



John's Credit Card

Computer Science - Group 22

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Main Problem

-> How can we verify the validity of a Credit Card Number ?



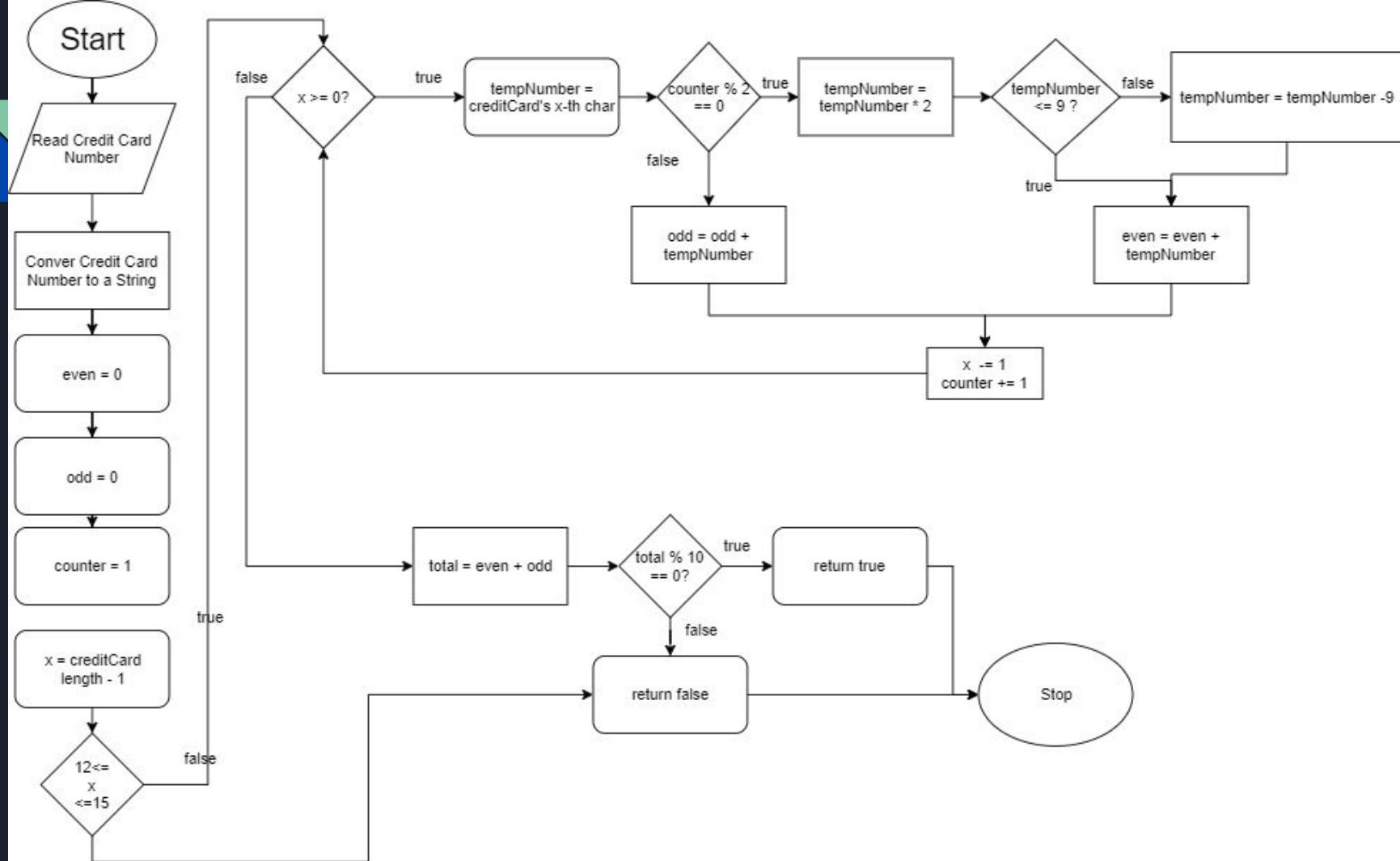
Luhn's Check

For example, take the card number 4388576018402626:

- Double every second digit from right to left. If doubling of a digit results in a two-digit number, add up the two digits to get a single-digit number.
 $2 * 2 = 4$
 $2 * 2 = 4$
 $4 * 2 = 8$
 $1 * 2 = 2$
 $6 * 2 = 12$ ($1 + 2 = 3$)
 $5 * 2 = 10$ ($1 + 0 = 1$)
 $8 * 2 = 16$ ($1 + 6 = 7$)
 $4 * 2 = 8$
- Now add all single-digit numbers from Step 1.
 $4 + 4 + 8 + 2 + 3 + 1 + 7 + 8 = 37$
- Add all digits in the odd places from right to left in the card number.
 $6 + 6 + 0 + 8 + 0 + 7 + 8 + 3 = 38$
- Sum the results from Step 2 and Step 3.
 $37 + 38 = 75$
- If the result in Step 4 is divisible by 10, the card number is correct.
75 is not divisible by 10. Therefore, this credit card number is not correct



Flowchart





Code in action

Website link : <https://john.corentin.codes>

- Visa: 4292284644947326
- Discover : 6011907829117332
- American Express : 3400 0000 0000 009
- Mastercard : 5559409424856331





Code



```
function luhn(creditCardNumber) {  
  let even = 0;  
  let odd = 0;  
  let counter = 1;  
  for (let x = creditCardNumber.length - 1; x >= 0; x--) {  
    if (counter % 2 == 0) {  
      let newNumber = creditCardNumber.charAt(x) * 2;  
      if (newNumber > 9) newNumber = newNumber - 9;  
      even += newNumber;  
    } else {  
      odd += parseInt(creditCardNumber.charAt(x));  
    }  
    counter++  
  }  
  return { even, odd, total: even + odd, correct: (even + odd) % 10 === 0 };  
}
```




Improvements

- Design website improvement
- If card no. is invalid: explain why it is invalid
- HTTP GET request for more efficient validation check
- Ask additional information, such as Name / Expiry / security code
- Dynamically update the card type on the check form



Problems encountered

- Credit Card numbers that are not 16-numbers long
 - Programming issue

A blue parallelogram and a light green parallelogram are positioned in the upper-left corner of the slide. The blue shape is partially behind the green one. Both shapes are oriented diagonally, with their longer sides running from the top-left towards the bottom-right. The background is a dark navy blue with subtle, lighter blue diagonal stripes running from the bottom-left towards the top-right.

Thanks !