

FOA3Q

Started on	Monday, 20 November 2023, 7:17 PM
State	Finished
Completed on	Monday, 20 November 2023, 7:27 PM
Time taken	9 mins 54 secs
Grade	1.8 out of 5.0 (35%)

Question 1

Partially correct

Mark 1.7 out of 3.0

Flag question

Consider the following problem specification:

Input: $a \in \mathbb{Z}^*$, $b \in \mathbb{Z}^*$ where

$\forall i \in \mathbb{N}: i < \text{length}(a) \rightarrow \exists j \in \mathbb{N}: j < \text{length}(b) \wedge a(i) = b(j)$

Output: $c \in \{0,1\}$ where

$c = 1 \rightarrow (\forall j \in \mathbb{N}: j < \text{length}(b) \rightarrow \exists i \in \mathbb{N}: i < \text{length}(a) \wedge a(i) = b(j))$

Please note that $\mathbb{N}=\{0,1,2,\dots\}$ and that $a(0)$ is the first element of a .

Answer the following questions:

1. Do the inputs $a=[1,3,5,7], b=[1,3,7,7]$ satisfy the input condition?

yes

no

Mark 0.0 out of 4.0

The correct answer is: no

Select every output c that satisfies the output condition (select "none", if the input condition is not satisfied):

none

c=0

c=1

The correct answer is:

none

2. Do the inputs $a=[1,1,3,5], b=[3,3,5,1]$ satisfy the input condition?

yes

no

Mark 1.0 out of 1.0

The correct answer is: yes

Select every output c that satisfies the output condition (select "none", if the input condition is not satisfied):

none

c=0

c=1

Mark 3.0 out of 3.0

The correct answer is:

c=1

3. Do the inputs $a=[1,1,3,5], b=[7,5,3,1]$ satisfy the input condition?

yes

no

Mark 0.0 out of 1.0

The correct answer is: yes

Select every output c that satisfies the output condition (select "none", if the input condition is not satisfied):

none

c=0

c=1

Mark 3.0 out of 3.0

The correct answer is:

c=0

Question 2

Complete

Mark 0.0 out of 2.0

Flag question

Specify the following problem (you may use any text representation for logical/mathematical symbols):

Given a finite integer sequence a , a natural number s , and an integer d that does not occur in a , compute the integer sequence b that has the same length as a and whose content is derived from a by shifting its elements s positions to the right and filling the resulting gap with d .

For example, for legal inputs $a=[2,3,5,7,11,13]$, $s=2$, $d=0$ output $b=[0,0,2,3,5,7]$ is legal.