DEVS-Suite Simulator Guide: TestFrame and Database

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Version 1.0

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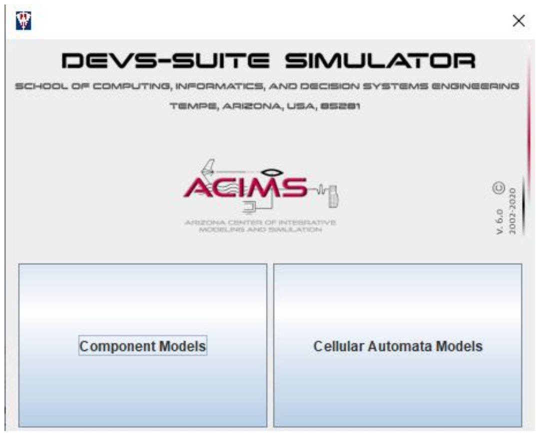
Synopsis: This report details two new features added to the DEVS-Suite Simulator. A Testing Framework (TestFrame) provides a set of generic JUnit/DEVS constructs enabling run-time testing and debugging of Parallel DEVS models. A built-in configurable database repository (PostgreSQL) supports superdense time input, state, and output trajectories of Parallel DEVS models.

Content

A. Simulator Set-up Procedure

The simulator needs to be configured to access and execute models that are available in the Models package. Additional packages with models can be created. After creating a Java project as described in Section A, the following steps should be used to set-up your simulation environment.

1. Launch the simulator and choose either Component Models or Cellular Automata Models


DEVS-SUITE SIMULATOR
SCHOOL OF COMPUTING, INFORMATICS, AND DECISION SYSTEMS ENGINEERING
TEMPE, ARIZONA, USA, 85281
ACIMS
ARIZONA CENTER OF INTEGRATIVE MODELING AND SIMULATION
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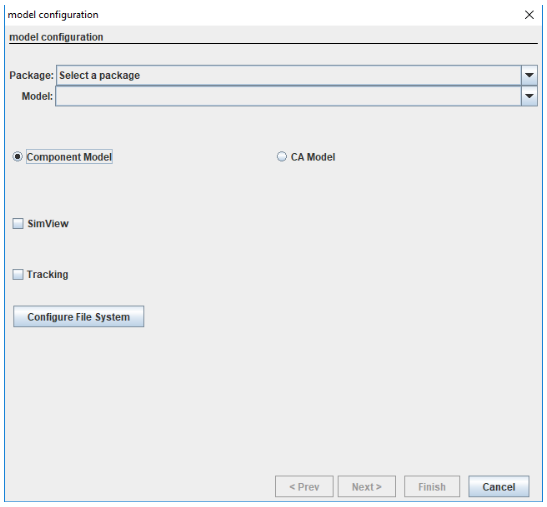
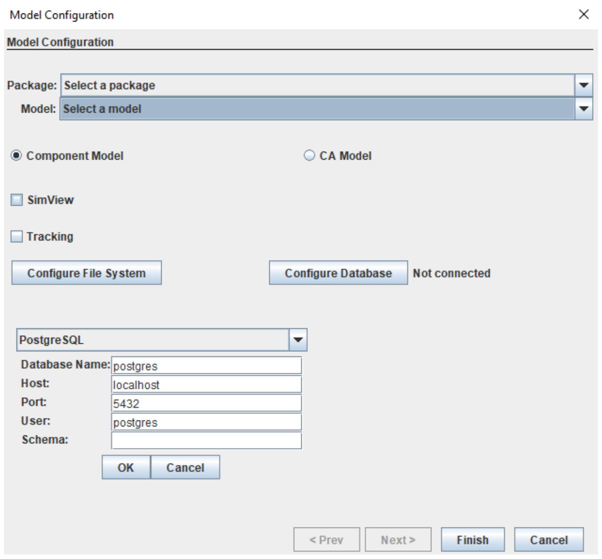
Component Models
Cellular Automata Models



