

ECE 316 - Operating Systems and Networking Laboratory

Practical Assignment 3 (Due: 05/02/2020)

Deliverables: Your report and code should be sent via email to lab teaching assistants (aanast01@ucy.ac.cy or ahadji29@ucy.ac.cy) prior the assignment examination and must include the usual cover page. In your report, include only the pseudocode, not the actual code, with any comments and description you may need to add, as well as a typical scenario that you use to test your programs. Email subject line should only consist of "ECE316_2020_3". Naming format for the zip file: lastName.zip (or lastName_lastName.zip if a group). **Caution:** Remove the executables (.exe) from the files before you send them!

The purpose of the first set of exercises is to familiarize yourself with Matlab and create some waveforms that are used in communication systems.

Exercise 1:

Suppose a system uses 5 volts for binary 1 and 0 volts for binary 0. Additionally, the speed of transmitter-receiver is 1Kbps (meaning the duration of one bit is 1ms). The transmitter wants to transmit the following sequence: 10010010. Show the signal that the receiver will receive if the line between them acts as a "perfect" filter (low pass filter) with maximum frequency:

1. 300Hz
2. 500Hz
3. 1KHz
4. 5KHz
5. 10KHz
6. 100KHz

Repeat the exercise with the following sequence 1101011010.

Exercise 2:

In a communication system with speed of 1Kbps, show the waveform created by the following transformers. Use as input the following binary sequences: a) 10100110 and b) 01001110 and that the frequency of the input signal is 3KHz.

1. ASK
2. FSK
3. PSK
4. QPSK

Exercise 3:

Implement a Pulse Amplitude Modulation (PAM) system. Using a sinusoid signal with a frequency of 3Hz and amplitude of 4, show the samples of signal which the system takes in time intervals of your choosing. You must show the differences between the samples when you use different rates of sampling.