**American International University- Bangladesh Department of Electrical and Electronic Engineering COE 3201: Data Communication Laboratory**

**Title: Study of Nyquist bit rate and Shannon capacity using MATLAB**

**Performance Task for Lab Report:** **(your ID = AB-CDEFG-H)**

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\*\*Generate a composite signal using two simple signals as,  
 **x = A1 sin(2π(C\*100)t ) + A2 cos(2π(G\*100)t) + s\*randn(size(t));**

**MATLAB code:**

%ID: 18-39230-3

%let ID = AB-CDEFG-H

%so, C = 3, G = 2 (for my case G = 0 )

%A1 = 18, A2 = 13, S = 3 ;

clear all;

clc;

fs = 80000;

t = 0:1/fs:1-1/fs;

A1 = 18;

A2 = 13;

s = 3;

x = A1\*sin(2\*pi\*(3\*100)\*t) + A2\*cos(2\*pi\*(2\*100)\*t) + s\*randn(size(t));

powfund = ((A1+A2)^2)/2;

varnoise = s^2;

%finding SNR

defSNR = 10\*log10(powfund/varnoise);

%finding Bandwidth

Bandwidth = obw(x,fs);

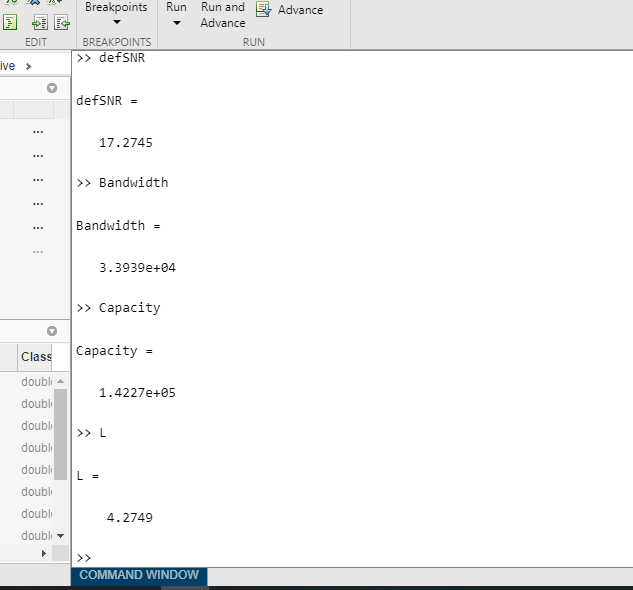
%finding capcity

Capacity = Bandwidth \* log2(1 + defSNR);

%finding signal level

L = 2^(Capacity/(2\*Bandwidth));

**OUTPUT:**

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