[j] < arr[j - 1])
{
int tmp = arr[j];
arr[j] = arr[j - 1];
arr[j - 1] = tmp;
}
}
}

for (i = 0; i < 5; i++)
{
if (arr[i] % 2 == 0)
{
printf("%d\n", arr[i]);
}
}
}
```

Your program allows users to enter array of n integers, where n is entered by the user (n < 10). The program removes all duplicated odd numbers (keeps only the first occurrence of the numbers). Then, the program prints the resultant list of numbers (after removing the duplicated ones). Between any two numbers, there is a newline character.

Input Format

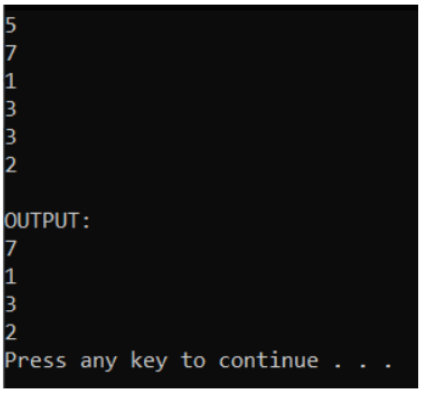
above

Constraints

above

Output Format

Below is an example how the program works.




```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
 #include <math.h>
    int main()
        {
     system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
       int n, arr[10], i, check = 0, j, k;
           scanf("%d", &n);
      for (i = 0; i < n; i++)
                {
         scanf("%d", &arr[i]);
                }

    for (i = 0; i < n - 1; i++)
                {
      for (j = i + 1; j < n; j++)
                    {
  if (arr[i] == arr[j] && arr[i] % 2 != 0)
                        {
            for (k = j; k < n; k++)
                            {
                arr[k] = arr[k + 1];
                            }

                        n--;
                        j--;
                        }
```

```
                    }
                }
    // Fixed Do not edit anything here.
            printf("OUTPUT:\n");
    //@STUDENT: WRITE YOUR OUTPUT HERE:
          for (i = 0; i < n; i++)
                    {
               if (check == 0)
                    check = 1;
                     else
                  printf("\n");
             printf("%d", arr[i]);
                    }
//--FIXED PART - DO NOT EDIT ANY THINGS HERE
                  printf("\n");
                system("pause");
                  return (0);
                     }
```

Your program allows users to enter a string: ‘s’ with maximum length of 100 characters. The system finds the number of words starting with letter 'h' and ending with letter 'g' in ‘s’. Finally, the system prints out that number.

Input Format

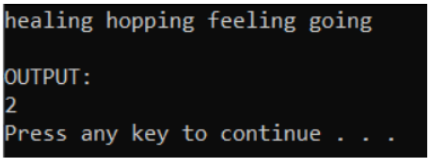
above

Constraints

above

Output Format

Below is an example:




```
                    #include <stdio.h>
                   #include <string.h>
                        int main()
                            {
                        system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
                         char s[100];
                           gets(s);
                      int i, j, count = 0;
                        char tmp[50][50];
                for (i = 0; i < strlen(s); i++)
                            {
                           j = 0;

               while (s[i] != ' ' && s[i] != '\0')
                            {
                    tmp[count][j] = s[i];
                             j++;
                             i++;
                            }
                   tmp[count][j] = '\0';
```

```
if (tmp[count][0] == 'h' && tmp[count][j - 1] == 'g')
                        count++;
                       }

      // Fixed Do not edit anything here.
            printf("\nOUTPUT:\n");
      //@STUDENT: WRITE YOUR OUTPUT HERE:

             printf("%d", count);

  //--FIXED PART - DO NOT EDIT ANY THINGS HERE
              printf("\n");
            system("pause");
              return (0);
                 }
```

Your program should allow users to enter an array of 'n' characters where 'n' < 20, 'n' is entered by users. It finds and displays the first two characters appearing the most (having the highest frequencies) among the entered characters. The program outputs each character on a separate line. The order of output characters follows the order they were entered by users.

Input Format

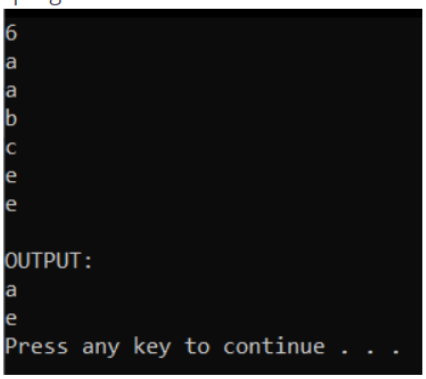
above

Constraints

above

Output Format

Below is the example show how the program works:




