**init**

*Declaration of dynamic variables.*

**Syntax:**

**init** <name of variable 1>{:<type of variable 1>}{=<triggering expression 1>}{**,**<name of variable 2>{:<type of variable 2>}{=<triggering expression 2>}}**;**

**Description:**

Declaration of dynamic variables (the form is the same as **var**). According to

**init** x; declaration

two variables of the same type will be created: state variable x and its derivative x’. If x is an array of state variables, then x'[i] is a derivative of variable x[i] of this array. State variables allow differential equations in Cauchy form to be set, i.e. as x'=f(x).

**Example:**

|  |  |
| --- | --- |
|  | **local**  { ENTRY OF INITIAL CONDITIONS }  **output** y1[2],y2[2];  **init** x1=5,x2=5,x3=5,x4=5.1,x5=5,x6=5;  { ENTRY OF COEFFICIENTS AND DIFFERENTIAL EQUATIONS }  a=10; b=28; c=2.6666666;  x1'=a\*(-x1+x2); { Simulation under initial cond. in point M1}  x2'=b\*x1-x2-x1\*x3; { - // - }  x3'=-c\*x3+x1\*x2; { - // - }  x4'=a\*(-x4+x5); { Simulation under initial cond. in point M2}  x5'=b\*x4-x5-x4\*x6; { - // - }  x6'=-c\*x6+x4\*x5; { - // - }  { DESCRIPTION OF EXITS FROM THE BLOCK }  y1[1]=x1; y1[2]=x4;  y2[1]=x3; y2[2]=x6;  **end**; |

Demonstrating example.

The task is: To study a non-stationary system described via Lorentz equations and corresponding to a classical strong strange attractor.

System of equations:

*x1'=a\*(-x1+x2);*

*x2'=b\*x1-x2-x1\*x3;*

*x3'=-c\*x3+x1\*x2;* where a=10.0; b=28.0; c=2.666(6);

Initial conditions: M1(0)=[5 5 5] and M2(0)=[5.1 5 5]