**A** palindromic [Le Monde mathematical puzzle](https://xianblog.wordpress.com/2011/09/03/le-monde-puzzle-website/):

*In a monetary system where all palindromic amounts between 1 and 10⁸ have a coin, find the numbers less than 10³ that cannot be paid with less than three coins. Find if 20,191,104 can be paid with two coins. Similarly, find if 11,042,019 can be paid with two or three coins.*

Which can be solved in a few lines of R code:

coin=sort(c(1:9,(1:9)\*11,outer(1:9\*101,(0:9)\*10,"+")))

amounz=sort(unique(c(coin,as.vector(outer(coin,coin,"+")))))

amounz=amounz[amounz<1e3]

and produces 10 amounts that cannot be paid with one or two coins. It is also easy to check that three coins are enough to cover all amounts below 10³. For the second question, starting with n¹=20,188,102,  a simple downward search of palindromic pairs (n¹,n²) such that n¹+n²=20,188,102 led to n¹=16,755,761 and n²=3,435,343. And starting with 11,033,011, the same search does not produce any solution, while there are three coins such that n¹+n²+n³=11,042,019, for instance n¹=11,022,011, n²=20,002, and n³=6.