```
                #include <stdio.h>
               #include <stdlib.h>
               #include <string.h>
                #include <math.h>
              int main()          ,
                       {
                   system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
      int n, i, str[21], j, k, count = 0;
                    char c[21];
                  scanf("%d ", &n);
```

```
      for (i = 0; i < n; i++)
                {
            scanf("%c", &c[i]);
                getchar();
                }
    // Fixed Do not edit anything here.
       printf("OUTPUT:\n");
    //@STUDENT: WRITE YOUR OUTPUT HERE:
      for (i = 0; i < n; i++)
                {
              str[i] = 1;
      for (j = 0; j < n + 1; j++)
                 {
                if (i != j)
                   {
                if (c[i] == c[j])
                      {
                     str[i]++;
                for (k = j; k < n; k++)
                     c[k] = c[k + 1];
                        n--;
                        j--;
                       }
                     }
                   }
                 }
      for (i = 0; i < n; i++)
                {
              if (str[i] >= 2)
                      {
             printf("%c", c[i]);
               if (count != 1)
                  printf("\n");
                   count++;
               if (count == 2)
                      break;
                    }
                  }
//--FIXED PART - DO NOT EDIT ANY THINGS HERE
              printf("\n");
            system("pause");
              return (0);
                 }
```

Your program should allow users to enter an integer number: 'a'. The program should check if 'a' is a power of 2 or not. If it is, the program prints the exponent 'n' that makes the number 'a' the power of 2; else, the program prints: "a is not a power of 2" where 'a' is the entered number from user.

Input Format

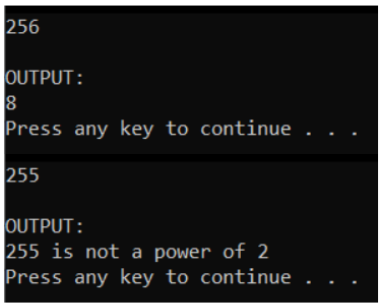
above

Constraints

above

Output Format

Example:




```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
 #include <math.h>
    int main()
        {
     system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
    int a, tmp, flag = 0;
      scanf("%d", &a);
          tmp = a;
   while (a % 2 == 0)
            {
           a /= 2;
           flag++;
            }
// Fixed Do not edit anything here.
       printf("OUTPUT:\n");
//@STUDENT: WRITE YOUR OUTPUT HERE:
        if (a == 1)
            {
     printf("%d", flag);
            }
          else
            {
 printf("%d is not a power of 2", tmp);
            }
//--FIXED PART - DO NOT EDIT ANY THINGS HERE
         printf("\n");
       system("pause");
         return (0);
        }
```

Your program should allow users to enter a string 's' with maximum 100 characters, then it should display the number of characters in the first three words of 's'. Words are separated from each other by a space character.

Input Format

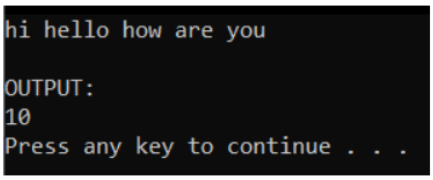
above

Constraints

above

Output Format

Examples:




```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
 #include <math.h>
    int main()
        {
    system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
            char s[100];
    int i, count = 0, tmp = 0;
              gets(s);
// Fixed Do not edit anything here.
        printf("OUTPUT:\n");
//@STUDENT: WRITE YOUR OUTPUT HERE:

  for (i = 0; i < strlen(s); i++)
                {
    if (s[i] != ' ' && tmp < 3)
                 {
          while (s[i] != ' ')
                   {
                  count++;
                    ++i;
                     ;
                   }
                 tmp++;
                 }
                }
          printf("%d", count);
//--FIXED PART - DO NOT EDIT ANY THINGS HERE
              printf("\n");
            system("pause");
              return (0);
                }
```

Your program should allow users to enter an integer 'n'. The program prints hexadecimal representation of 'n' if it is a prime number; else the program prints: "n is not a prime number" where 'n' is the number entered by the user.

Input Format

above

Constraints

above

Output Format

Examples:

