```
1   //Carolyn Yee
2
3   public class CreditCard
4   {
5
6   public int findType(String num)
7   {
8     if (num.substring(0,2).equals("51") ||  //if first two elements equal 51, 52, 53,
    54, 55 then mastercard, return 1
9        num.substring(0,2).equals("52") ||
10        num.substring(0,2).equals("53") ||
11        num.substring(0,2).equals("54") ||
12        num.substring(0,2).equals("55"))
13      return 1;
14    else if (num.substring(0,1).equals("4")) //first element equals 4 then visa card
15      return 2;
16    else if (num.substring(0,4).equals("6011"))//first four elements equals 6011 then
    discover
17      return 3;
18    else if (num.substring(0,2).equals("34") ||
19             num.substring(0,2).equals("37"))//first two elements equal 34, 37 then
    amex
20      return 4;
21    else if (num.substring(0,2).equals("36") ||
22             num.substring(0,2).equals("38") ||//first two elements equal 36, 38 then
    carte blanch/binor's
23             num.substring(0,3).equals("300") ||//or first three elements equals 300,
    301, 302, 303, 304, 305 then carte blanch/binor's
24             num.substring(0,3).equals("301") ||
25             num.substring(0,3).equals("302") ||
26             num.substring(0,3).equals("303") ||
27             num.substring(0,3).equals("304") ||
28             num.substring(0,3).equals("305"))
29     return 5;
30    else
31      return 0;
32  }
33
34
35  // verify with Luhn Check
36
37  public boolean verify (String num)
38  {
39    int sum = 0;
40    boolean doubled = false; //first number is not doubled
41    for (int i = num.length()-1;i >= 0; i--) { //runs through entire string
42     if (doubled == false) //when number is not doubled, (when it is odd from end)
43    {
44      sum += Integer.valueOf(num.substring(i, i + 1));
45      doubled = true;//makes next number even (and so doubled)
46    }
47    else //when number is doubled, (when it is even from end)
48    {
49      int temp = 2 * Integer.valueOf(num.substring(i, i + 1));
50      if (temp >= 10)//if temp is bigger than 9, add the two digits together
51      {
52        temp = 1 + temp % 10; //ten's digit always one, one's digit is the remainder
    of ten
53      }
54      sum += temp; //if temp is smaller than 10, add temp directly to sum
55                   //if temp is larger than or equal to 10, temp is added to sum
    after adding digits
56      doubled = false;//makes next number odd (and so not doubled)
57    }
58   }
59
60   return sum % 10 == 0; //checking if sum is divisable by ten, if it is, will return
    true because credit card is valid
61   }
62
63  }
64
65
```