

❖ Vensim - download



- freeware alat za simulaciju dinamičkih sustava
- rješava vremenski ovisne diferencijalne jednačbe
- download: <http://www.vensim.com/freedownload.html>



VENSIM®
from Ventana Systems, Inc.

Home

Software

Applications

Purchase

Download

Courses

Resources

FAQ

Contact Us

Site Map

Download Vensim Software

Current version: 6.0A

Choose Product and Platform

Download	<input checked="" type="radio"/> Vensim PLE 6.0A <input type="radio"/> Vensim PLE 5.11A <input type="radio"/> Model Reader
Platform	<input checked="" type="radio"/> Windows (XP/Vista/7) <input type="radio"/> Macintosh OSX (10.4+)

Note : Use of the Vensim software is subject to the terms of a [license agreement](#).

Download software

❖ Vensim - download

- freeware alat za simulaciju dinamičkih sustava
- rješava vremenski ovisne diferencijalne jednačbe
- download: <http://www.vensim.com/freedownload.html>

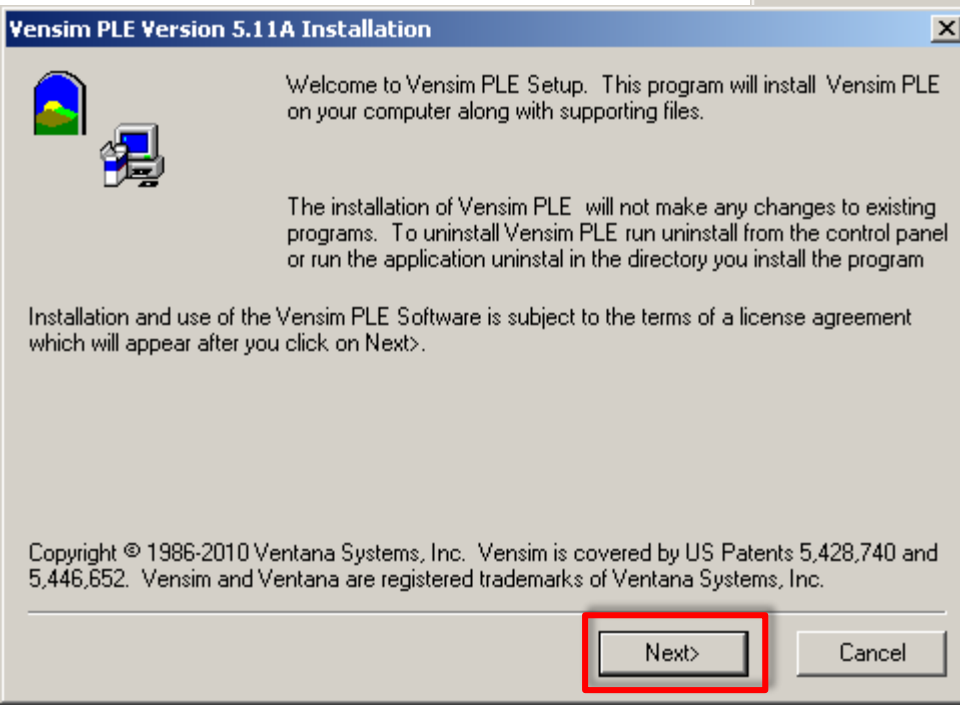
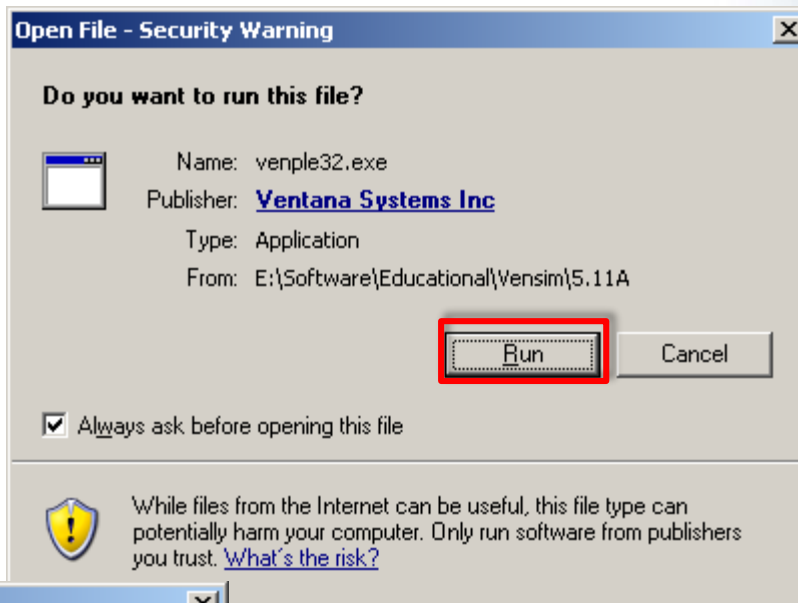
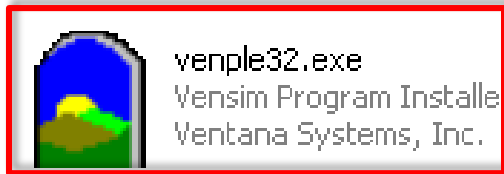
Choose a Product and Platform:

