for loop

> **for (loop initialization ;   loop condition ; loop update)**
> **{**
> **   loop body;**
> **}**

Notes:
1. Loop initialization is performed one time, at the beginning of the loop only
2. Loop condition is evaluated before the body of the loop is executed. This is a pre-test loop structure
3. Loop update is performed after the body of the loop is executed
4. Starting from the second iteration of the loop, loop condition is evaluated after loop updates

Examples:

o **Single for loop:**

    1) display the first 100 natural numbers

```
int   i;
for ( i=0;  i<100; i++)
{
    cout << i << endl;
}
```

    2) display the first 50 even numbers

```
for (int i=0;  i<100; i++)
{
    cout << 2*i << endl;
}
```

    3) display the lower case alphabetical letters

```
for (int i=0;  i<26; i++)
{
    cout << char('a'+i) << endl;
}
```

Practice question: Find all the prime numbers between 2 and 1000 inclusive

o **Nested for loop:**
    1) Display a square shape made of stars

```
for (int i=0; i< 4; i++)
{
    for (int j=0; j<5; j++)
    {
        cout << "*";
    }
    cout << endl;
}
```

Practice question: use nested for loop to display a triangle shape made of stars