

## Proyecto EDIII (PRUEBA)

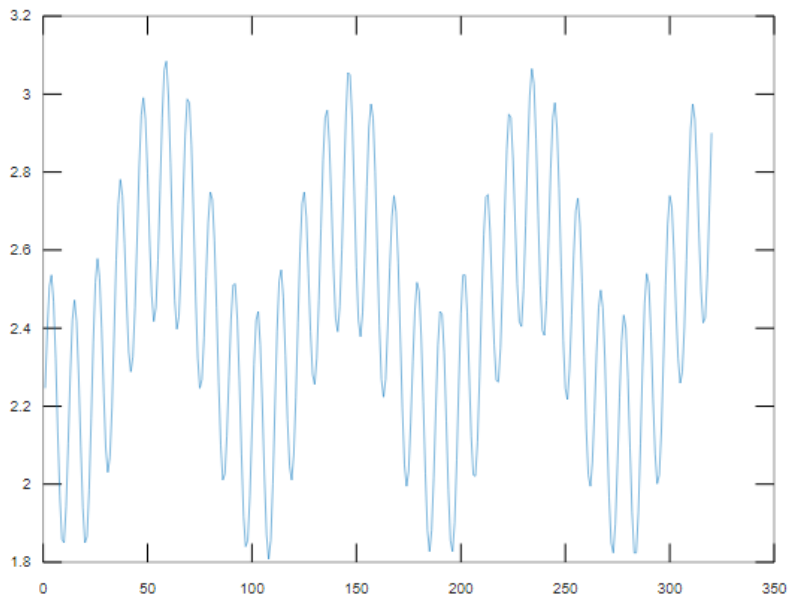
1. Se genera una señal de 1kHz y 8kHz con la app function generator.
2. Se procede con el muestreo de la señal, ejecutando la aplicación.
3. Se captura los datos, se los procesa y envía por el puerto COM4.
4. Estos valores son representados en OCTAVE

**octave:1>**

```
A=[2.2461912632,2.3976562023,2.5072264671,2.5362303257,2.4685547352,2.3235352039,2.1333982944,1.9690428972,1.8594726324,1.8498046398,1.9432617426,2.1043944359,2.2816405296,2.4202148914,2.4717772007,2.4169921875,2.2784178257,2.0979492664,1.9400390387,1.8498046398,1.8659179211,1.9851561785,2.1688475609,2.3654296398,2.5168945789,2.5781250000,2.5297851562,2.3976562023,2.2333006859,2.0947265625,2.0302734375,2.0689451694,2.1946289539,2.3815429211,2.5749022961,2.7166991234,2.7811522484,2.7392578125,2.6167967319,2.4653320312,2.3396484852,2.2880859375,2.3267576694,2.4524414539,2.6264648437,2.8101561069,2.9455077648,2.9906249046,2.9358398914,2.7972655296,2.6264648437,2.4846680164,2.4169921875,2.4524414539,2.5749022961,2.7553710937,2.9390623569,3.0615234375,3.0840818882,2.9938476086,2.8230469227,2.6264648437,2.4717772007,2.3976562023,2.4298827648,2.5555663109,2.7328124046,2.8939452171,2.9874022007,2.9777343273,2.8681640625,2.6876952648,2.4846680164,2.3235352039,2.2461912632,2.2687499523,2.3750975132,2.5330078602,2.6715819836,2.7489256859,2.7295897007,2.6232421398,2.4524414539,2.2623045444,2.1011717319,2.0109374523,2.0270507336,2.1237304211,2.2751953602,2.4234373569,2.5104491711,2.5136718750,2.4234373569,2.2655272484,2.0786132812,1.9174804687,1.8401366472,1.8562499285,1.9690428972,2.1366209984,2.3074219227,2.4202148914,2.4427733421,2.3557617664,2.1978514194,2.0141601562,1.8691406250,1.8079100847,1.8562499285,2.0012695789,2.1978514194,2.3912107944,2.5201170444,2.5491211414,2.4782226086,2.3299803734,2.1656248569,2.0463867187,2.0109374523,2.0753905773,2.2236328125,2.4137694836,2.5974609852,2.7199218273,2.7489256859,2.6844725609,2.5394530296,2.3912107944,2.2816405296,2.2558593750,2.3235352039,2.4717772007,2.6554687023,2.8294920921,2.9390623569,2.9583983421,2.8746092319,2.7231445312,2.5523436069,2.4266600609,2.3912107944,2.4556639194,2.6006834507,2.7811522484,2.9519531727,3.0550780296,3.0486328602,2.9358398914,2.7521483898,2.5555663109,2.4202148914,2.3783202171,2.4395506382,2.5845701694,2.7618162632,2.9132812023,2.9745116234,2.9390623569,2.8004882336,2.6039061546,2.4073240757,2.2687499523,2.2236328125,2.2687499523,2.4008789062,2.5555663109,2.6844725609,2.7392578125,2.6973631382,2.5684568882,2.3815429211,2.1946289539,2.0496094227,1.9948241711,2.0334961414,2.1591796875,2.3138670921,2.4459960461,2.5168945789,2.4943358898,2.3815429211,2.2107422352,2.0270507336,1.8820312023,1.8272460699,1.8820312023,2.0173828602,2.1946289539,2.3557617664,2.4427733421,2.4363281727,2.3364257812,2.1624023914,1.9851561785,1.8562499285,1.8272460699,1.9013671875,2.0625000000,2.2590820789,2.4363281727,2.5362303257,2.5362303257,2.4395506382,2.2784178257,2.1237304211,2.0238280296,2.0206053257,2.1076171398,2.2751953602,2.4717772007,2.6393554211,2.7360351086,2.7424805164,2.6490232944,2.4975585937,2.3557617664,2.2655272484,2.2623045444,2.3493163586,2.5104491711,2.6941406727,2.8584959507,2.9487304687,2.9390623569,2.8327147961,2.6715819836,2.5136718750,2.4169921875,2.4041016102,2.4975585937,2.6619141102,2.8488280773,2.9970703125,3.0647461414,3.0260741711,2.8842773437,2.6909179687,2.5104491711,2.3944334984,2.3815429211,2.4717772007,2.6329100132,2.8069336414,2.9390623569,2.9777343273,2.9132812023,2.7585937977,2.5555663109,2.3686523437,2.2461912632,2.2171874046,2.2945311069,2.4331054687,2.5877928734,2.7005858421,2.7328124046,2.6651365757,2.5168945789,2.3267576694,2.1430664062,2.0238280296,1.9948241711,2.0560545921,2.1849608421,2.3364257812,2.4524414539,2.4975585937,2.4524414539,2.3203125000,2.13662099
```

