Problem statement:

Write a program to check whether a number is an Armstrong number or not?

Hey! but

What is an Armstrong number?

Armstrong number: An Armstrong number of order n is a number in which each digit when multiplied by itself n number of times and finally added together, results the same number.

For example:
371 is a 3 digit number. Therefore, its order is 3

Now here, each digit is multiplied by itself 3 times and finally added together and results in our original number i.e.

3*3*3 + 7*7*7 + 1*1*1 = 27 + 343 + 1 = 371

How to write a program which checks whether a number is an Armstrong number or not?

Step #1 – First find out, how many digits are there in your number

```
count = 0;
while(q != 0)
{
    q = q/10;
    count++;
}
```

1. 371/10 = 37
   count = 1
2. 37/10 = 3
   count = 2
3. 3/10 = 0
   count = 3

How to write a program which checks whether a number is an Armstrong number or not?

Step #2 – Multiply each digit n times (in our example, n = 3) and add them

```
cnt = count, result = 0;
while(q!=0)
{
    rem = q%10;
    while(cnt!=0)
    {   mul = mul*rem;
        cnt--;
    }
    result = result + mul;
    cnt = count;
    q = q/10;
    mul = 1;
}
```

1. 371%10 = 1
   mul = 1
   result = 1

2. 37%10 = 7
   mul = 7*7*7 = 343
   result = 1 + 343
   = 344

3. 3%10 = 3
   mul = 3*3*3 = 27
   result = 344 + 27
   = 371

How to write a program which checks whether a number is an Armstrong number or not?

Step #3 – Check whether the calculated result is equal to the actual number or not.

```
if(result == number)
        printf("%d is an Armstrong number", number);
    else
        printf("%d is not an Armstrong number", number);
```

Armstrong.c - Code::Blocks 16.01

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```c
int main()
{
    int number, count=0, result=0, mul=1, cnt, rem;
    printf("Please enter a number: ");
    scanf("%d", &number);

    int q = number;
    while(q != 0)
    {
        q = q/10;
        count++;
    }
    cnt = count;
    q = number;

    while(q!=0)
    {
        rem = q%10;
        while(cnt!=0)
        {   mul = mul*rem;
            cnt--;
        }
        result = result + mul;
        cnt = count;
        q = q/10;
        mul = 1;
    }
    if(result == number)
        printf("%d is an Armstrong number", number);
    else
        printf("%d is not an Armstrong number", number);
    return 0;
}
```

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