Digital communication HW#3

BER for Binary transmission System

In this homework, we will derive the theoretical equation for bit error rate for binary transmission system in AWGN.

1. Draw a suggested block diagram for such system.
2. What is the channel noise distribution p(x).
3. Derive the probability of error for such model.
4. Derive the maximum likelihood (ML) rule.

Simulation:

1. Generate random data.
2. Encode the generated data by NRZ line code.
3. Pass the encoded data through AWGN channel.
4. Demodulate the received data using ML detector.
5. Count the number of errors.
6. Compute the BER.
7. Repeat the same steps ((1-6)or(3-6)) for multiple Eb/No (0:20 Db)

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