```
47

OUTPUT:
0x2F
Press any key to continue . . .
```

```
46

OUTPUT:
46 is not a prime number
Press any key to continue . . .
```

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <math.h>
#include <ctype.h>
int checkprime(int n)
{
int i;
if (n < 2)
return 0;
for (i = 2; i <= sqrt(n); i++)
if (n % i == 0)
return 0;
return 1;
}
int main()
{
system("cls");
// INPUT - @STUDENT:ADD YOUR CODE FOR INPUT HERE:
int n;
scanf("%d", &n);

// Fixed Do not edit anything here.
printf("OUTPUT:\n");
//@STUDENT: WRITE YOUR OUTPUT HERE:

if (checkprime(n))
{
printf("0x%X", n);
}

else
```

```
                {
    printf("%d is not a prime number", n);
                }
//--FIXED PART - DO NOT EDIT ANY THINGS HERE
              printf("\n");
            system("pause");
              return (0);
                }
```

String:

Đếm số kí tự số trong xâu nhập từ bàn phím.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
int demktso(char s[])
          {
         int i,dem=0;
   for (i=0;i<strlen(s);i++)
if ( s[i]>='0' && s[i]<='9' )
                    dem++;
          return dem;
          }
     void main()
          {
       char s[100];
         gets(s);
printf("so ki tu so la  :  %d",demktso(s));
          getch();
          }
```

Đếm số kí tự hoa trong xâu nhập từ bàn phím.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
int demkthoa(char s[])
          {
         int i,dem=0;
   for (i=0;i<strlen(s);i++)
if ( s[i]>='A' && s[i]<='Z' )
                    dem++;
          return dem;
          }
```

```
void main()
     {
  char s[100];
    gets(s);
printf("so ki tu hoa la  :  %d",demkthoa(s));
    getch();
     }
```

Đếm số kí tự thường trong xâu nhập từ bàn phím.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
int demktthuong(char s[])
     {
    int i,dem=0;
  for (i=0;i<strlen(s);i++)
if ( s[i]>='a' && s[i]<='z' )
                  dem++;
    return dem;
     }
void main()
     {
  char s[100];
    gets(s);
printf("so ki tu thuong la  :  %d",demktthuong(s));
    getch();
     }
```

Đếm các số tự nhiên trong xâu nhập từ bàn phím. Các kí tự số gần nhau ghép thành 1 số tự nhiên.
Ví dụ: a123bc4d56ef
cho ra đáp án là : 3

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
    void main()
     {
  char s[100];
 int i=0,j,dem=0;
     gets(s);
  while (i<=strlen(s))
       {
        j=0;
while ( s[i]>='0' && s[i]<='9' )
        {
         i++;
         j++;
        }
       i++;
  if (j!=0) dem++;
       }
 printf("%d",dem);
     getch();
     }
```

Tính độ dài của một chuỗi C

```
#include <stdio.h> int main() {
char s[] = "Chương trình đang chạy";
int i;
for (i = 0; s[i] != '\0'; ++i);
printf("Độ dài chuỗi: %d", i);
return 0;
}
```

nối hai chuỗi trong C

```
#include <stdio.h> int main() {
char s1[100] = "Lập trình ", s2[] = "c cơ bản";
int length, j;
// chiều dài cửa hàng của s1 trong biến chiều dài
length = 0;
while (s1[length] != '\0') {
++length;
}
// nối s2 thành s1
for (j = 0; s2[j] != '\0'; ++j, ++length) {
s1[length] = s2[j];
}
// chấm dứt chuỗi s1
s1[length] = '\0';
printf("Chuỗi sau cùng: ");
puts(s1);
return 0;
}
```

1) Nhập vào 1 chuỗi và xuất chuỗi đó ra theo chiều ngược lại:

VD Nhập vào tran van thoa xuất ra aoht nav nart

```
#include <conio.h> #include <stdio.h> #include <string.h>  //thư viện chuỗi

int main()
{
char xau[30];
printf("Nhap vao 1 chuoi: ");
gets(xau);
for(int i=strlen(xau)-1;i>=0;i--)  //strlen trả về độ dài của chuỗi
{
printf("%c",xau[i]);
}
getch();
}
```

