**Problem 1**

**Problem 2**

**Problem 3**

**Problem 4**

Longest at position 1 is of length 1

There is no previous position

Longest at position 2 is of length 2

The previous position is 1

Longest at position 3 is of length 2

The previous position is 1

Longest at position 4 is of length 1

There is no previous position

Longest at position 5 is of length 3

The previous position is 3

Longest at position 6 is of length 4

The previous position is 5

Longest at position 7 is of length 2

The previous position is 4

Longest at position 8 is of length 1

There is no previous position

Longest at position 9 is of length 4

The previous position is 5

Longest at position 10 is of length 3

The previous position is 7

Longest at position 11 is of length 5

The previous position is 9

Longest at position 12 is of length 2

The previous position is 8

Longest at position 13 is of length 2

The previous position is 8

Longest at position 14 is of length 4

The previous position is 10

Longest at position 15 is of length 3

The previous position is 12

Longest at position 16 is of length 4

The previous position is 15

Longest at position 17 is of length 5

The previous position is 14

Longest at position 18 is of length 6

The previous position is 11

Longest at position 19 is of length 5

The previous position is 14

Longest at position 20 is of length 6

The previous position is 19

The longest increasing subsequence has length 6

one of the subsequences with the longest length is [8, 9, 14, 15, 17, 19]

The positions of the entries in this sequence are [1, 3, 5, 9, 11, 18]