Q1.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   for (int i = 1; i <= 5; i++)
   {
      for (int j = 1; j <= i; j++)
         printf("* ");
      printf("\n");
   }
   return 0;
}
```

Q2.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
    for (int i = 1; i <= 5; i++)
    {
        for (int j = 1; j <= 5; j++)
        {
            if (j <= 5 - i)
                printf(" ");
            else
                printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

Q3.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   for (int i = 0; i <= 5; i++)
   {
      for (int j = 1; j <= (5 - i); j++)
         printf("* ");
      printf("\n");
   }
   return 0;
}
```

Q4.

*****

 ****

  ***

   **

    *

```
#include <stdio.h>
int main(int argc, char *argv[])
{
    for (int i = 0; i < 5; i++)
    {
        for (int j = 1; j <= 5; j++)
            if (j <= i)
                printf(" ");
            else
                printf("*");
        printf("\n");
    }
    return 0;
}
```

Q5.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
    for (int i = 4; i >= 0; i--)
    {
        for (int j = 1; j <= 9; j++)
            if (j > i && j < 10 - i)
                printf("*");
            else
                printf(" ");
        printf("\n");
    }
    return 0;
}
```

Q6.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
    for (int i = 0; i < 5; i++)
    {
        for (int j = 1; j < 10; j++)
            if (j > i && j < 10 - i)
                printf("*");
            else
                printf(" ");
        printf("\n");
    }
    return 0;
}
```

Q7.

****

**** ****

***   ***

**   **

*   *

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   for (int i = 0; i < 5; i++)
   {
      for (int j = 1; j <= 10; j++)
         if ((j <= 5 - i) || (j >= 6 + i))
            printf("*");
         else
            printf(" ");
      printf("\n");
   }
   return 0;
}
```

Q8.

```
   1
  121
 12321
1234321
#include <stdio.h>
int main(int argc, char *argv[])
{
    int x = 0;
    for (int i = 0; i < 4; i++)
    {
        for (int j = 0; j <= 4 + i; j++)
        {
            if ((j >= 4 - i) && (j <= 4 + i))
                if (j <= 4)
                    printf("%d", x = x + 1);
                else
                    printf("%d", x = x - 1);
            else
                printf(" ");
        }
        printf("\n");
        x = 0;
    }
  return 0;
}
```

Q9.

```
 1234321
  12321
   121
    1
#include <stdio.h>
int main(int argc, char *argv[])
{
    int x = 0;
    for (int i = 3; i >= 0; i--)
    {
        for (int j = 1; j <= 4 + i; j++)
        {
            if ((j >= 4 - i) && (j <= 4 + i))
                if (j <= 4)
                    printf("%d", x = x + 1);
                else
                    printf("%d", x = x - 1);
            else
                printf(" ");
        }
        printf("\n");
        x = 0;
    }
    return 0;
}
```

Q10.

1234321

123 321

12   21

1   1

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   int x = 0, y = 0;
   for (int i = 4; i >= 1; i--)
   {
      if (i >= 3)
         y = 0;
      else
         y = y + 1;
      for (int j = 1; j <= 7; j++)
      {
         if (j <= i)
         {
            x = x + 1;
            printf("%d", x);
         }
         else if (j >= 5 + y)
         {
            if (i == 4)
```

```
            {
               x = x - 1;
               printf("%d", x);
            }
            else
            {
               printf("%d",x);
               x=x-1;
            }
         }
         else
         {
            printf(" ");
         }
      }
      printf("\n");
      x = 0;
   }
   return 0;
}
```

Q11.

```
    A
   ABA
  ABCBA
 ABCDCBA
ABCDEDCBA
```

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   int x = 64;
   for (int i = 0; i <= 4; i++)
   {
      for (int j = 1; j <= (5 + i); j++)
         if ((j >= 5 - i) && (j <= 5 + i))
         {
            if (j <= 5)
            {
               x = x + 1;
               printf("%c", x);
            }
            else
            {
               x = x - 1;
               printf("%c", x);
```

```
            }
        }
        else
            printf(" ");
    printf("\n");
    x = 64;
  }
  return 0;
}
```

Q12.

ABCDCBA

ABCBA

ABA

A

```
#include <stdio.h>
int main(int argc, char *argv[])
{
    int x = 64;
    for (int i = 3; i >= 0; i--)
    {
        for (int j = 1; j <= 4 + i; j++)
            if (j >= 4 - i && j <= 4 + i)
                if (j <= 4)
                {
                    x = x + 1;
                    printf("%c", x);
                }
                else
                {
                    x = x - 1;
                    printf("%c", x);
                }
            else
```

```
            printf(" ");
        x = 64;
        printf("\n");
    }
    return 0;
}
```

Q13.