2) Nhập vào 1 chuỗi và xuất chuỗi đó ra theo chiều ngược lại:

VD Nhập vào tran van thoa xuất ra thoa van tran

```
#include <stdio.h> #include <conio.h> #include <string.h>

int main()
{
char xau[50];
printf("Nhap vao mot chuoi: ");
gets(xau);
```

```
        int a=strlen(xau)-1;
    for(int i=strlen(xau)-1;i>=0;i--)
                {
           if(xau[i]==32 || i==0)
                    {
                  if(i==0)
                     {
                   printf(" ");
                     }
              for(int j=i;j<=a;j++)
                     {
                printf("%c",xau[j]);
                     }
                  a=i-1;
                   }
                 }
               getch();
                 }
```

3) Nhập vào họ và tên tách ra họ, tên;

VD Nhập vào tran van thoa xuất ra tran thoa

```
#include <conio.h> #include <stdio.h> #include <string.h>

                int main()
                    {
                 char xau[30];
           printf("Nhap vao mot chuoi: ");
                  gets(xau);
           for(int i=0;i<strlen(xau);i++)
                        {
                  if(xau[i]!=32)
                         {
                  printf("%c",xau[i]);
                         }
                  else         {
            for(int j=strlen(xau)-1;j>=i;j--)
                         {
                    if(xau[j]==32)
                          {
              for(int k=j;k<=strlen(xau)-1;k++)
                    printf("%c",xau[k]);
                           break;
                          }
                         }
                      break;
                       }
                      }
                    getch();
                      }
```

4) Nhập vào họ và tên xuất ra họ, tên đệm, tên mỗi từ 1 dòng;

VD Nhập vào tran van thoa xuất ra
tran
van
thoa

```
#include <conio.h> #include <stdio.h> #include <string.h>

                int main()
                    {
                 char xau[30];
           printf("Nhap vao mot chuoi: ");
```

```
                    gets(xau);
            for(int i=0;i<=strlen(xau)-1;i++)
                        {
                  if(xau[i]!=32)
                        {
                 printf("%c",xau[i]);
                        }
                    else       {
                      printf("\n");
                        }
                       }
                    getch();
                      }
```

5) Nhập vào 1 dãy số và đọc dãy số đó.

VD: 123 đọc là một trăm hai mươi ba

```
#include <conio.h> #include <stdio.h> #include <string.h>

char doc_so[50];
char *docso(int n)
{
   char doc[10][5]={"","Mot","Hai","Ba","Bon","Nam","Sau","Bay","Tam","Chin"};
   doc_so[0]=0;
   int donvi=n%10;
   n=n/10;
   int chuc=n%10;
   int tram=n/10;
   if(tram>0)
   {
      strcat(doc_so,doc[tram]);
      strcat(doc_so," Tram ");
   }
   if(chuc>0)
   {
      if(chuc==1)
      strcat(doc_so," Muoi ");
      else       {
         strcat(doc_so,doc[chuc]);
         strcat(doc_so," Muoi ");
      }
   }
   if(donvi>0)
   strcat(doc_so,doc[donvi]);
   return doc_so;
}
int main()
{
   int n;
    printf("Nhap vao mot day so: ");
    scanf("%d",&n);
    if(n==0)
    {
      printf("Khong");
   }
   else    {
      int tram=n%1000;
```