Version 5.0.0

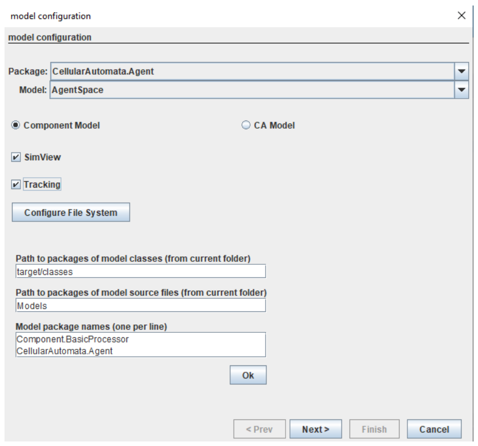


Version 6.0.0

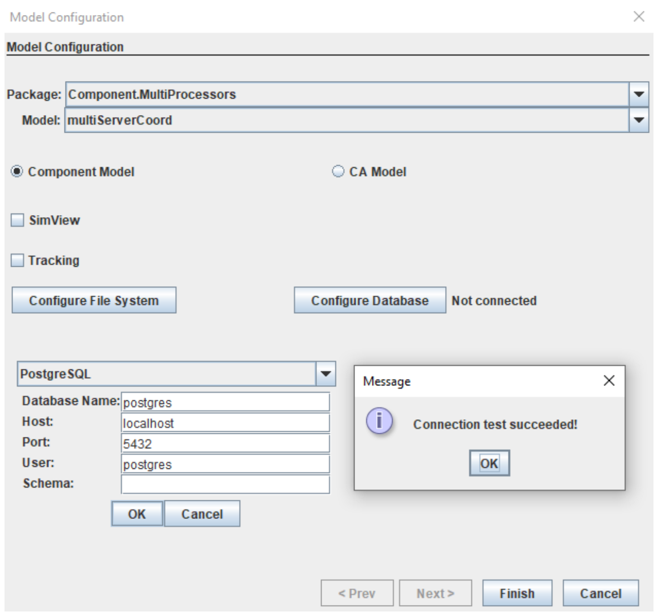
2. Set up the model configuration as shown in the following figures. Note that either Component Model or CA Model can be selected at this stage too. Note that the items shown in the "Package: Select a package" appears after the "Configure File System" set-up is completed.

    a. set the "Path to packages of model classes (from current folder)" to the absolute location of the package one wants to load, '[path to the unzipped folder]/ DEVS_Suite_6.0.0.jar',
    b. set the "Path to packages of model source files (from current folder)" to 'Models'

c. Add packages (e.g., Component.SwitchNetwork) in the “Model package names (one per line)”. The Component.BasicProcessor and CellularAutomata.Agent packages are included in the "Model package name (one per line)". You can delete packages. The “SimView_settings” file included in the with software has a set of default packages. A part of this file is shown in top figure in Page 8.
d. Select the OK button
e. Connect to the PostreSQL database if desired (see Section C).

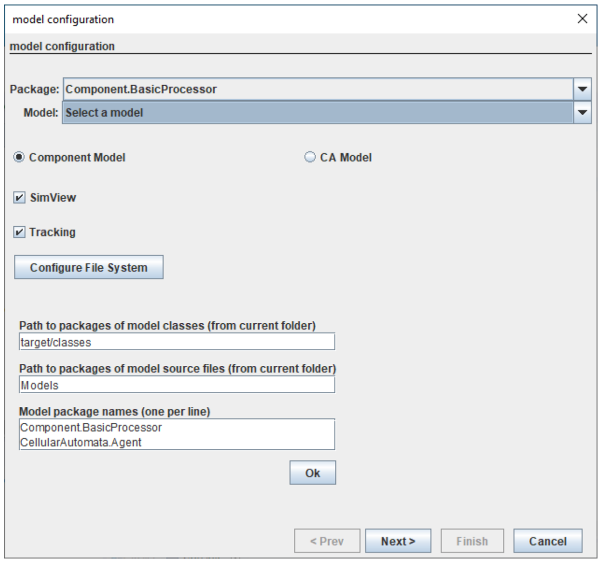

model configuration

Package: CellularAutomata.Agent
Model: AgentSpace
[✓ Component Model] CA Model
[✓] SimView
[✓] Tracking
Path to packages of model classes (from current folder): target/classes
Path to packages of model source files (from current folder): Models
Model package names (one per line):
Component.BasicProcessor
CellularAutomata.Agent

