

Class Problem
Math 2513
Tuesday, July 5

- PROBLEM. (a) List all of the bit strings of length 2.
(b) List all of the bit strings of length 8 which start with 0111 and end with 2 consecutive 0's.
(c) List all of the bit strings of length 8 which contain exactly two 1's and those 1's are separated by at least two 0's.

Definition: Let n be a natural number. A *bit string of length n* is a sequence of n bits where a bit has two possible values either 0 or 1. For example, 111000110010 is a bit string of length 12.

SOLUTION:

- (a) The set of bit strings of length two is $\{00, 01, 10, 11\}$.
(b) The set of all bit strings of length 8 which start with 0111 and end with 2 consecutive 0's is

$\{01110000, 01110100, 01111000, 01111100\}$.

- (c) The set of bit strings of length 8 which contain exactly two 1's and those 1's are separated by at least two 0's is

10010000, 10001000, 10000100, 100000010, 10000001,
01001000, 01000100, 01000010, 01000001,
00100100, 00100010, 00100001,
00010010, 00010001,
00001001.

This set has 15 elements.