**Instructions**

Convert a binary number, represented as a string (e.g. '101010'), to its decimal equivalent using first principles.

Implement binary to decimal conversion. Given a binary input string, your program should produce a decimal output. The program should handle invalid inputs.

**Note**

* Implement the conversion yourself. Do not use something else to perform the conversion for you.

**About Binary (Base-2)**

Decimal is a base-10 system.

A number 23 in base 10 notation can be understood as a linear combination of powers of 10:

* The rightmost digit gets multiplied by 10^0 = 1
* The next number gets multiplied by 10^1 = 10
* ...
* The *n*th number gets multiplied by 10^*(n-1)*.
* All these values are summed.

So: 23 => 2\*10^1 + 3\*10^0 => 2\*10 + 3\*1 = 23 base 10

Binary is similar, but uses powers of 2 rather than powers of 10.

So: 101 => 1\*2^2 + 0\*2^1 + 1\*2^0 => 1\*4 + 0\*2 + 1\*1 => 4 + 1 => 5 base 10.