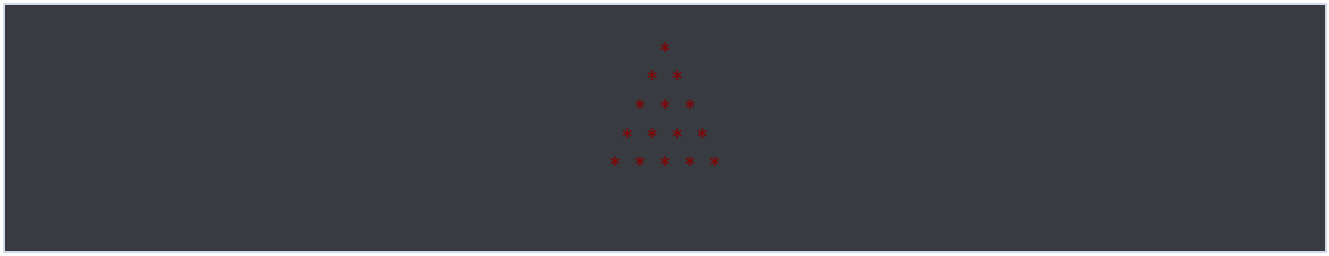
```
      n=n/1000;
      int ngan=n%1000;
      n=n/1000;
      int trieu=n%1000;
      int ty=n/1000;
      if(ty>0)
      {
         printf("%s Ty",docso(ty));
      }
      if(trieu>0)
      {
         printf(" %s Trieu ",docso(trieu));
      }
      if(ngan>0)
      {
         printf(" %s Ngan ",docso(ngan));
      }
      if(tram>0)
      {
         printf(" %s ",docso(tram));
      }
   }
   getch();
}
```

6) Nhập vào 1 chuỗi sau đó nhập vào váo 1 từ và kiểm tra xem từ đó có xuất hiện trong chuỗi trên hay không, nếu có thì xuất hiện bao nhiêu lần.

VD Nhập vào tran van thoa. Nhập kí tự t --> có 2 lần

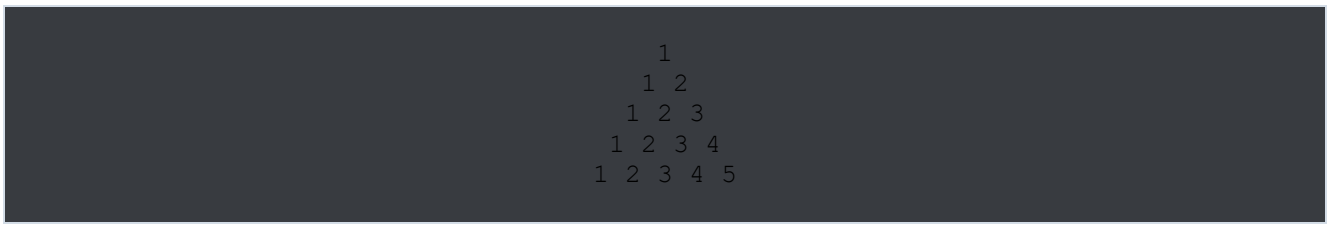
```
#include <stdio.h> #include <conio.h> #include <string.h>

int main()
{
char xau[50];
char kitukiemtra;
int dem;
printf("Nhap vao mot chuoi: ");
gets(xau);
printf("Nhap vao ki tu muon kiem tra: ");
scanf("%c",&kitukiemtra);
for(int i=0;i<strlen(xau)-1;i++)
{
if(xau[i]==kitukiemtra)
dem++;
}
if(dem==0)
printf("Ki tu %c khong co trong chuoi",kitukiemtra);
else     printf("Ki tu %c xuat hien %d lan trong chuoi",kitukiemtra,dem);
getch();
}
```

Hình




```
#include <stdio.h>
int main() {
    if (original == reversed)
        printf("%d is a palindrome.", original);
    else
        printf("%d is not a palindrome.", original);

    return 0;
}
```

```

    int i, j, rows;
    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (i = 1; i <= rows; ++i) {
        for (j = 1; j <= i; ++j) {
            printf("* ");
        }
        printf("\n");
    }
    return 0;
}

```




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

```
    return 0;
}
```

```
A
B B
C C C
D D D D
E E E E E
```

```
#include <stdio.h>
int main() {
    int i, j;
    char input, alphabet = 'A';
    printf("Enter an uppercase character you want to print in the last row: ");
    scanf("%c", &input);
    for (i = 1; i <= (input - 'A' + 1); ++i) {
        for (j = 1; j <= i; ++j) {
            printf("%c ", alphabet);
        }
        ++alphabet;
        printf("\n");
    }
    return 0;
}
```

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

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

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

```
1 2 3 4 5
 1 2 3 4
  1 2 3
   1 2
    1
```

```
#include <stdio.h>
int main() {
    int i, j, rows;
    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (i = rows; i >= 1; --i) {
        for (j = 1; j <= i; ++j) {
            printf("%d ", j);
        }
        printf("\n");
    }
    return 0;
}
```