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13,1.8240233660,1.8240233660,1.9271484613,2.1043944359,2.3009765148,2.46533203
12,2.5394530296,2.5136718750,2.3912107944,2.2204101086,2.0786132812,2.00126957
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96,2.7166991234,2.9003906250];
```

```
octave:2> plot(A)
```



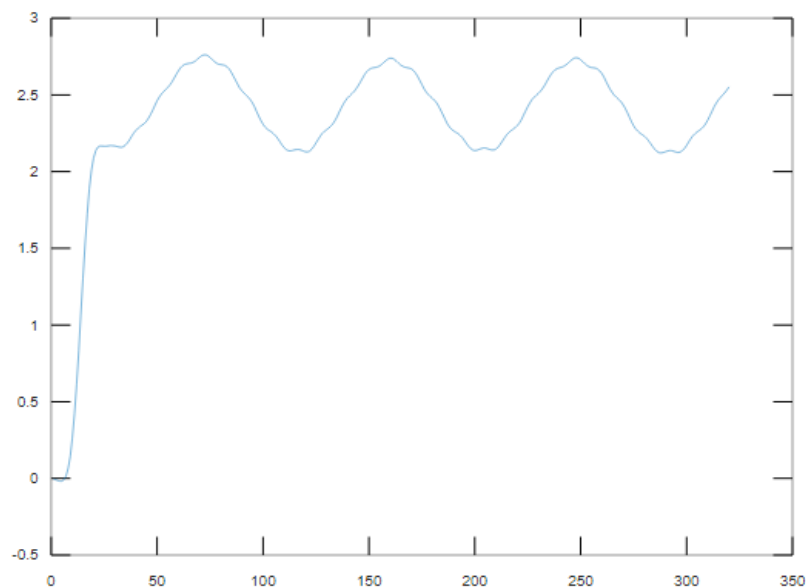
```
octave:3> B=[-0.0040264484,-0.0085182907,-0.0135556990,-0.0178746656,-
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1.8859803677,2.0067288876,2.0883328915,2.1363654137,2.1593406200,2.1667032242,
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2.1875064373,2.2079803944,2.2302753925,2.2515161037,2.2695238590,2.2834730148,
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2.7074835300,2.7125084400,2.7210042477,2.7323753834,2.7446725368,2.7551884651,
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2.2780113220,2.2623324394,2.2509605885,2.2415924072,2.2316002846,2.2189083099,
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2.1319956779,2.1274328232,2.1250011921,2.1272995472,2.1359345913,2.1509621143,
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2.2684748173,2.2788553238,2.2927377224,2.3116867542,2.3358287811,2.3638260365,
2.3932733536,2.4214837551,2.4463155270,2.4668366909,2.4835836887,2.4983572960,
2.5135285854,2.5312619209,2.5527160168];

```

**octave:4>** plot(B)



## Velocidad de sampling y coeficientes del filtro:

#DEFINE SAMPLING\_RATE 20000 //Muestreo a 20kHz

```
const float32_t firCoeffs32[NUM_TAPS] = {  
-0.00179256693870527,-0.00187888351193098,-0.00202850558385614,-0.00167121003424694,  
1.02275721635981e-18,0.00385526032868034,0.0106060380434773,0.0205854549583695,  
0.0335846185154550,0.0487894686034313,0.0648420439362281,0.0800227460083969,  
0.0925224258960228,0.100751512354513,0.103623194848330,0.100751512354513,  
0.0925224258960228,0.0800227460083969,0.0648420439362281,0.0487894686034313,  
0.0335846185154550,0.0205854549583695,0.0106060380434773,0.00385526032868034,  
1.02275721635981e-18,-0.00167121003424694,-0.00202850558385614,-0.00187888351193098,  
-0.00179256693870527}; //Buffer de coeficientes FIR con MATLAB fir1(28, 6/24)
```

## FOTOS:

