

```

1 public class CreditCard {
2     public boolean verify(String num) {
3         int sum = 0; // initialize sum variable
4
5         for (int i = num.length()-1; i >= 0; i --) { // for all of the characers in num
6             if (num.length()%2 == 1%2) // if placement is even
7                 sum += Integer.parseInt(num.substring(i,i+1))/5 + Integer.parseInt(num.
8                 substring(i,i+1))*2%10; // add double tens place and double ones place of that one
9                 digit
10            else // if placement is odd
11                sum += Integer.parseInt(num.substring(i,i+1)); // just add digit to sum
12        }
13        return sum%10 == 0; // valid if divisible by 10
14    }
15
16    public int findType(String num) {
17        if (num.length() < 4) // if there are no first 4 digits, then throw it out
18            return 0;
19        if (num.substring(0,1).equals("4")) // if first digit is 4, Visa
20            return 2;
21        if (Integer.parseInt(num.substring(0,2)) > 50 && Integer.parseInt(num.substring
22        (0,2)) < 56) // if first digits are 51-55, MC
23            return 1;
24        if (num.substring(0,2).equals("34") || num.substring(0,2).equals("37")) // if
25        first two digits are 34, 37, AmEx
26            return 3;
27        if (num.substring(0,2).equals("36") || num.substring(0,2).equals("38")) // if
28        they are 36 or 38, Diner thing
29            return 5;
30        if (Integer.parseInt(num.substring(0,3)) > 299 && Integer.parseInt(num.
31        substring(0,3)) < 306) // if first 3 digits are between 300 and 305, also Diner
32        thing
33            return 5;
34        if (num.substring(0,4).equals("6011")) // if starts with 6011, discover
35            return 4;
36        return 0; // otherwise, other
37    }
38
39    public String randomNumber(int type) {
40        String randNum;
41        switch (type) {
42            case 1:
43                randNum = Integer.toString((int)(Math.random()*5+51));
44                break;
45            case 2:
46                randNum = "4";
47                break;
48            case 3:
49                randNum = Integer.toString((int)(Math.random()*2)*3+34);
50                break;
51            case 4:
52                randNum = "6011";
53                break;
54            case 5:
55                if (Math.random() < .5)
56                    randNum = Integer.toString((int)(Math.random()*2)*2+36);
57                else
58                    randNum = Integer.toString((int)((Math.random()*2)*6+300));
59                break;
60            default:
61                randNum = "";
62        }
63        for (int i = randNum.length(); i < 15; i ++){
64            randNum += Integer.toString((int)(Math.random()*10));
65        }
66        for (int i = 0; i < 10; i ++){
67            if (verify(randNum + i))
68                return randNum + i;
69        }
70        return "ERROR";
71    }
72 }

```