in ISBN you will need to do some calculations using the place value of a number. A **checksum** (or **checkdigit**) is a method where a formula is used on a number to be sure it is valid. This is also used in credit cards - each type has a different checksum formula used.

Here we are just going to make a short program to demonstrate this using only 4 digits. It is not the complete solution to ISBN but it should help you to get started...

Enter the code - try it out - are the answers correct? Remember that the first place value in computers is a value of 0 and not 1…

> **For a number 4321 the answer will be that same as figuring this out:**
>
> **1 x 3 = 3**
> **2 x 2 = 4**
> **3 x 1 = 3**
> **4 x 0 = 0**
>
> **3 + 4 + 3 + 0 = 10**
> **So, sum = 10, the last digit would be 1**

```
#include <cs50.h>
#include <math.h>
#include <stdio.h>
// my coded solution
int main(void)
{

// set up variables
    int temp_mod = 0;
    long long number_in = 0;
    int sum = 0;
    int last = 0;

// ask user for a positive number
// of 4 digits
    do
    {
      printf("Please enter a positive number with four digits: \n");
      number_in = GetLongLong();
    }
    while (number_in < 1 || number_in > 9999);
```

```
// take the last digit and save it
    last = number_in % 10;

// create a loop moving from right to left of the number
// take the last digit
// multiply it by the place value in the number
// add to an ongoing sume
// then remove last digit from the number

    for (int i = 3; i > 0; i--)
    {
        temp_mod = number_in % 10;
        number_in = number_in / 10;
        sum += temp_mod * i;
    }
// at the end print the sum
// and also display the digit that was saved
    printf("Sum is: %d\n", sum);
    printf("Last digit was: %d\n", last);
}
```