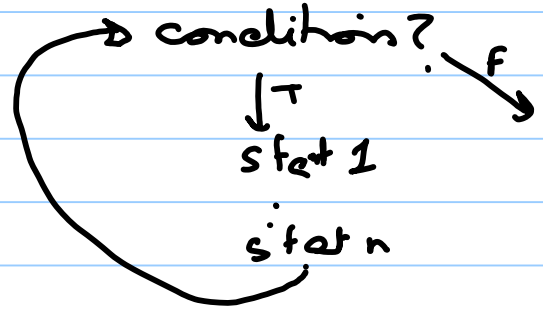
COL 100 Lecture 7

Note Title 13-08-2018

Review:

- while-loop
  - termination
  - sentinel value
  - sentinel loop
- for-loop

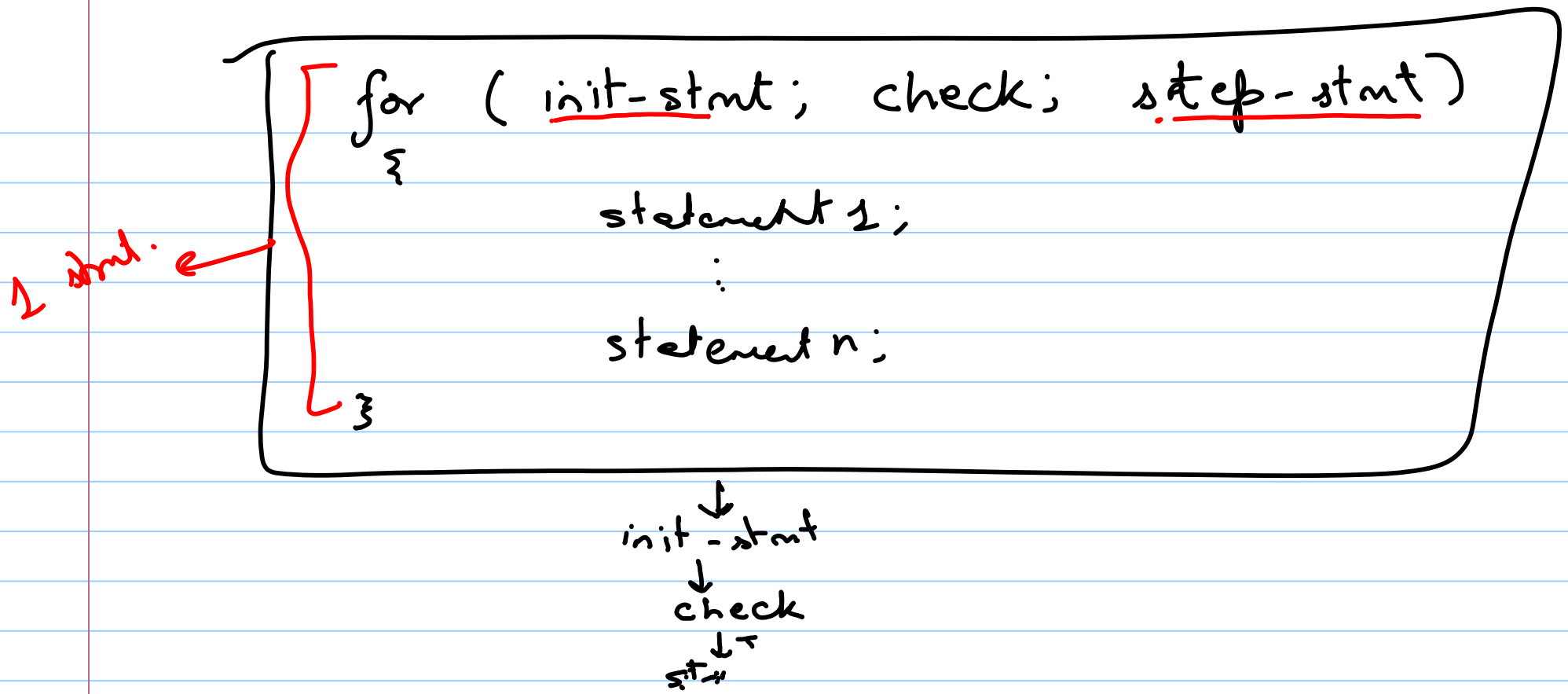
```
while (condition)
{
    statement 1;
    :
    :
}
```