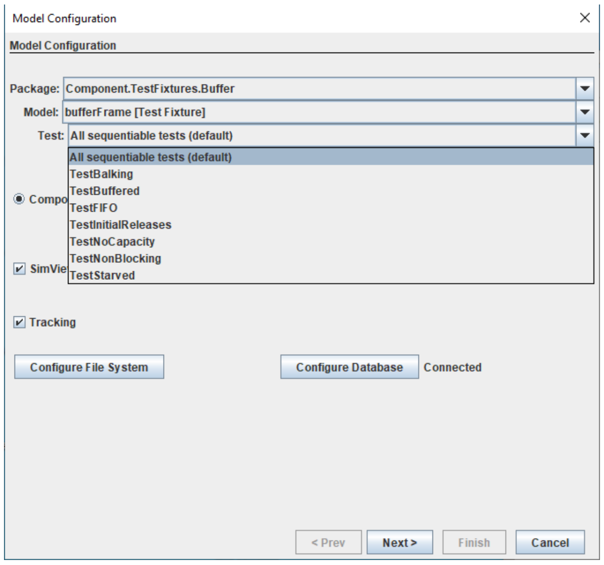

Model Configuration

Package: Component.MultiProcessors
Model: multiServerCoord
[✓ Component Model] CA Model
[ ] SimView
[ ] Tracking
Configure Database Not connected
PostgreSQL
Database Name: postgres
Host: localhost
Port: 5432
User: postgres
Schema:
Message: Connection test succeeded!

Version 5.0.0 Version 6.0.0


model configuration

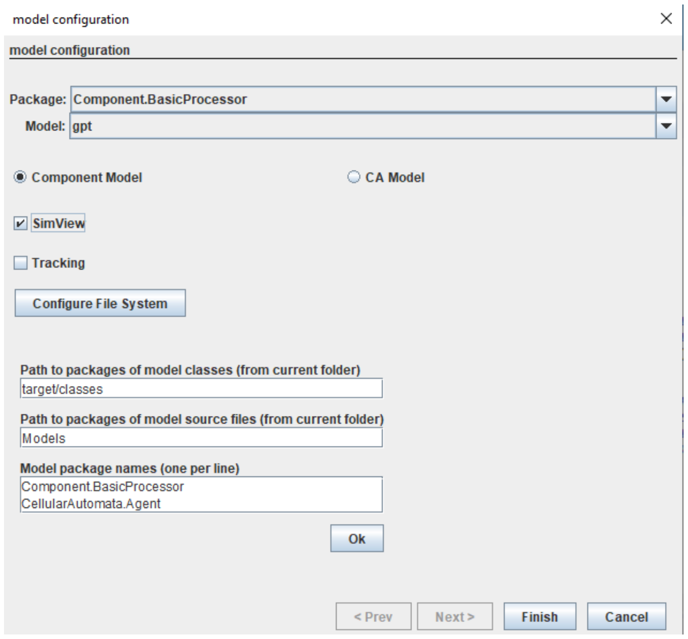
Package: Component.BasicProcessor
Model: Select a model
[✓ Component Model] CA Model
[✓] SimView
[✓] Tracking
Path to packages of model classes (from current folder): target/classes
Path to packages of model source files (from current folder): Models
Model package names (one per line):
Component.BasicProcessor
CellularAutomata.Agent


Model Configuration

Package: Component.TestFixtures.Buffer
Model: bufferFrame [Test Fixture]
Test: All sequentiable tests (default)
All sequentiable tests (default)
TestBalking
TestBuffered
TestFIFO
TestInitialReleases
TestNoCapacity
TestNonBlocking
TestStarved
[✓ Compo]
[✓] SimVie
[✓] Tracking
Configure Database Connected

Version 5.0.0 Version 6.0.0

3. Choose a package and a model to load. You can also choose a package, a model, a test to load. The component model sub-packages in the "TestFixtures" can have tests. This is a new feature for Version 6.0.0. Then select Finish.



Package: Component.BasicProcessor
Model: gpt

[✓ Component Model] CA Model

[✓] SimView

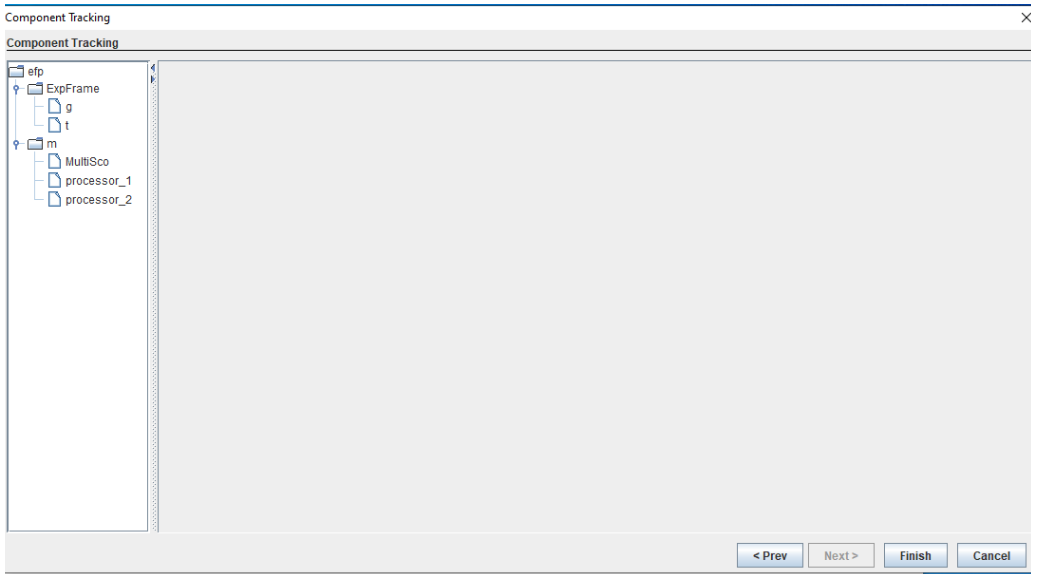
[ ] Tracking

Path to packages of model classes (from current folder): target/classes

Path to packages of model source files (from current folder): Models

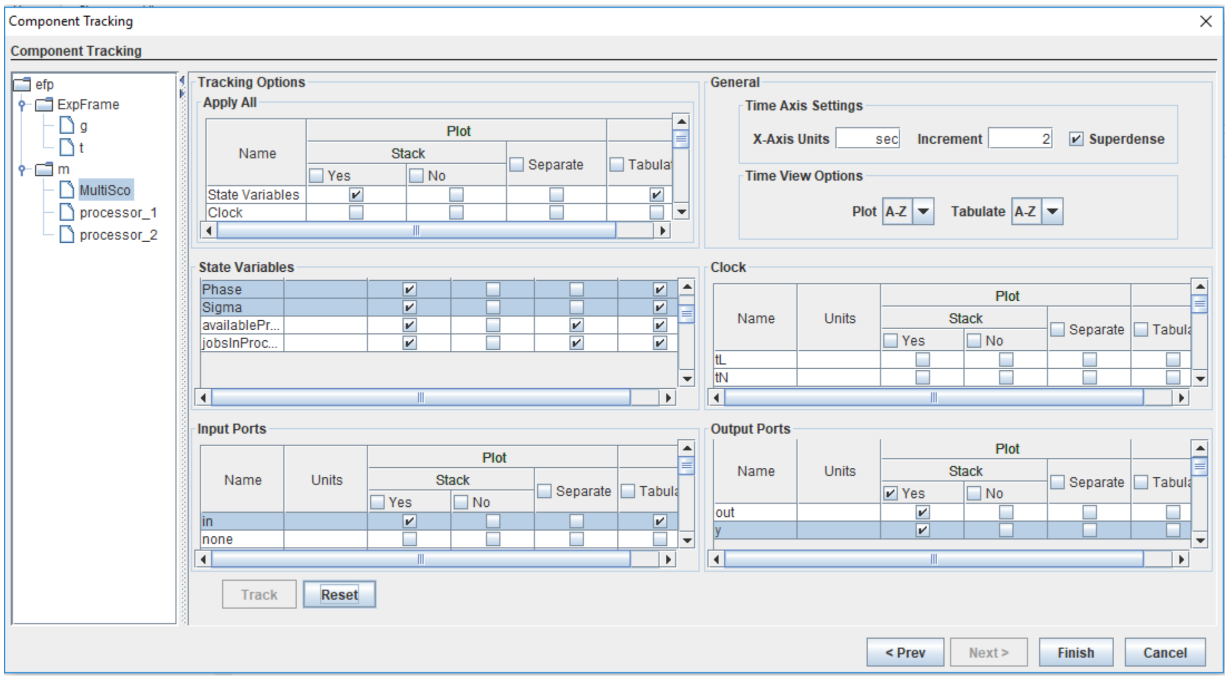
Model package names (one per line):
Component.BasicProcessor
CellularAutomata.Agent

4. If the "Tracking" option is selected before selecting "Finish", then any number of atomic and coupled models can be tracked. Each model is tracked individually.