Anti-spam	<input checked="" type="checkbox"/> Please tick this box
Product	<input checked="" type="radio"/> Vensim PLE 6.3 <input type="radio"/> Vensim PLE 5.11A <input type="radio"/> Model Reader
Platform	<input checked="" type="radio"/> Windows (XP/Vista/7/8/8.1) <input type="radio"/> Macintosh OSX (10.4+)
Vensim newsletter	<input type="checkbox"/> Subscribe Name <input type="text" value="Petar Stipanović"/> PLEASE NOTE: DOWNLOAD INSTRUCTIONS WILL BE EMAILED TO YOU, A FAKE EMAIL ADDRESS HERE WILL NOT WORK. Email address <input type="text" value="pero@pmfst.hr"/> Retype email address <input type="text" value="pero@pmfst.hr"/> The Vensim newsletter is used for announcements of software updates, courses, and related information. Frequency is low – typically quarterly – and addresses are never shared.

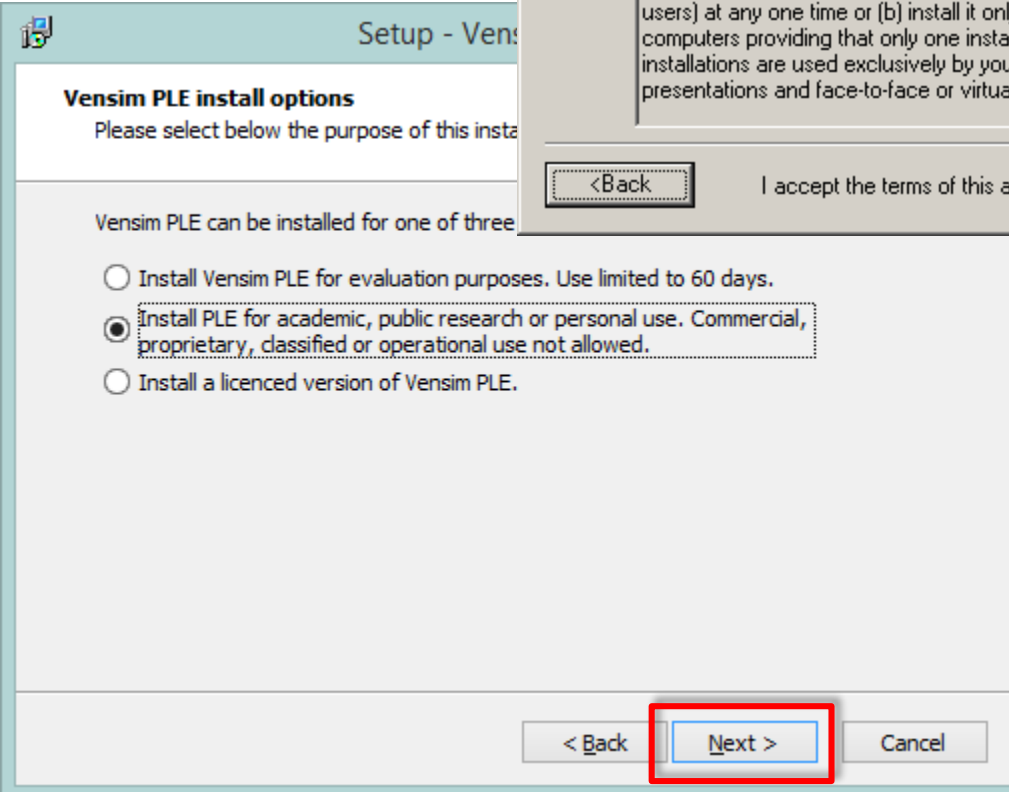
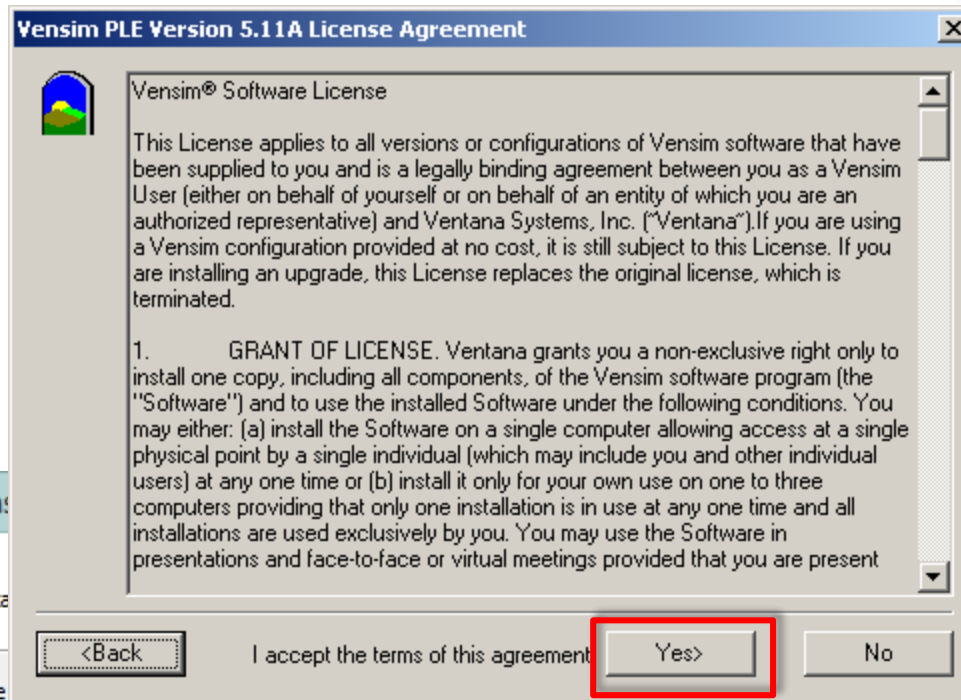
Download software

unesite svoje podatke

❖ Vensim - instalacija



❖ Vensim - instalacija



Vensim - instalacija

Vensim PLE Version 5.11A Installation Registration

Enter software registration information here.

Your name:
upisati_ime

Company name:
Academic Use Only

NOTE Vensim version 4 registration codes will not work.

<Back **Next>** Cancel

Setup - Vensim

Select Additional Tasks
Which additional tasks should be performed?

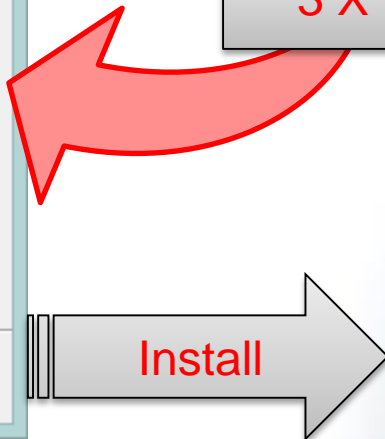
Select the additional tasks you would like Setup x32, then click Next.

Additional options
 Reset all Vensim settings (existing settings will be backed up)

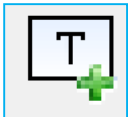

Additional icons:
 Create a desktop icon

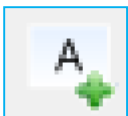

< Back **Next >** Cancel


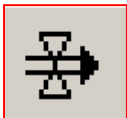
3 X Next>

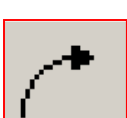




Vensim - alati

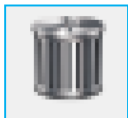

  akumulacijska varijabla (nova vrijednost = stara vrijednost + promjena) $P(t+\Delta t)=P(t)+\Delta P$, veličine koje su derivirane



  varijabla koja služi za pohranu jednadžbe, konstante ili vrijednosti koja se ne akumulira u vremenu

  brzina promjene varijable u vremenu $dP(t)/dt$

  strelica, spojnica kojom povezujemo ovisne veličine

  upis vrijednosti, jednadžbi... za odabrane objekte

  brisanje odabranih objekata

  grafički prikaz ovisnosti odabranih veličina o vremenu

❖ Vensim - operatori

Relacijski

<	manje od
>	veće od
<=	jednako ili manje od
>=	jednako ili veće od
=	jednako
<>	različito od

Aritmetički

+	zbrajanje
-	oduzimanje
*	množenje
/	dijeljenje
^	potenciranje
()	prioritet operacija

Logički

:AND:	i
:OR:	ili
:NOT:	ne

- operator pridruživanja vrijednosti već su upisani kao =
- za rješavanje diferencijalne jednačbe n-tog reda potrebno je imati n početnih uvjeta

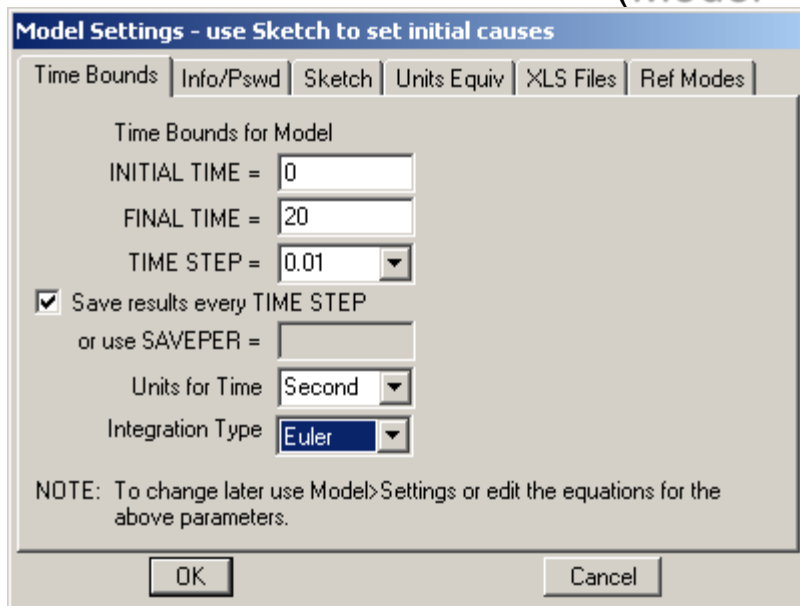
❖ Vensim – 1. zadatak

- V1. Koristeći Vensim prikažite tijekom prvih 20s promjenu položaja tijela koje se giba jednoliko brzinom 5m/s ako mu je početni položaj -20m.

- ✓ rješenje: 05 V0.mdl
- ✓ koordinatni sustav kojem je ishodište 20m udaljeno od $x(0)$
- ✓ napišemo diferencijalne jednadžbe prvog reda koje opisuju dani problem i zadane jednadžbe za početne uvjete

$$x(0) = -20 \text{ m} \quad v_x = \frac{dx}{dt} \Rightarrow x(t + \Delta t) = x(t) + \int_t^{t+\Delta t} v_x dt$$

- ✓ definiramo vremensku skalu (**Model => Settings...**)



Model Settings - use Sketch to set initial causes

Time Bounds | Info/Pswd | Sketch | Units Equiv | XLS Files | Ref Modes

Time Bounds for Model

INITIAL TIME = 0

FINAL TIME = 20

TIME STEP = 0.01

Save results every TIME STEP

or use SAVEPER =

Units for Time Second

Integration Type Euler

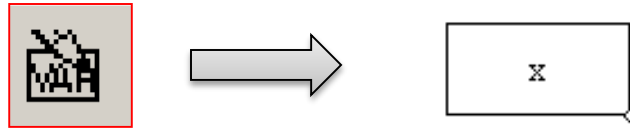
NOTE: To change later use Model>Settings or edit the equations for the above parameters.

