Patterns Assignment

1.using while ,do while and for loops

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

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

Output;

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

2. using while ,do while and for loops :

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

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

Output:

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

4.

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

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

Output:

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

6.

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

Output:

```
1
22
333
4444
55555
```

7.

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

Output:

```
1
```

12
123
1234
12345

8.

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

out put:

1
01
101
0101
10101

9.

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

Output:

5
44
333
2222
11111

10.

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

Output:

```
5
54
543
5432
54321
```

11.

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

output:

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

12.

without using nested loops :

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

```
 #include <stdio.h>
void main() {
   int rows = 5;
```

```
    char pattern[100] = "";
    for (int i = 0; i < rows; i++) {
        pattern[i * 2] = '*';
        pattern[i * 2 + 1] = ' ';
        pattern[i * 2 + 2] = '\0';
        printf("%s\n", pattern);
    }
}
```

output:

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

13.

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

output:

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

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

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

output:Enter two integers (start and end): 10
50
Prime numbers between 10 and 50 are:
11 13 17 19 23 29 31 37 41 43 47