Credit Card Validation (Luhn's Algorithm)[1]

Introduction

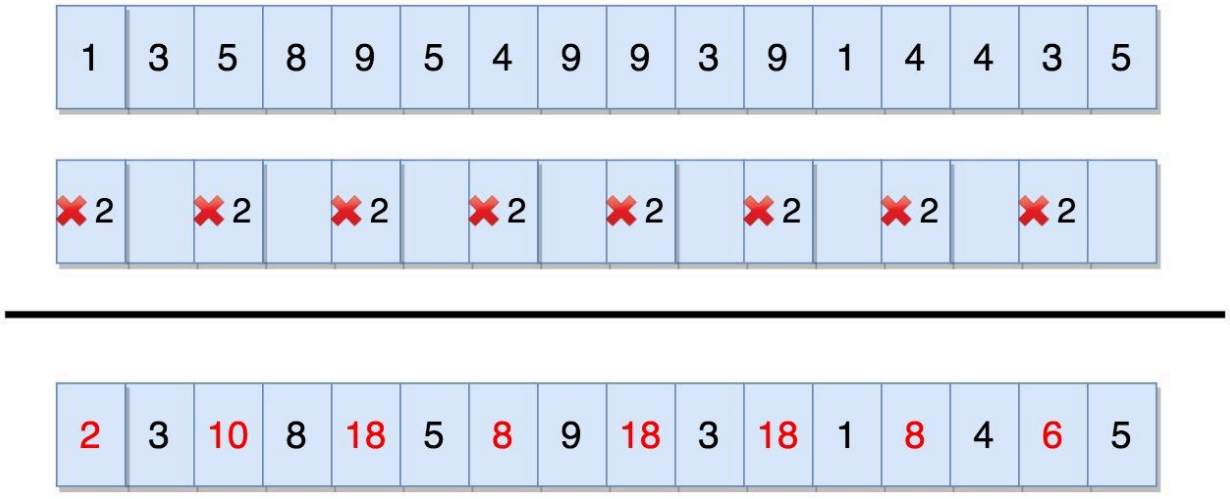
Luhn algorithm, also known as modulus 10 or mod 10 algorithm, is a simple checksum process for validating various identification numbers such as credit card numbers and Canadian social security numbers.

This algorithm is designed to protect against mistyped or accidental error rather than malicious attacks. Most credit card companies adopted this algorithm as this was available in the public domain and can be used by anyone.

Here are the steps involved in Luhn Algorithms:

Step 1:

From the rightmost digit, we should double every second digit.



[1] Adapted from https://java2blog.com/luhn-algorithm-java/

Step 2:

If the result from doubling a digit yields us a product with two digits - add the digits together and use that number.
(Note what happens to the 10 and the 18s)

2	3	10	8	18	5	8	9	18	3	18	1	8	4	6	5

2	3	1	8	9	5	8	9	9	3	9	1	8	4	6	5

Step 3:

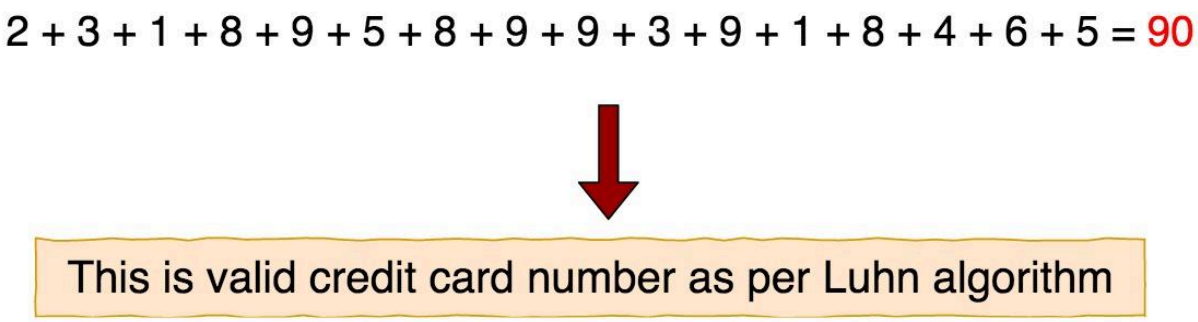
Compute the sum of all the digits.

2	3	1	8	9	5	8	9	9	3	9	1	8	4	6	5

2 + 3 + 1 + 8 + 9 + 5 + 8 + 9 + 9 + 3 + 9 + 1 + 8 + 4 + 6 + 5 = 90

Step 4:

If total sum is divisible by 10 i.e. total sum modulo 10 is 0, then the number is valid else it is not valid.



As 90 mod 10 is 0, this is a valid credit card number.

Implementation

Write a program that prompts the user to enter a credit card number as a long.

```
long num = s.nextLong();
```

It should then display what type of card it is and whether the card is valid or invalid.

Credit card numbers follow certain patterns.
A credit card number must have between 13 and 16 digits. It must start with:

- 4 for Visa cards
- 5 for Mastercards
- 34 or 37 for American Express cards
- 6 for Discover cards

There's a whole lot more to the credit card number, and you can look here if you're interested...

Example Input/Output:

```
Input : 379354508162306
Output : AMEX 379354508162306 is Valid

Input : 4388576018402626
Output : Visa 4388576018402626 is Invalid

Input : 4556737586899855
Output : Visa 4556737586899855 is Valid
```

```
Input : 4024007109022143
Output : Visa 4024007109022143 is Invalid
```