1. using while ,do while and for loops :

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

for loop :

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

while loop:

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

do-while loop:

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

```
int main() {
   int i = 1, j;
   do {
      j = 1;
      do {
         printf("* ");
         j++;
      } while (j <= i);
      printf("\n");
      i++;
   } while (i <= 5);
   return 0;
}
```

2. using while ,do while and for loops :

*** * * * ***

*** * * ***

*** * ***

*** ***

*****

for loop:

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

while loop:

```
#include <stdio.h>
int main() {
   int i = 5;
   while (i > 0) {
```

```
        int j = 0;
        while (j < i) {
            printf("* ");
            j++;
        }
        printf("\n");
        i--;
    }
    return 0;
}
```

do-while loop:

```
#include <stdio.h>
int main() {
    int i = 5;
    do {
        int j = 0;
        do {
            printf("* ");
            j++;
        } while (j < i);
        printf("\n");
        i--;
    } while (i > 0);
    return 0;
}
```

3. using while ,do while and for loops :

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

for loop:

```
#include <stdio.h>
void main() {
    for (int i = 0; i < 2; i++) {
```

```
    for (int s = 0; s < i * 2; s++) printf(" ");  // Modify this for left alignment
    for (int j = 5 - i; j > 0; j--) printf("* ");
    printf("\n");
  }
  for (int i = 3; i > 0; i--) {
    for (int s = 0; s < (5 - i) * 2 + 4; s++) printf(" "); // Adjusted spaces for continuous alignment
    for (int j = 0; j < i; j++) printf("* "); // Stars
    printf("\n");
  }
}
```

while loop:

```
#include <stdio.h>
void main() {
  int i = 0;
  while (i < 2) {
    int s = 0;
    while (s < i * 2) {
      printf(" ");  // Modify this for left alignment
      s++;
    }
    int j = 5 - i;
    while (j > 0) {
      printf("* ");
      j--;
    }
    printf("\n");
    i++;
  }
  i = 3;
  while (i > 0) {
    int s = 0;
    while (s < (5 - i) * 2 + 4) {
      printf(" "); // Adjusted spaces for continuous alignment
      s++;
    }
```

```
        int j = 0;
        while (j < i) {
            printf("* "); // Stars
            j++;
        }
        printf("\n");
        i--;
    }
}
```

do-while loop:

```
#include <stdio.h>
int main() {
    int i = 0, j, s;

    do {
        s = 0;
        do {
            printf(" ");
            s++;
        } while (s < i * 2);

        j = 5 - i;
        do {
            printf("* ");
            j--;
        } while (j > 0);
        printf("\n");
        i++;
    } while (i < 2);

    i = 3;
    do {
        s = 0;
        do {
            printf(" ");
```

```
        s++;
      } while (s < (5 - i) * 2 +4);
      j = 0;
      do {
        printf("* ");
        j++;
      } while (j < i);
      printf("\n");
      i--;
   } while (i > 0);
   return 0;
}
```

6.

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

for loop:

```
#include <stdio.h>
int main() {
   int i, j;

   for (i = 1; i <= 5; i++) {
      for (j = 1; j <= i; j++) {
      printf("%d",i);
      }
      printf("\n");
   }
   return 0;
}
```

7.

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

```
#include <stdio.h>
int main() {
   int i, j;
   for (i = 1; i <= 5; i++) {
      for (j = 1; j <= i; j++) {
      printf("%d",j);
      }
      printf("\n");
   }
   return 0;
}
```

8.

```
1
0 1
1 0 1
0 1 0 1
1 0 1 0 1
```

```
#include <stdio.h>
int main() {
   int i, j;
   for (i = 1; i <= 5; i++) {
      for (j = 1; j<=i; j++) {
      printf("%d",(i+j)%2);
      }
      printf("\n");
   }
   return 0;
}
```

9.

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

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

```
    int i, j;
    for (i = 5; i >= 1; i--) {
        for (j = 1; j <= (6 - i); j++) {
            printf("%d ", i);
        }
        printf("\n");
    }
    return 0;
}
```

10.

5

5 4

5 4 3

5 4 3 2

5 4 3 2 1

```
include <stdio.h>
int main() {
    int i, j;
    for (i = 1; i <= 5; i++) {
        for (j = 5; j >= (6 - i); j--) {
            printf("%d ", j);
        }
        printf("\n");
    }
    return 0;
}
```

11.

1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

```
#include <stdio.h>
int main() {
    int num = 1;
    for (int i = 1; i <= 5; i++) {
        for (int j = 1; j <= i; j++) {
```

```
            printf("%d ", num++);
        }
        printf("\n");
    }
    return 0;
}
```

12.without using nested loops :

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

```
#include <stdio.h>
int main() {
    int i = 1;
    char str[] = "";
    while (i <= 5) {
        printf("%.*s*\n", i * 2 - 1, "**********");
        i++;
    }
    return 0;
}
```

14. Write a program to print all prime numbers between 2 given integers.

```
#include <stdio.h>
int main() {
    int start, end, i, j, isPrime;
    printf("Enter two numbers: ");
    scanf("%d %d", &start, &end);
    printf("Prime numbers between %d and %d are:\n", start, end);
    for (i = start; i <= end; i++) {
        if (i < 2)
        continue;
        isPrime = 1;
        for (j = 2; j < i; j++) {
            if (i % j == 0) {
```

```
            isPrime = 0;
            break;
        }
    }
    if (isPrime) printf("%d ", i);
  }
  return 0;
}
```