

## Problem

Consider the Hamming distance function defined in Example 7.1.10.

- a. Find  $H(10101, 00011)$
- b. Find  $H(00110, 10111)$ .

## Step-by-step solution

## Step 1 of 3

$H$  is the Hamming distance function

## Step 2 of 3

$$\begin{aligned} \text{(a) } H(10101, 00011) &= d(1,0) + d(0,0) + d(1,0) + d(0,1) + d(1,1) \\ &= 1 + 0 + 1 + 1 + 0 \\ &= 3 \\ \therefore H(10101, 00011) &= 3 \end{aligned}$$

## Step 3 of 3

$$\begin{aligned} \text{(b) } H(00110, 10111) &= d(0,1) + d(0,0) + d(1,1) + d(1,1) + d(0,1) \\ &= 1 + 0 + 0 + 0 + 1 \\ &= 2 \\ \therefore H(00110, 10111) &= 2 \end{aligned}$$