Programming Assignment #4

CSCE 4510/5510 001

Spring 2018

Wireless Communication

100 Points

Instructions: Generate all the deliverables and create a zip archive of your assignment folder (code and labelled plots) and upload the zip file. Not following the above instructions could result up to 20% deduction from your program assignment score.

Objective:

Compute the hamming code for SEC for an 8-bit data block using Matlab.

Requirements:

1. Assume an 8-bit digital data, find the 4 check bits and insert the check bits at the correct locations.
2. Plot the digital data as well as the coded data.
3. Generate a one-bit error at a data bit location.
4. Compute the syndrome and detect and correct the error at the receiver side.
5. Plot the data in error and without error in two separate sub plots.

Procedure:

1. Assume 8-bit input digital data “01110010” and plot the digital data.
2. Compute the check bits and create the block to be transmitted.
3. Plot the transmitted digital data.
4. Receive the block and flip a bit (data bit) to create the error.
5. Compute the hamming code syndrome to find the location of the error.
6. Display the location of the error along with the syndrome.
7. Correct the error.
8. Plot the data in error and without error in two separate sub plots.
9. Make sure you do not use any functions or Simulink toolbox from Matlab. Do not copy functions or code from other sources for hamming code technique

Deliverables:

1. Upload all the plots (label all the axes and caption the plot) along with the commented Matlab code to Blackboard.
2. Submit a file that explains how your code works. Explain your submitted files in the description.