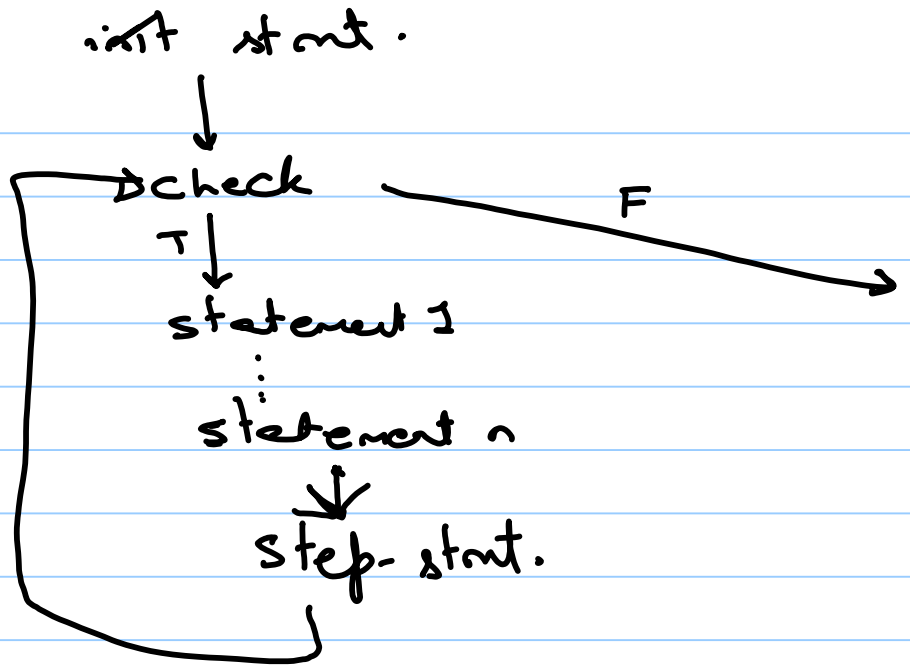


Example: add up the first n-1 numbers.

```
int main() {
    int n = getInteger("Enter a number: ");
    int sum = 0;
    int i = 0;
    while (i != n)
    {
        sum = sum + i;
        i++;
    }
    cout << sum << endl;
}
```

```
int sum = 0;
for (int i = 0; i < n; i++)
{
    sum = sum + i;
}
cout << sum << endl;
}
```


for (init-stmt ; check ; step-stmt)
{
statement 1 ;
:
statement n ;
}
1 stmt.
init-stmt
check
step-stmt


init stmt.
check
F
T
statement 1
statement n
step- stmt.

