

Intermediate Loop Problems

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Remember, if the problem description asks you to return something, you don't print it out inside the function, you print out where the function was called and returned the value.

1 Number of Vowels

Write a function which, given a String, returns the total number of vowels that were in the String. This means you need to feed the function you write a String as a parameter and return an integer.

2 Number of Even Digits

Write a function which, given an `int`, return the number of even digits in the `int`. For example, if the function is passed the number 254, it should return 2, as only two of the digits are even. You will need to use modulus and division to solve the problem. The strategies you use here will help you develop solutions for the next two problems.

3 Three Digit Armstrong Numbers

A Three Digit Armstrong Number is an integer such that the sum of the cube of each digit is equal to the whole number. Write a function that, given an integer as a parameter, returns whether or not a number is a Three Digit Armstrong Number. Some examples of Armstrong Numbers:

$$371 = 3^3 + 7^3 + 1$$

$$370 = 3^3 + 7^3 + 0^3$$

4 Riddler

Holy digits Batman! The Riddler is planning his next caper somewhere on Pennsylvania Avenue. In his usual sporting fashion, he has left the address in the form of a puzzle. The address on Pennsylvania is a four-digit number with the following properties:

- All four digits are different
- The digit in the thousands place is three times the digit in the tens place
- The number is odd
- The sum of the digits is 27.

Write a function that uses a loop or loops that returns the address where the Riddler plans to strike.

4.1 Hint

Figure out how to get each of the ones, tens, hundreds, and thousands place first. You will need to use division and the modulus operators.

5 Grading

There are a total of 100 points. Each problem is worth 25 points.