Coin sums

Problem 31 (http://projecteuler.net/problem=31)

In England the currency is made up of pound, £, and pence, p, and there are eight coins in general circulation:

    1p, 2p, 5p, 10p, 20p, 50p, £1 (100p) and £2 (200p).

It is possible to make £2 in the following way:

    1×£1 + 1×50p + 2×20p + 1×5p + 1×2p + 3×1p

How many different ways can £2 be made using any number of coins?

Solution

In [1]:
```
def coins(a,n):
    t = 0
    if (n > 0) and a:
        for x in range(n // a[0] + 1):
            if x * a[0] ==  n:
                t += 1
            else:
                t += coins(a[1:], n - x * a[0])
    return t

coins([200, 100, 50, 20, 10, 5, 2, 1], 200)
```

Out[1]: 73682