OK Cancel

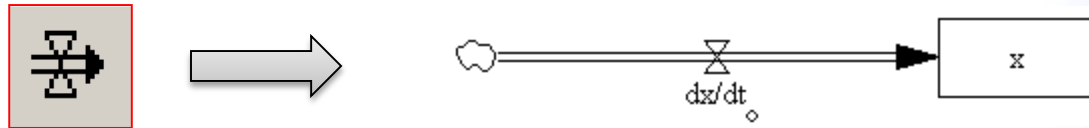
vremenski korak
mora biti dovoljno
mali kako ne bi
utjecao na rješenje

Vensim – V1

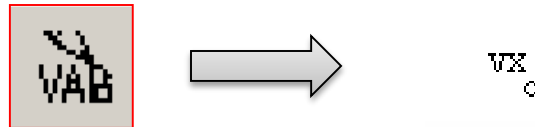
- ✓ sve varijable čije imamo vremenske derivacije definiramo kao akumulacijske



- ✓ definiramo brzinu promjene (strelica mora završiti u pripadnoj akumulacijskoj varijabli)



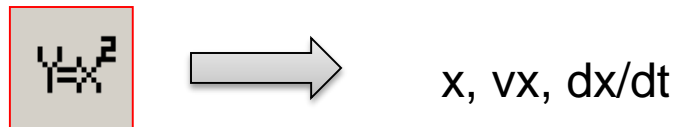
- ✓ dodamo konstante i varijable koje se ne akumuliraju (stara+promjena)



- ✓ povežemo zavisne veličine

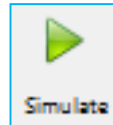
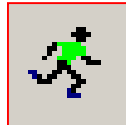


- ✓ upišemo iznose, mjerne jedinice i relacije za svaki dodani objekt

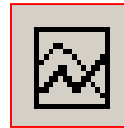


Vensim – V1

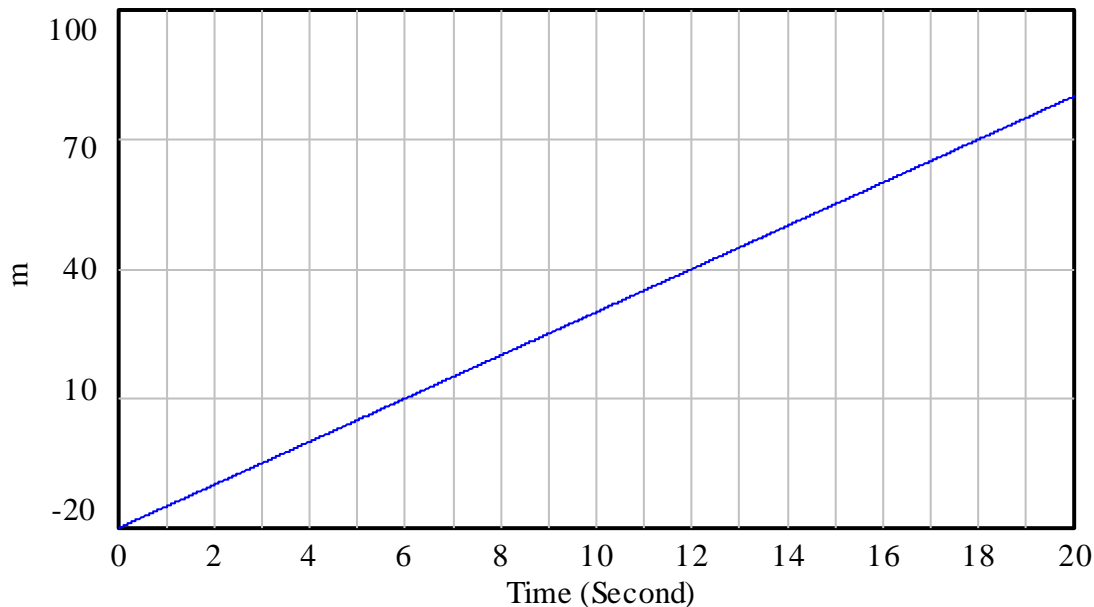
- ✓ upisane jednadžbe
 - ❖ za x (=INTEG("dx/dt"), Initial Value -20, Units: m)
 - ❖ za dx/dt (=vx, Units: m/Second)
 - ❖ za vx (=5, Units: m/Second)
- ✓ provjera (Model => Check Model; Model => Units Check)
- ✓ pokretanje simulacije



- ✓ grafički prikazi veličina, odaberemo x pa



x



x : Current