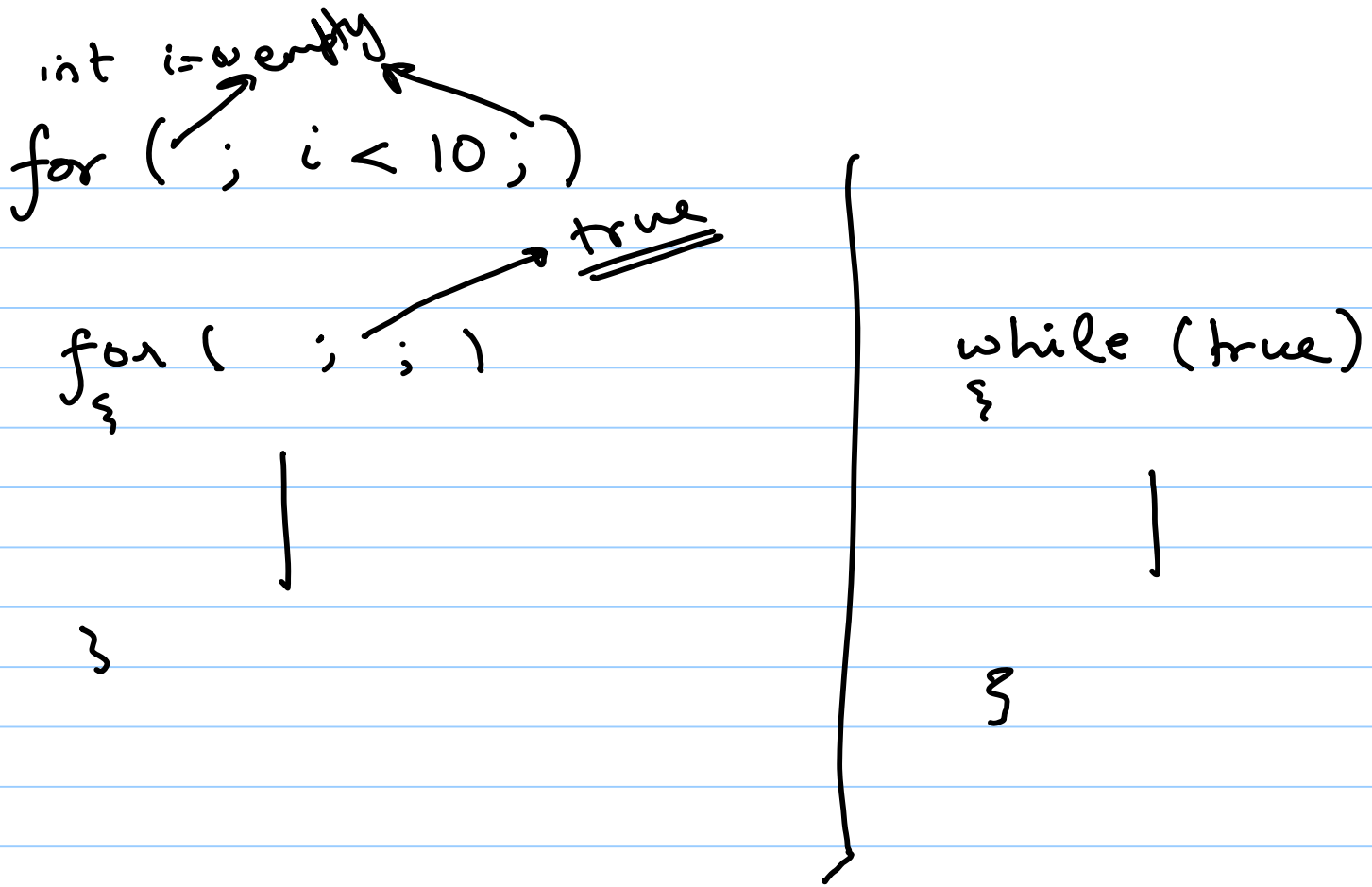
Countdown

```
int main()
{
    for (int i = 10; i >= 0; i--)
    {
        cout << i << endl;
    }
    cout << "Blast off!" << endl;
}
```

!= 3

for (int j = 0; j < 10000; j++)

10
9
8
⋮
1
Blast off


int i=0
empty
for (; i < 10 ;)
true
for (; ;)
{
}
while (true)
{
}

break statement

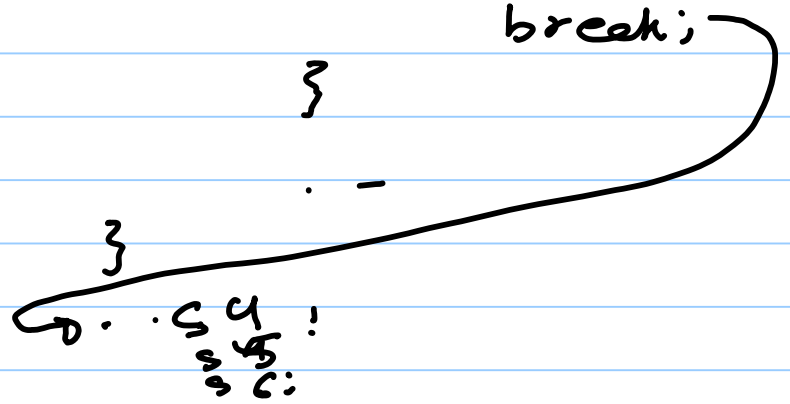
```
while ( condition )
{
    .
    .
    .   s1
        s2;

        break;
        s3;

        s4;

}
s100;
```

```
for(int i=0; i<n; i++)
{
    s1;
    s2;
    break;
    s3
    :
}
s100
```

```
while (condition)
{
    .
    .
    .
    if (c2)
    {
        break;
    }
    .
    .
    .
}
```

