Result Analysis:

Table below showcases the performance of the encoded communication scheme against the various SNR considered. The value of BER (Bit Error Ratio) is recorded for (3*10^6) bits transmitted.

S.NO	SNR(dB)	Number of Errors Observed	BER Calculated
1	0	67964	0.2265
2	1	46328	0.1544
3	2	28208	0.0940
4	3	15680	0.0523
5	4	7088	0.0236
6	5	2528	0.0084
7	6	836	0.0028
8	7	172	5.233e-04
9	8	64	2.133e-04
10	9	4	1.333e-04
11	10	4	1.333e-04

Table 1. Performance evaluation of Linear block code over coded communication scheme

The probable single-bit and two-bit errors, along with the Standard array is recorded and is shown in table 2.

S.NO	1Bit Error	2Bit Error	Corset
1	0000000	1100000	0000000
2	1000000	1010000	0001000
3	0100000	1001000	0010000
4	0010000	1000100	0011000
5	0001000	1000010	0100000
6	0000100	1000001	1000001
7	0000010	0110000	0110000
8	0000001	0101000	0000010
9		0100100	1000000
10		0100010	1001000
11		0100001	0000011
12		0011000	0000100
13		0010100	0000110
14		0010010	0000001
15		0010001	0011001
16		0001100	1000010
17		0001010	
18		0001001	
19		0000110	
20		0000101	
21		0000011	

Table 2. Probable error patterns with the Standard array

In order to observe the performance efficiency of the Linear Block codes over the Binary Symmetric channel, a plot of incurred BER against the value of SNRs are plotted along with the BER value of an uncoded communication scheme is represented in figure attached in the repository.

Conclusion:

With the aid of Linear block codes used in the communication scheme, it is clearly observed that there has been a performance improvement of 2-3 dB.