

Worksheet 17 Solution

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Question 1

a. We need to determine $|\mathcal{I}_n|$.

The problem tells that the values in inputs are either 1 or 0, and we know \mathcal{I}_n represents all possible inputs of size n containing binary values.

After watching lecture videos, and reading notes, I do not yet understand the details of how to evaluate the \mathcal{I}_n , but from the pattern below

$[0], [1], [1, 0], [0, 1], [1, 1], [0, 0], [0, 0, 0], [0, 0, 1], [0, 1, 0], [1, 0, 0], [1, 1, 0], [1, 0, 1], [0, 1, 1], [1, 1, 1]$

we can see the inputs of size 1 have 2 different inputs, the inputs of size 2 have 4 different inputs, and the inputs of size 3 have 8 different inputs.

Using this pattern, I can make an educated guess that $|\mathcal{I}_n| = 2^n$.