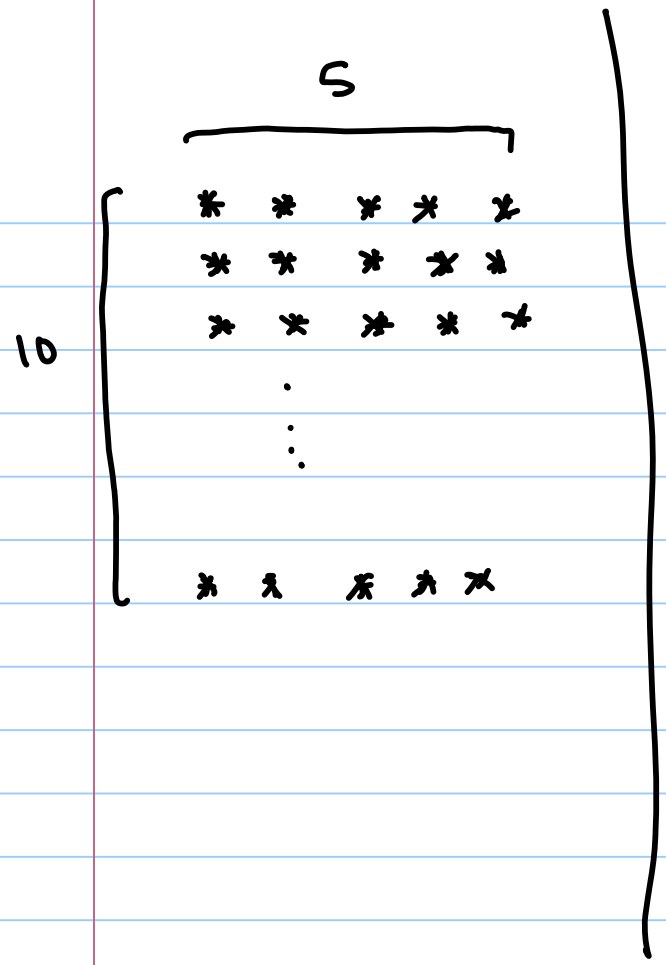
```
for ( . . . . )
{
    .
    .
    .
    if (c)
    {
        break;
    }
    .
    .
}
```

```
while (c1)
{
    ...
    while (c2 && c3)
    {
        ...
        if (c3) {
            break;
        }
        ...
    }
    ...
}
```

