

Here's how a for loop works:

Variables are initialized.

The condition is evaluated.

- **If the condition is true, the code in the loop's body runs, variables are updated, and the condition is reevaluated.**
- **If the condition is false, the loop terminates.**

Demo Code is below:

```
#include <cs50.h>
#include <stdio.h>
// example of a For Loop

int main(void)
{
    // initialize variables
    int input_num = 0;
    int counter = 0;
    int sum = 0;

    // get input from user - limit the range
    printf("Enter a number from 1 to 5: ");
    input_num = GetInt();

    // validate input - the || is an OR comparison
    if (input_num < 1 || input_num > 5)
    {
        printf("Sorry, that number does not work - goodbye!\n");
        // a return of 1 signals a problem with the program or data
        return 1;
    }
    // the placeholder of %i means an integer will be put here
    // the variable name follows - in this case it is input_num
    printf("You entered %i\n", input_num);

    // create a loop that will add up the numbers from 1 to the input number
    // this loop starts by setting the counter to 1
    // it will repeat until the counter as long as the counter is
    // less than or equal to the input number
    // counter++ will increase the counter by one on each loop through
    for (counter = 1; counter <= input_num; counter++)
    {
```

```
// this takes what is already in sum and add the counter to it
// it is the same as saying sum = sum + counter;
sum += counter;
}
printf("The total of your numbers is %d\n", sum);
}
```