Screen Shot:

```
X = dcdcbacbbb
X'= dcdcbacb-bb
Y'= acdcca-bdbb
Y = acdccabdbb
-----------------
M(n,m) = 10
```

Exercise 15 1-2

Let $n = 4$, $p_1 = 0.1$, $p_2 = 1.8$, $p_3 = 3$, $p_4 = 3$

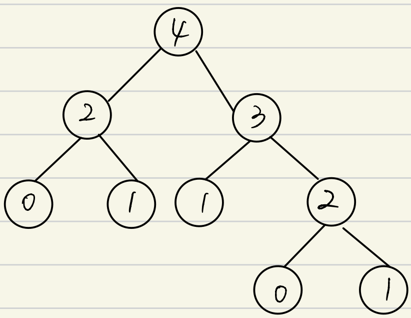
as a result the maximal density piece equal to 3

The greedy doest not always produce the optimal result.

In this case, it would cut the rod into two pieces of length 3 and 1 with total 3.1, but there is a better solution that two pieces of 2 with total piece 3.6.

length i	1	2	3	4
price p_i	1	20	33	36
p_i/i	1	10	11	9

Exercise 15.1-5



The number of vertices in tree to compute the nth Fibonacci will follow the recurrence

$$V(n) = 1 + V(n-2) + V(n-1)$$

The initial condition $V(1) = V(0) = 1$, and for the base case

$$V(n) = 1+2\times Fib(n-2)-1+2\times Fib(n-1)-1 = 2\times Fib(n)-1$$

The number of edge will satisfy the recurrence

$$E(n) = 2+E(n-1)+E(n-2)$$

$$E(n) = 2+2\times Fib(n-1)-2+2\times Fib(n-2)-2 = 2\times Fib(n)-2$$

Exercise 15.4-1

$X=[1,0,0,1,0,1]$, $Y=[0,1,0,1,1,0,1,1,0]$

$X.length=8$ $\quad$ $Y.length=9.$

$LCS[8.8] = 1+LCS[7.7] = 1+\max(LCS(7.6), LCS[6.7])$

$LCS[7.6] = 1+LCS[6.5] = 2+\max(LCS[5.3], LCS[4,4])$

$LCS[5,3] = 1+LCS[4.2] = 3$

$LCS[4.4] = 3$, $LCS[2.1] = 1$, $LCS[1.2] = 1$

$LCS[7.6] = 5$ $\quad$ $LCS[7,9] = 6 = LCS[8,9]$