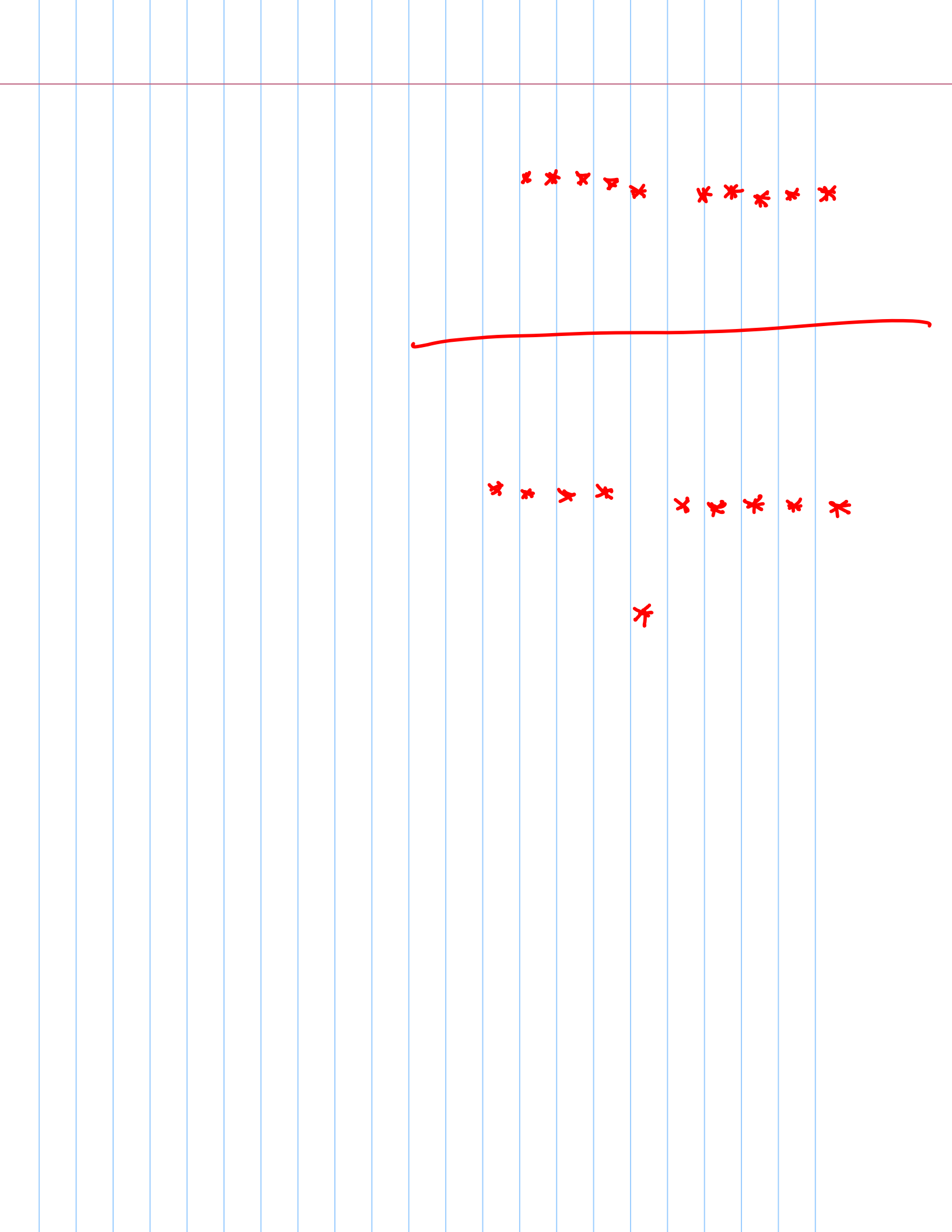


```
int main() {
    int sum = 0;
    for (int i = 0; i < 10; i++) {
        int n = getInteger("next? ");

        if (n == -1) {
            break;
        }
        sum = sum + n;
    }
    cout << sum << endl;
    cout << n << endl;
}
```

