Hashes and checksums, can be found everywhere in modern database and software systems and everyday life. Credit cards are part of our everyday life, most people have at least one, and we use them to pay for goods and services in both the physical and online worlds.

Credit cards and bank cards are no strangers to checksums. Your task for this project is to research the checksum function used for credit cards (Luhn),write a short report explaining your understanding of how it functions and to implement the algorithm so that you can check credit card numbers yourself and verify if they are valid.

You may also want to look at the vendor numbers for each card:

https://en.wikipedia.org/wiki/Payment_card_number

You're program should have a number of modes.

1. Verify: Take a credit card number as input and output if it is a valid or invalid credit card number.

2. Vendor: Again take a credit card number as input and output the issuing vendor

3. Checksum: Given just the first portion of a credit card calculate the checksum

4. Generate: Select the issuing vendor, then generate a random valid credit card

You may be asked to explain or defend you code.