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Q1 def longestIncreasingSubsequence (seq):

if seq.length == 0 → return 0

M = [1]

for i = 2 → n:

Val = 1

for j = 1 → M.length:

if seq[j] < seq[i]:

Val = max(Val, ~~M[j]~~ <sup>M</sup>[j] + 1)

~~M.append(Val)~~

M.append(Val)

return max(M)

Q2 Steps

V<sub>0</sub> V<sub>1</sub> V<sub>2</sub> V<sub>3</sub> V<sub>4</sub> Queue

Visited <sup>Yes</sup> No Yes No No

Distance ∞ ∞ 0 ∞ ∞ V<sub>3</sub>

Path Null Null Null ∞ ~~∞~~ V<sub>1</sub>  
Null Null

1 1

Step 2	$V_0$	$V_1$	$V_2$	$V_3$	$V_4$	Queue
Visited	No	Yes	Yes	No	No	$V_0$
Distance	$\infty$	1	0	$\infty$	$\infty$	$V_3$
Path	Null	$V_2$	Null	Null	Null	<del><math>V_1</math></del>

Step 3	$V_0$	$V_1$	$V_2$	$V_3$	$V_4$	Queue
Visited	No	Yes	Yes	Yes	No	$V_4$
Distance	$\infty$	1	0	1	$\infty$	$V_0$
Path	Null	$V_2$	Null	<del><math>V_2</math></del>	Null	<del><math>V_3</math></del>

Step 4	$V_0$	$V_1$	$V_2$	$V_3$	$V_4$	Queue
Visited	Yes	Yes	Yes	Yes	No	
Distance	2	1	0	1	$\infty$	$V_4$
Path	$V_1$	$V_2$	Null	$V_2$	Null	<del><math>V_0</math></del>

Step 5	$V_0$	$V_1$	$V_2$	$V_3$	$V_4$	Queue
Visited	Yes	Yes	Yes	Yes	Yes	
Distance	2	1	0	1	2	
Path	$V_1$	$V_2$	Null	$V_2$	<del><math>V_3</math></del>	<del><math>V_4</math></del>

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