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**Result**

Answer 1:

Initial state: 1 0 0 0

M-sequence:

0 0 0 1 1 1 1 0 1 0 1 1 0 0 1



Answer 2:

Autocorrelation:



Answer 3:

Initial state: 0 0 0 0 1

Sequence b:

1 0 1 0 1 1 1 0 1 1 0 0 0 1 1 1 1 1 0 0 1 1 0 1 0 0 1 0 0 0 0

Sequence b’:

1 0 1 1 0 1 0 1 0 0 0 1 1 1 0 1 1 1 1 1 0 0 1 0 0 1 1 0 0 0 0

Cross-correlation:



Answer 4:

Initial state: 0 0 1 0 1

Sequence b”:

1 0 0 1 1 0 0 0 0 1 0 1 1 0 1 0 1 0 0 0 1 1 1 0 1 1 1 1 1 0 0

Sequence b’:

1 0 1 1 0 1 0 1 0 0 0 1 1 1 0 1 1 1 1 1 0 0 1 0 0 1 1 0 0 0 0

=> b’ and b” are the same sequence with different offset.

It has 1 run of one’s of length 5, 1 run of zero’s of length (5-1), 1 run of one’s and 1 run of zero’s of length (5-2).

Answer 5:

The first four sequences of the code book. [ b, b’ , b+b’, b+Db’ ]

Sequence 1:

1 0 1 0 1 1 1 0 1 1 0 0 0 1 1 1 1 1 0 0 1 1 0 1 0 0 1 0 0 0 0

Sequence 2:

1 0 1 1 0 1 0 1 0 0 0 1 1 1 0 1 1 1 1 1 0 0 1 0 0 1 1 0 0 0 0

Sequence 3:

0 0 0 1 1 0 1 1 1 1 0 1 1 0 1 0 0 0 1 1 1 1 1 1 0 1 0 0 0 0 0

Sequence 4:

1 1 1 1 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 1 0 1 0 0 0 0 0 1 0 0 0

Answer 6:

Base sequence :

-1 1 -1 1 1 -1 1 1 1 1 -1 1 -1 1 -1 -1 -1 1 -1 -1 1 1 1 -1 -1 -1 -1 -1 1 1 -1



Answer 7:

My last digit of student ID is 4.

Base sequence :

-1 1 -1 -1 -1 1 1 1 1 -1 -1 1 1 -1 1 1 1 -1 -1 -1 1 1 -1 -1 1 -1 -1 1 -1 -1 1

The results of full-period cross-correlation of and .

