Credit

My program prompts the user for a credit card number and then reports (whether it is a valid American Express, MasterCard, or Visa card number), per the definitions of each’s format herein.

All American Express numbers start with 34 or 37; most MasterCard numbers start with 51, 52, 53, 54, or 55 (they also have some other potential starting numbers which we won’t concern ourselves with for this problem); and all Visa numbers start with 4. Also, American Express uses 15-digit numbers, MasterCard uses 16-digit numbers, and Visa uses 13- and 16-digit numbers.

But credit card numbers also have a “checksum” built into them, a mathematical relationship between at least one number and others. Therefore, I utilized a formula called Luhn’s Algorithm to check if a credit card number is valid as follows:

1. Multiply every other digit by 2, starting with the number’s second-to-last digit, and then add those products’ digits together.
2. Add the sum to the sum of the digits that weren’t multiplied by 2.
3. If the total’s last digit is 0 (or, put more formally, if the total modulo 10 is congruent to 0), the number is valid!

**Sample Implementation:**

Text

Description automatically generated with medium confidence

The program will also catch inputs that are not credit card numbers (e.g., a phone number), even if numeric:

Text

Description automatically generated with medium confidence

And reject hyphens (and more) as well:

Text

Description automatically generated