Question01: Part 04:

H-Table

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X|Y | - | A | C | D | C | C | A | B | D | B | B |
| - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| C | 0 | 0 | 2 | 1 | 4 | 3 | 2 | 1 | 1 | 1 | 0 |
| D | 0 | 0 | 1 | 4 | 3 | 3 | 2 | 1 | 3 | 2 | 1 |
| C | 0 | 0 | 2 | 3 | 6 | 5 | 4 | 3 | 2 | 2 | 1 |
| B | 0 | 0 | 1 | 2 | 5 | 5 | 4 | 6 | 5 | 4 | 4 |
| A | 0 | 2 | 1 | 1 | 4 | 4 | 7 | 6 | 5 | 4 | 3 |
| C | 0 | 1 | 4 | 3 | 3 | 6 | 6 | 6 | 5 | 4 | 3 |
| B | 0 | 0 | 3 | 3 | 2 | 5 | 5 | 8 | 7 | 7 | 6 |
| B | 0 | 0 | 2 | 2 | 2 | 4 | 4 | 7 | 7 | 9 | 9 |
| B | 0 | 0 | 1 | 1 | 1 | 3 | 3 | 6 | 6 | 9 | 11 |

P-Table: (L=Left, U=Up, D=Down)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X|Y | - | A | C | D | C | C | A | B | D | B | B |
| - | L | L | L | L | L | L | L | L | L | L | L |
| D | L | L | L | D | L | L | L | L | D | L | L |
| C | L | L | D | L | D | L | L | L | U | D | L |
| D | L | L | U | D | L | D | L | L | D | L | L |
| C | L | L | D | U | D | L | L | L | L | D | L |
| B | L | L | U | U | U | D | L | D | L | L | D |
| A | L | D | L | U | U | U | D | L | L | L | L |
| C | L | U | D | L | D | D | U | D | L | L | L |
| B | L | L | U | D | L | U | U | D | L | D | D |
| B | L | L | U | U | D | U | U | D | D | D | D |
| B | L | L | U | U | U | U | U | D | U | D | D |

X’ = dcdcbacb-bb

Y’ = -cdcca-bdbb

**Exercise 15.1-2:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| lengthi | 1 | 2 | 3 | 4 |
| Price pi | 1 | 20 | 33 | 36 |
| Pi/p | 1 | 10 | 11 | 9 |

**Exercise 15.1-5:**

Source Code:

Fibonacci(n)

Let fibonacci[0…n] be a new array

fibonacci [ 0 ] = 0;

fibonacci [ 1 ] = 1;

for (2 <= i <= n) do

fibonacci [ i ] = Fibonacci[ i-1 ] + Fibonacci [ i-2 ];

return Fibonacci[n]

There are:

* n+1 vertices in the sub problem graph

for:

* v0 and v1 , each has 0 leaving edge.
* for v2­, v3, …, vn has 2 outgoing edges.
* Thus there are 2n-2 edges.

Fib(1)

f



Fib(0)

f

Fib(2)

f



Fib(3)

f

Fib(1)

f

Fib(1)

f

Fib(4)

f



Fib(2)

f

Fib(5)

f



Fib(0)

f

Fib(1)

f

Fib(3)

f

Fib(0)

f

Fib(2)

f



Fib(1)

f

**Exercise 15.4-1:**

X = 1 0 0 1 0 1 0 1

Y = 0 1 0 1 1 0 1 0

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| **0** | **0** | **1** | **1** | **1** | **1** | **1** | **1** | **1** |
| **0** | **1** | **1** | **2** | **2** | **2** | **2** | **2** | **2** |
| **0** | **1** | **1** | **2** | **2** | **2** | **3** | **3** | **3** |
| **0** | **1** | **2** | **2** | **3** | **3** | **3** | **4** | **4** |
| **0** | **1** | **2** | **3** | **3** | **3** | **4** | **4** | **5** |
| **0** | **1** | **2** | **3** | **4** | **4** | **4** | **5** | **5** |
| **0** | **1** | **2** | **3** | **4** | **4** | **5** | **5** | **6** |
| **0** | **1** | **2** | **3** | **4** | **5** | **5** | **6** | **6** |

LCS: 0 1 0 1 0 1