Versions 5.0.0. and 6.0.0

The figure below shows the "MultiSco" component is selected from the left-hand panel. Upon selection, the right-hand panel is filled in with input and output ports, any user defined state variables, time of last event (tL) and time of Next event (tN). Time axis can be configured in terms of time increments and unit. The Superdense choice can be selected and is applied to any variable that have multiple values at an instance of time.


Component Tracking

Component Tracking

efp
- ExpFrame
  - g
  - t
- m
  - MultiSco
  - processor_1
  - processor_2

Tracking Options

Apply All

Name	Plot: Stack Yes	Plot: Stack No	Separate	Tabulat
State Variables	✓			✓
Clock				

State Variables

Phase		✓			✓
Sigma		✓			✓
availablePr...		✓		✓	✓
jobsInProc...		✓		✓	✓

General

Time Axis Settings

X-Axis Units: sec Increment: 2 ✓ Superdense

Time View Options

Plot: A-Z Tabulate: A-Z

Clock

Name	Units	Plot: Stack Yes	Plot: Stack No	Separate	Tabula
tL					
tN					

Input Ports

Name	Units	Plot: Stack Yes	Plot: Stack No	Separate	Tabula
in		✓			✓
none					

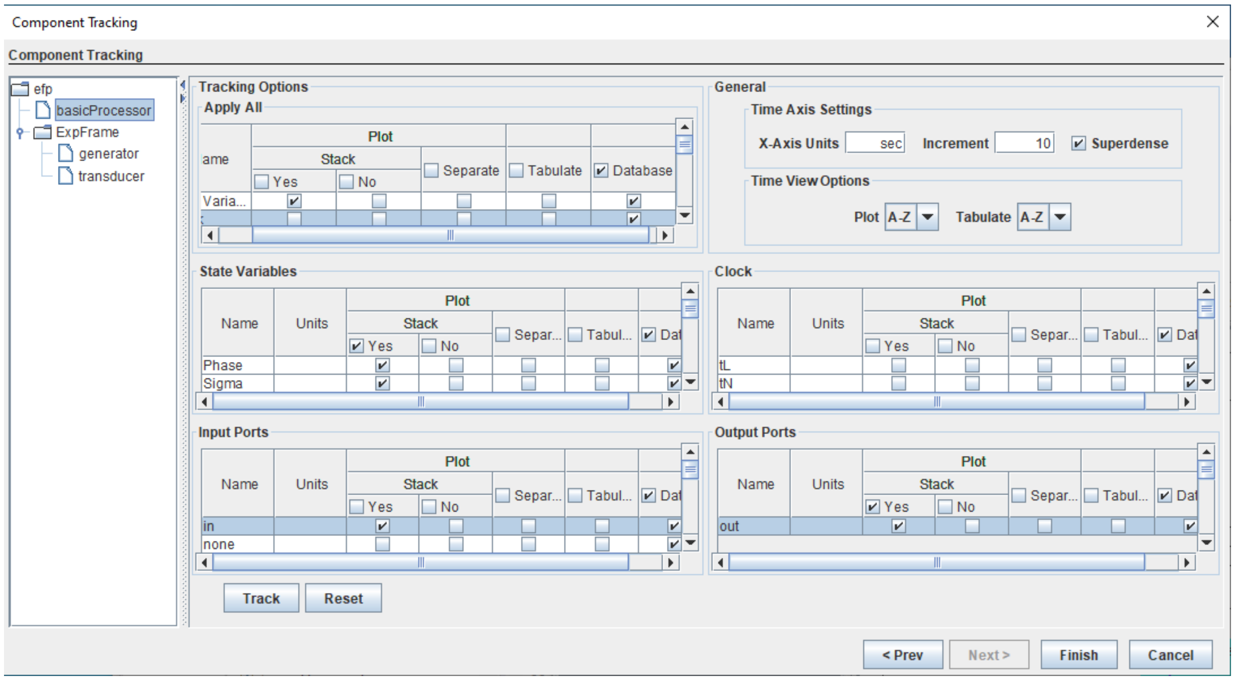
Output Ports

Name	Units	Plot: Stack ✓ Yes	Plot: Stack No	Separate	Tabula
out		✓			
y		✓			

Track Reset

< Prev Next > Finish Cancel

Version 5.0.0


Component Tracking

Component Tracking

efp
- basicProcessor
- ExpFrame
  - generator
  - transducer

Tracking Options

Apply All

ame	Plot: Stack Yes	Plot: Stack No	Separate	Tabulate	✓ Database
Varia...	✓				✓
					✓