```
ABCDEFGFEDCBA
ABCDEF FEDCBA
ABCDE     EDCBA
ABCD         DCBA
ABC             CBA
AB                 BA
A                    A
```

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   int x = 64;
   for (int i = -1; i <= 5; i++)
   {
      for (int j = 1; j <= 13; j++)
         if (i == -1)
            if (j <= 7)
            {
               x = x + 1;
               printf("%c", x);
            }
            else
            {
               x = x - 1;
```

```
            printf("%c", x);
        }
    else
        if (j <= (6 - i))
        {
            x = x + 1;
            printf("%c", x);
        }
        else if (j >= (8 + i))
        {
            printf("%c", x);
            x = x - 1;
        }
        else
            printf(" ");
    x = 64;
    printf("\n");
  }
  return 0;
}
```

Q14.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   int space = 0, x = 1;
   for (int i = 1; i <= 5; i++)
   {
      for (int j = 1; j <= i; j++)
      {
         if (i < 3 || i == 5)
         {
            printf("*");
         }
         else if (space == 0)
         {
            printf("*");
            space = x;
         }
         else if (space != 0)
```

```
            {
                printf(" ");
                space = space - 1;
            }
        }
        printf("\n");
        if (i > 2)
        {
            x = x + 1;
            space = 0;
        }
    }
}
```

Q15.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   int flag = 5, space = 0, x = -1;
   for (int i = 1; i <= 5; i++)
   {
      for (int j = 5; j >= 1; j--)
         if (i < 3)
            if (6 - j >= flag)
               printf("*");
            else
               printf(" ");
         else if (i == 5)
            printf("*");
         else if ((6 - j >= flag) && space == 0)
         {
            printf("*");
            space = x;
```

```
            }
            else if (space != 0)
            {
                printf(" ");
                space = space - 1;
            }
            else
                printf(" ");

        printf("\n");
        space = 0;
        x = x + 1;
        flag = flag - 1;
    }
    return 0;
}
```

Q16.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
   for (int i = 0; i <= 4; i++)
   {
      for (int j = 0; j <= 4 + i; j++)
         if ((4 - i == j) || (4 + i == j))
            printf("*");
         else
            if (i == 4)
               printf("*");
            else
               printf(" ");
      printf("\n");
   }
   return 0;
}
```

Q17.

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

```
#include <stdio.h>

int main(int argc, char *argv[])
{
    for (int i = 4; i >= 0; i--)
    {
        for (int j = 8; j >= 4 - i; j--)
            if (i == 4)
                printf("*");
            else if ((4 - i == j) || (4 + i == j))
                printf("*");
            else
                printf(" ");
        printf("\n");
    }
    return 0;
}
```

Q18.

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

```
#include <stdio.h>
int main(int argc, char *argv[])
{
    for (int i = 0; i <= 4; i++)
    {
        for (int j = 0; j <= 4 + i; j++)
            if ((j >= 4 - i) && (j <= 4 + i))
                printf("*");
            else
                printf(" ");
        printf("\n");
    }

    for (int i = 3; i >= 0; i--)
```

```
    {
        for (int j = 0; j <= 4 + i; j++)
            if ((j >= 4 - i) && (j <= 4 + i))
                printf("*");
            else
                printf(" ");
        printf("\n");
    }
    return 0;
}
```

Q19.

```
  *****     *****
 *******   *******
********* *********
******MySirG*******
 *****************
  ***************
   *************
    ***********
     *********
      *******
       *****
        ***
         *
```

```
#include <stdio.h>

int main(int argc, char *argv[])
{
    int heart_size = 12, col = (heart_size - 3) * 2, x = 0, size = 0, center, line=2;
    char name[] = "MySirG";

// counting starting lines for perfect shape -> start
    for (int i = 4; heart_size >= (12 + i); i = i + 4)
```

```
    {
        line = line + 1;
    }
    // counting starting lines for perfect shape -> end


    // first 3 rows -> start
    for (int i = 0; i <= line; i++)
    {
        for (int j = 0; j <= col; j++)
        {
            if (((j >= (line - i)) && (j < (col / 2) - (line - i))) || ((j > (col / 2)
+ (line - i)) && (j <= col - (line - i))))
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
        printf("\n");
    }
    // first 3 rows -> end


    // string size count -> start
```

```
while (name[x] != '\0')
{
   size = size + 1;
   x = x + 1;
}
// string size count -> end

center = (col + 1) - size; // finding center for name

x = 0;
for (int i = 0; i <= (heart_size - 3); i++)
{
   if (i == 0)
   {
      // printing name -> start
      for (int j = 0; j <= col; j++)
      {
         if ((j < (center / 2)) || (j >= (center / 2) + size))
         {
            printf("*");
         }
         else
         {
            printf("%c", name[x]);
            x = x + 1;
```

```
            }
        }
        // printing name -> end
    }
    else
    {
        //printing second triangle -> start
        for (int j = 0; j <= (col - i); j++)
        {
            if (j >= i)
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
        //printing second triangle -> end
    }
    printf("\n");
  }
  return 0;
}
```