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

```
#include <stdio.h>
int main() {
    int i, space, rows, k = 0;
    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (i = 1; i <= rows; ++i, k = 0) {
        for (space = 1; space <= rows - i; ++space) {
            printf("  ");
        }
        while (k != 2 * i - 1) {
            printf("* ");
            ++k;
        }
        printf("\n");
    }
    return 0;
```

```
17. }
18.
```

```
    1
    1
  2 3 2
3 4 5 4 3
4 5 6 7 6 5 4
5 6 7 8 9 8 7 6 5
```

```
1.  #include <stdio.h>
2.  int main() {
3.      int i, space, rows, k = 0, count = 0, count1 = 0;
4.      printf("Enter the number of rows: ");
5.      scanf("%d", &rows);
6.      for (i = 1; i <= rows; ++i) {
7.          for (space = 1; space <= rows - i; ++space) {
8.              printf("  ");
9.              ++count;
10.         }
11.         while (k != 2 * i - 1) {
12.             if (count <= rows - 1) {
13.                 printf("%d ", i + k);
14.                 ++count;
15.             } else {
16.                 ++count1;
17.                 printf("%d ", (i + k - 2 * count1));
18.             }
19.             ++k;
20.         }
21.         count1 = count = k = 0;
22.         printf("\n");
23.     }
24.     return 0;
25. }
26.
```

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

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

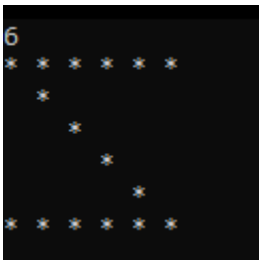
```c
#include <stdio.h>

int main() {
    int rows, i, j, space;
    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (i = rows; i >= 1; --i) {
        for (space = 0; space < rows - i; ++space)
            printf("  ");
        for (j = i; j <= 2 * i - 1; ++j)
            printf("* ");
        for (j = 0; j < i - 1; ++j)
            printf("* ");
        printf("\n");
    }
    return 0;
}
```

```
        1
      1   1
    1   2   1
  1   3   3   1
1   4   6   4   1
1  5   10   10  5   1
```

```c
//Pascal's Triangle
#include <stdio.h>
int main() {
    int rows, coef = 1, space, i, j;
    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (i = 0; i < rows; i++) {
        for (space = 1; space <= rows - i; space++)
            printf("  ");
        for (j = 0; j <= i; j++) {
            if (j == 0 || i == 0)
                coef = 1;
            else
                coef = coef * (i - j + 1) / j;
            printf("%4d", coef);
        }
        printf("\n");
    }
    return 0;
}
```

```
1
2 3
4 5 6
7 8 9 10
```

```
1.  #include <stdio.h>
2.  int main() {
3.     int rows, i, j, number = 1;
4.     printf("Enter the number of rows: ");
5.     scanf("%d", &rows);
6.     for (i = 1; i <= rows; i++) {
7.        for (j = 1; j <= i; ++j) {
8.           printf("%d ", number);
9.           ++number;
10.       }
11.       printf("\n");
12.    }
13.    return 0;
14. }
15.
```




```
#include <stdio.h>
    int main()
        {
     int i, j, n;
   scanf("%d", &n);
for (i = 1; i <= n; i++)
            {
  for (j = 1; j <= n; j++)
              {
if (i == 1 || i == n || i == j)
              {
          printf("* ");
              }
            else
          printf("  ");
            }
       printf("\n");
          }
        }
```

```
6
* * * * * *
  *     *
    * *
    * *
  *     *
* * * * * *
```

```c
#include <stdio.h>
    int main()
        {
         int i, j, n;
        scanf("%d", &n);
    for (i = 1; i <= n; i++)
                {
      for (j = 1; j <= n; j++)
                    {
if (i == 1 || i == n || i == j || i + j == n + 1)
                        {
                    printf("* ");
                        }
                      else
                    printf("  ");
                      }
                printf("\n");
                    }
                  }
```

```c
/*

        9
    * * * * * * * * *
    * *           * *
    *   *       *   *
    *     *   *     *
    *       *       *
    *     *   *     *
    *   *       *   *
```