cout << "next?" << endl

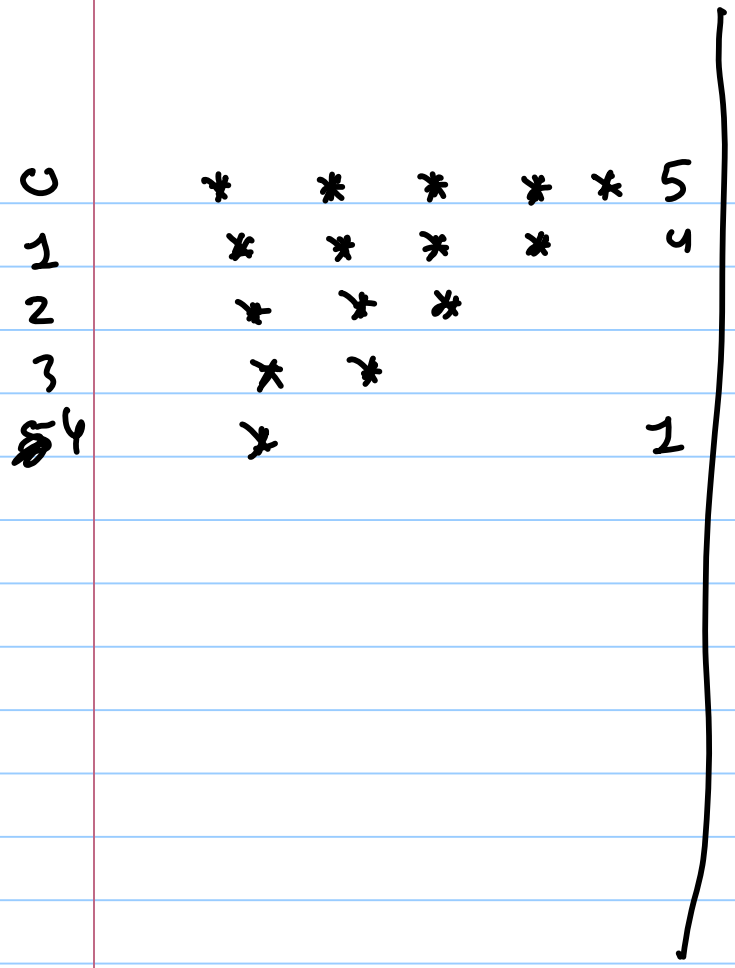



```
int main() {
    for (int j = 0; j < 10; j++)
    {
        for (int i = 0; i < 5; i++)
        {
            cout << "*";
        }
        cout << endl;
    }
}
```

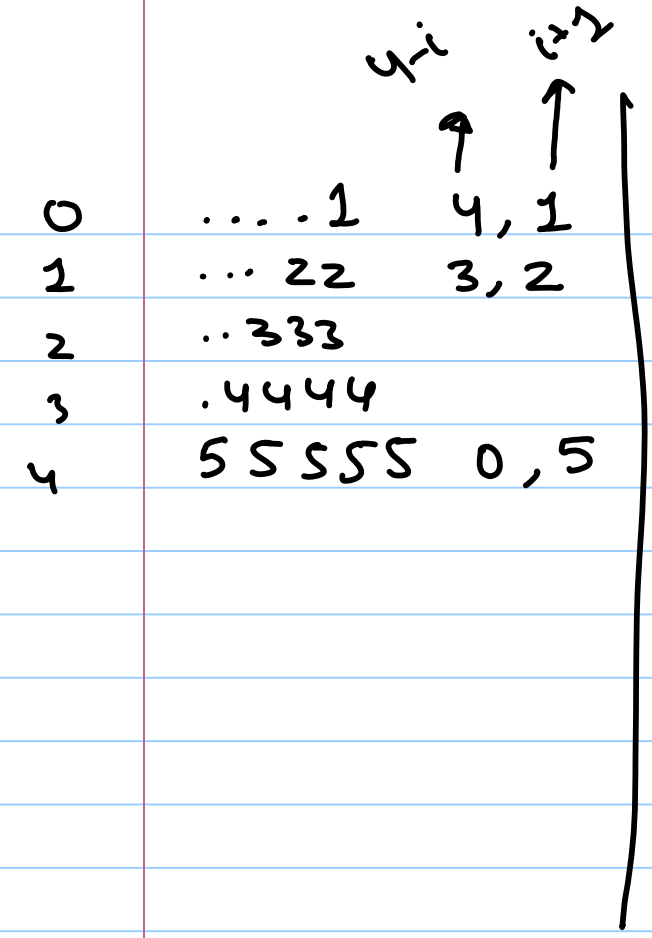


```
for (int i=0; i<50; i++)
{
    cout << "*";
    if (i is a multiple of 5)
    {
        cout << endl;
    }
}
```