General

Time Axis Settings

X-Axis Units: sec Increment: 10 ✓ Superdense

Time View Options

Plot: A-Z Tabulate: A-Z

State Variables

Name	Units	Plot: Stack ✓ Yes	Plot: Stack No	Separar...	Tabul...	✓ Dat
Phase		✓				✓
Sigma		✓				✓

Clock

Name	Units	Plot: Stack Yes	Plot: Stack No	Separ...	Tabul...	✓ Dat
tL						✓
tN						✓

Input Ports

Name	Units	Plot: Stack Yes	Plot: Stack No	Separ...	Tabul...	✓ Dat
in		✓				✓
none						✓

Output Ports

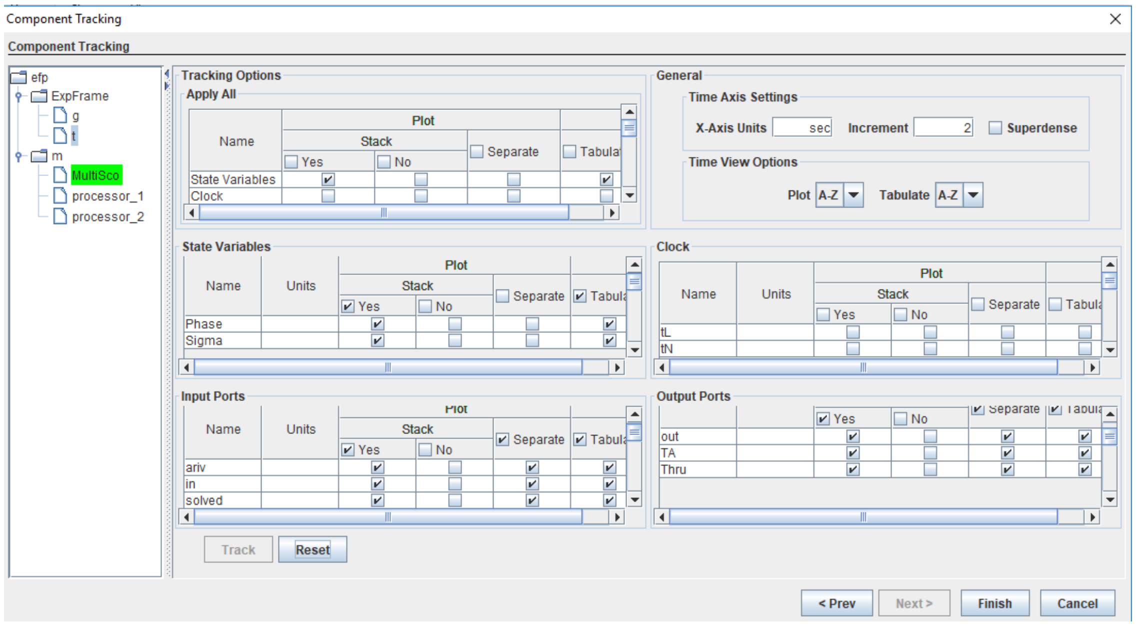
Name	Units	Plot: Stack ✓ Yes	Plot: Stack No	Separ...	Tabul...	✓ Dat
out		✓				✓

Track Reset

< Prev Next > Finish Cancel

Version 6.0.0

The figure below shows “MultiSco” has already been configured for tracking.