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

        */

      #include <stdio.h>
          int main()
              {
           int i, j, n;
          scanf("%d", &n);
        for (i = 1; i <= n; i++)
                {
          for (j = 1; j <= n; j++)
                  {
if (i == 1 || i == j || j == 1 || j == n || i == n || i + j == n + 1)
                    printf("# ");
                      else
                    printf("  ");
                      }
                printf("\n");
                  }
                }
```

```
        /*

         5
         *****
         *   *
         *   *
         *   *
         *****

         */

      #include <stdio.h>
          int main()
              {
           int i, j, n;
          scanf("%d", &n);
        for (i = 1; i <= n; i++)
                {
       for (j = 1; j < n - i + 1; j++)
                  {
                   printf(" ");
                      }
          for (j = 1; j <= n; j++)
                  {
    if (i == 1 || j == 1 || i == n || j == n)
                    {
                   printf("*");
                      }
                      else
                    printf(" ");
                      }
                printf("\n");
                  }
                }



        /*
```

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


*/

#include <stdio.h>

int main()
{
int i, j, space, rows = 8, star = 0;

/* Printing upper triangle */
for (i = 0; i < rows; i++)
{
if (i < 5)
{
/* Printing upper triangle */
for (space = 1; space < 5 - i; space++)
{
printf(" ");
}
/* Printing stars */
while (star != (2 * i + 1))
{
printf("*");
star++;
;
}
star = 0;
/* move to next row */
printf("\n");
}
else
{
/* Printing bottom walls of huts */
for (j = 0; j < 9; j++)
{
if ((int)(j / 3) == 1)
printf(" ");
else
printf("*");
}
printf("\n");
}
}
return 0;
}
```

```
input n: 5
    *
  *  *  *
*  *  *  *  *
*  *  *  *  *  *  *
*  *  *  *  *  *  *  *  *
```