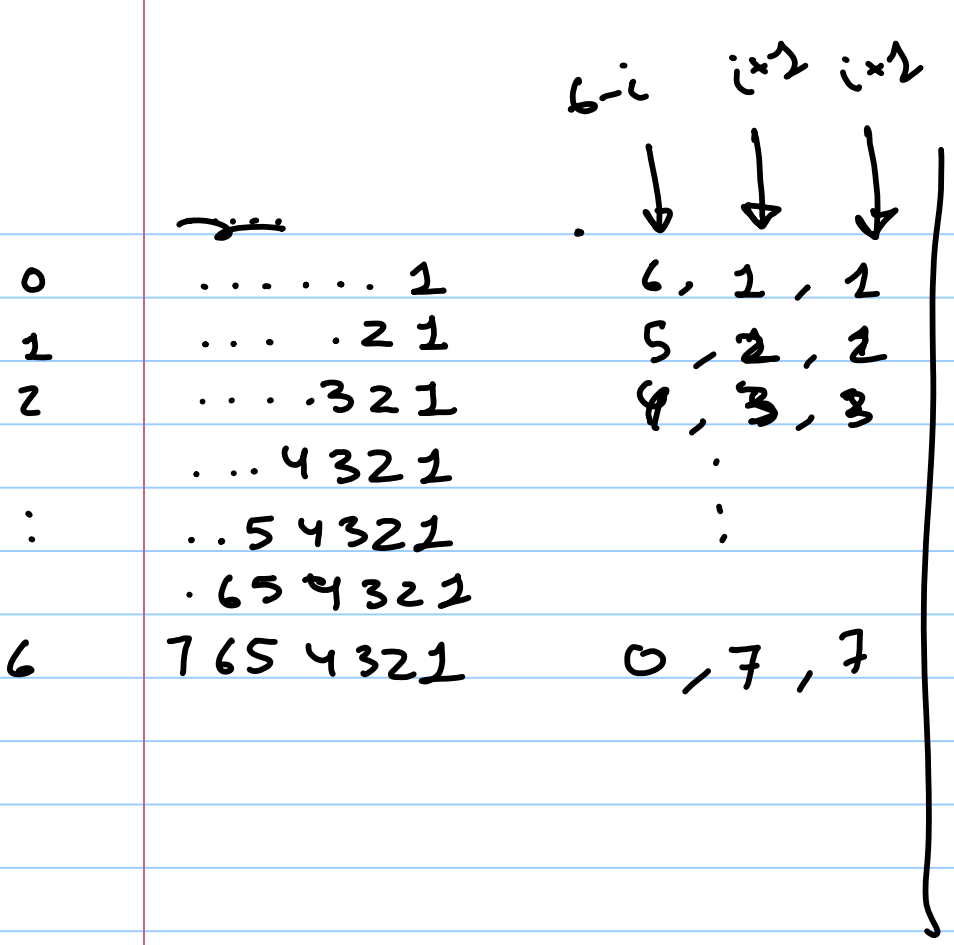
0
1
2
3
4
5




```
                                    1   ≤ 5
for (int  i = 0; i< 5 ; i++)
{
    for (int j= 0; j< 5-i ; j++)
    {
        print
        cout << "*" ;
    }
    cout << endl;
}
```




```
for (int i=0; i< 5; i++)
{
    for (int j=0; j< 4-i; j++)
    {
        cout << " . " ;
    }
    for (int k=0; k<i+1; k++)
    {
        cout << i+1;
    }
    cout << endl;
}
```




```
for (int i=0; i< 7 ; i++)
{
    for (int j=0; j< 6-i;j++)
    {
        cout << " . ";
    }
    for (int j = i+1 ; j >= 1 ;j--)
    {
        cout << j;
    }
    cout << endl;
}
```

counting up: n times:

```
for ( i = 0; i < n; i++)
```

counting down n times:

```
for ( i = n; i > 0; i--)
```

Methods or functions

declaration

```
type    name ( )
{
        stat 1
        :
        stat n
}

name();
```

```
void    printGreeting ( )
{
    cout << " Hello " << endl;
    cout << "How are you?"
         << endl;
}

int main()
{
    system (
```

void

declaration

```
int main() {
    while (true) {
        string name = getLine("your name? ");
        if (name == "") {
            break;
        }
        printGreeting();
    }
    return 0;
}
```