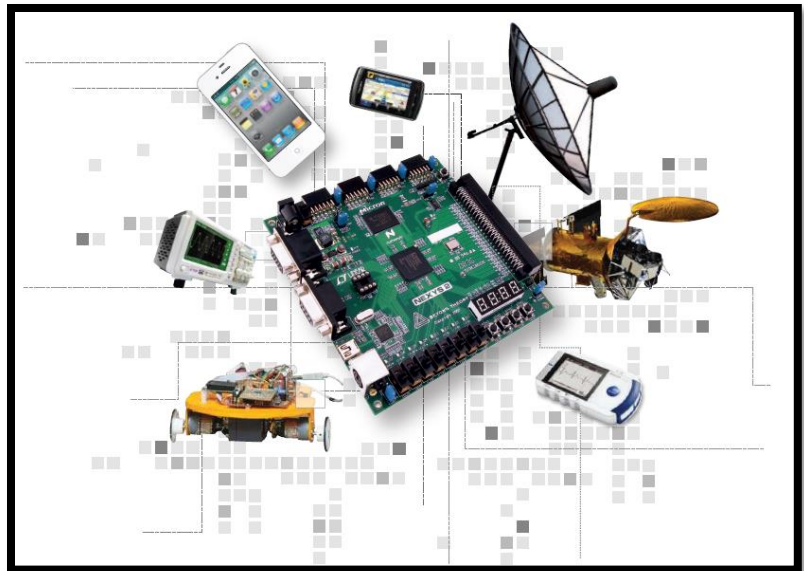


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Tarea 2

Sistemas embebidos



ANDRADE SALAZAR, IGNACIO
CENTRO UNIVERSITARIO DE LOS VALLES

Procedimiento

Método de Euler

18 02 24

Scribe

Simule la siguiente Función de transferencia ante una entrada tipo escalón unitario

$$\frac{y(s)}{U(s)} = \frac{0.125}{s+8} \quad b=0.125$$
$$a=8$$

$$\frac{Y(s)}{U(s)} = \frac{b}{s+a}$$

Multiplicación Cruzada

$$Y(s)(s+a) = U(s)b$$

Realizar multiplicación elem. x elem.

$$\mathcal{L}^{-1}\{sY(s) + aY(s) = bU(s)\}$$

$$\frac{dy(t)}{dt} + ay(t) = bu(t)$$

$$\frac{y(i+1) - y(i)}{h} + ay(i) = U(i)b$$

Despejar el termino de mayor orden

$$y(i+1) = y(i) + h[-ay(i) + bu(i)]$$

Código en C

```
akeLists.txt × main.cpp ×
#include <stdio.h>
#include <math.h>

//Igaio Andrade Salazar
main() {
    //Tiempo de simulación
    double tfin = 10;

    //paso de integración
    double h = 0.01;

    //Tamaño del vector
    int n = tfin / h;

    // Vectores
    double t[n], y[n], u[n];

    // Parametros de la FT
    double b = 0.125, a = 8;

    printf( format: "t \t\t y(t)\n\n");

    for (int i = 0; i < n; i++) {
        t[i] = i * h;
        u[i] = 1; //u[i]=sin(t[i])
        y[i + 1] = y[i] + h * (-a * y[i] + b * u[i]);

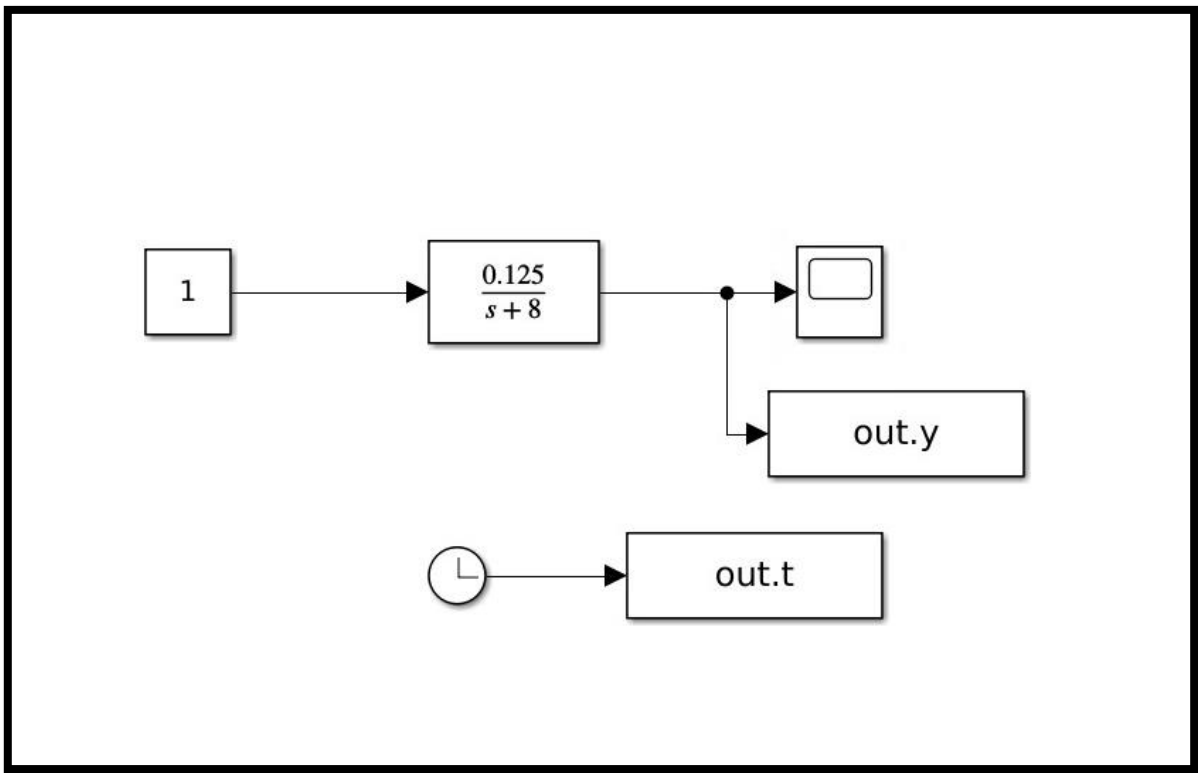
        printf( format: "%f \t\t %f \n", t[i], y[i]);
    }
}
```

Resultados en C

```
9.820000      0.015625
9.830000      0.015625
9.840000      0.015625
9.850000      0.015625
9.860000      0.015625
9.870000      0.015625
9.880000      0.015625
9.890000      0.015625
9.900000      0.015625
9.910000      0.015625
9.920000      0.015625
9.930000      0.015625
9.940000      0.015625
9.950000      0.015625
9.960000      0.015625
9.970000      0.015625
9.980000      0.015625
9.990000      0.015625
```

```
Process finished with exit code 0
```

Diagrama a bloques simulink



Gráfica en simulink