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

```c
#include <stdio.h>

    int main()
        {
        int n;
 printf("input n: ");
   scanf("%d", &n);


          //thoi2
  for (int i = 1; i <= n; i++)
          {
  for (int j = 1; j <= n - i; j++)
          {
          printf("   ");
          }

for (int j = 1; j <= 2 * i - 1; j++)
          {
          printf(" * ");
          }
        printf("\n");
        }

for (int i = n - 1; i >= 1; i--)
          {
  for (int j = 1; j <= n - i; j++)
          {
          printf("   ");
          }

for (int j = 1; j <= 2 * i - 1; j++)
          {
          printf(" * ");
          }
        printf("\n");
        }
         }
```

```
                5
*  *  *  *  *  *  *  *  *  *  *
*  *  *  *        *  *  *  *  *
*  *  *              *  *  *  *
*  *                    *  *  *
*                          *  *
*  *                    *  *  *
*  *  *              *  *  *  *
*  *  *  *        *  *  *  *  *
*  *  *  *  *  *  *  *  *  *  *
```

```c
#include <stdio.h>

    int main()
        {
        int n;
       scanf("%d", &n);

  for (int i = 1; i <= n; i++)
```

```
                {
    for (int j = 1; j <= 2 * n; j++)
                    {
      if (j <= n - i + 1 || j >= n + i)
                        {
                    printf(" * ");
                        }
                       else
                        {
                    printf("   ");
                        }
                    }
                printf("\n");
                    }

  for (int i = n - 1; i >= 1; i--)
                {
    for (int j = 1; j <= 2 * n; j++)
                    {
      if (j <= n - i + 1 || j >= n + i)
                        {
                    printf(" * ");
                        }
                       else
                        {
                    printf("   ");
                        }
                    }
                printf("\n");
                    }
                  }
```

```
                /*
  Enter the number of columns5
                *****
                ****
                ***
                **
                *
                **
                ***
                ****
                *****
                */

                #include <stdio.h>

                  int main(void)
                        {

                int n;
     printf("Enter the number of columns");
                  scanf("%d", &n);
  // printing the upper part of the pattern..
                for (int i = 1; i <= n; i++)
                        {
                for (int j = 1; j <= n - i; j++)
                            {
                        printf("   ");
                            }
                for (int k = 0; k <= n - i; k++)
                            {
```

```
                printf(" * ");
                }
            printf("\n");
            }
        for (int i = 1; i < n; i++)
            {
        for (int j = 1; j < i + 1; j++)
            {
            printf("   ");
            }
        for (int k = 1; k <= i + 1; k++)
            {
            printf(" * ");
            }
            printf("\n");
            }
            return 0;
            }
```

```
            /*
    Enter the odd number only5
                +
                +
          +  +  +  +  +
                +
                +
            */

        #include <stdio.h>

            int main(void)
            {
            int n;
    printf("Enter the odd number only");
            scanf("%d", &n);
        for (int i = 1; i <= n; i++)
            {
            if (i == ((n / 2) + 1))
            {
            for (int j = 1; j <= n; j++)
            {
                printf(" + ");
                }
            }
             else
            {
          for (int j = 1; j <= n / 2; j++)
            {
            printf("   ");
            }
            printf(" + ");
            }
            printf("\n");
            }
            return 0;
            }
```

```
5
        1
    1   2   1
```

```
        1  2  3  2  1
     1  2  3  4  3  2  1
  1  2  3  4  5  4  3  2  1
```

```
#include <stdio.h>
 #include <math.h>

void tamGiacThuong(int h)
            {
 for (int i = 1; i <= h; i++)
              {
  for (int j = 1; j < 2 * h; j++)
                {
      if (abs(h - j) <= (i - 1))
                 {
      printf("%3d", i - abs(h - j));
                 }
              else
                 {
            printf("   ");
                 }
              }
         printf("\n");
             }
           }

        int main()
            {
             int h;
         scanf("%d", &h);
         tamGiacThuong(h);
             return 0;
             }
```

```
Enter the number of rows5
    1 2 3 4 5 4 3 2 1
       1 2 3 4 3 2 1
          1 2 3 2 1
             1 2 1
                1
```

```
#include <stdio.h>
#include <stdlib.h>
   int main() {

      int i,j,rows,space=0;
   printf("Enter the number of rows");
scanf("%d",&rows);//taking numer of rows from user

      for(i=rows; i>=1; i--){
          //outer for loop
     for(j=1; j<=space; j++)
           printf("  ");
       for(j=1; j<=i; j++)
             printf("%d ",j);

        for(j=i-1; j>=1; j--)
                printf("%d ",j);
       printf("\n");
       space++;
           }
       getch();
       return 0;
```

```
}
/*
 8
 *
 **
* *
*  *
*   *
*    *
*     *
********

*/

#include <stdio.h>
    int main()
        {
     int i, j, n;
    scanf("%d", &n);
for (i = 1; i <= n; i++)
            {
  for (j = 1; j <= i; j++)
            {
if (j == 1 || i == n || i == j)
            printf("*");
              else
            printf(" ");
              }
       printf("\n");
          }
        }
```

```
/*

Enter the number of rows: 5
      *  *           *  *
  *  *  *  *     *  *  *  *
  *  *  *  *  *  *  *  *  *
       *  *  *  *  *  *  *
            *  *  *  *  *
                 *  *  *
                      *


*/

#include <stdio.h>

    int main()
        {
    int i, j, rows;

 printf("Enter the number of rows: ");
          scanf("%d", &rows);
/* printing top semi circular shapes of heart */
 for (i = rows / 2; i <= rows; i += 2)
            {
      /* Printing Spaces */
    for (j = 1; j < rows - i; j += 2)
            {
          printf("   ");
            }
 /* printing stars for left semi circle */
```

```
            for (j = 1; j <= i; j++)
                    {
                printf(" * ");
                    }
             /* Printing Spaces */
        for (j = 1; j <= rows - i; j++)
                    {
                printf("   ");
                    }
    /* printing stars for right semi circle */
            for (j = 1; j <= i; j++)
                    {
                printf(" * ");
                    }
             /* move to next row */
                 printf("\n");
                     }

     /* printing inverted start pyramid */
         for (i = rows; i >= 1; i--)
                    {
           for (j = i; j < rows; j++)
                    {
                printf("   ");
                    }
       for (j = 1; j <= (i * 2) - 1; j++)
                    {
                printf(" * ");
                    }
             /* move to next row */
                 printf("\n");
                     }

                 return 0;
                   }
```