Tracking Options

Apply All

Name	Plot Stack Yes	No	Separate	Tabular
State Variables	✓	☐	☐	✓
Clock	☐	☐	☐	☐

General

Time Axis Settings: X-Axis Units sec, Increment 2, ☐ Superdense

Time View Options: Plot A-Z, Tabulate A-Z

State Variables

Name	Units	Plot Stack ✓ Yes	☐ No	☐ Separate	✓ Tabular
Phase		✓	☐	☐	✓
Sigma		✓	☐	☐	✓

Clock

Name	Units	Plot Stack ☐ Yes	☐ No	☐ Separate	☐ Tabular
tL		☐	☐	☐	☐
tN		☐	☐	☐	☐

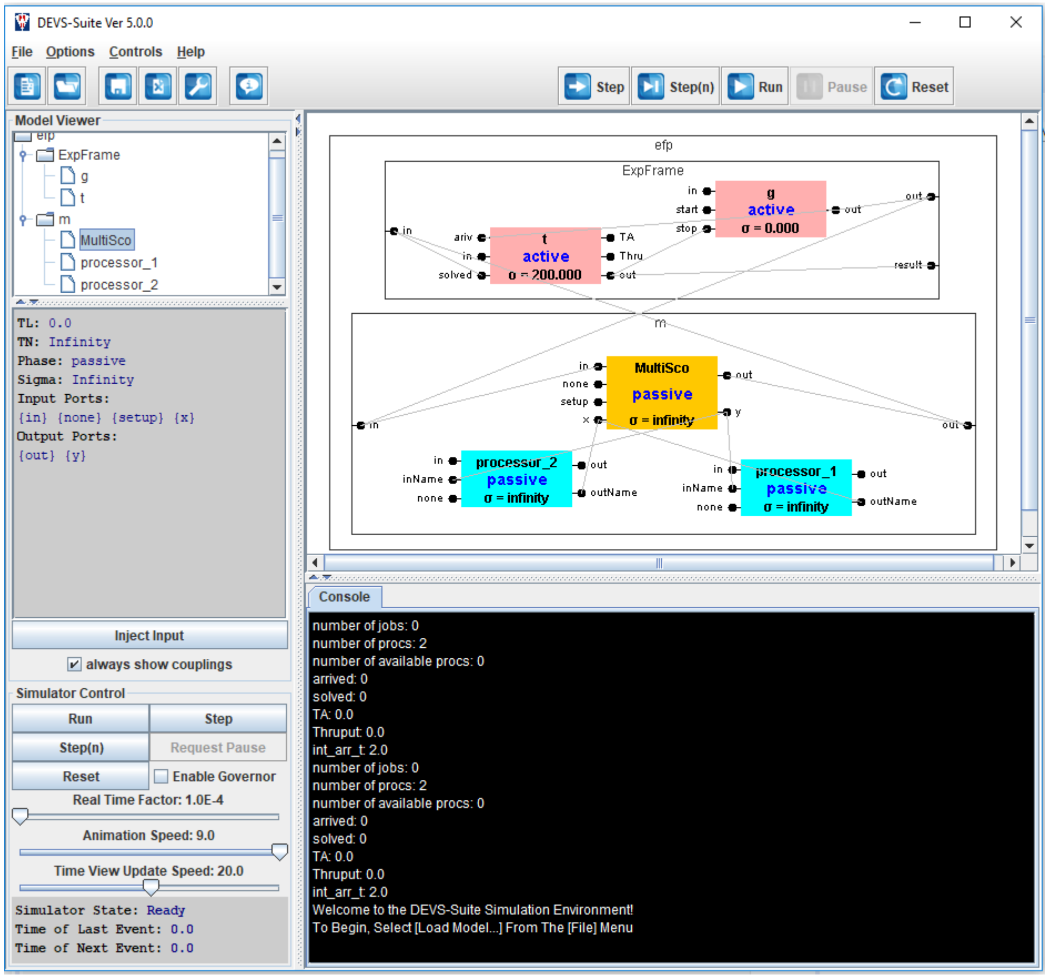
Input Ports

Name	Units	Plot Stack ✓ Yes	☐ No	✓ Separate	✓ Tabular
ariv		✓	☐	✓	✓
in		✓	☐	✓	✓
solved		✓	☐	✓	✓

Output Ports

Name	Units	✓ Yes	☐ No	✓ Separate	✓ Tabular
out		✓	☐	✓	✓
TA		✓	☐	✓	✓
Thru		✓	☐	✓	✓

5. The SimView portion of the simulator populates if the SimView choice is selected. The Model Viewer and the Simulator Control are the same as those provided in the 3.0.0, 4.0.0, and 5.0.0 versions.



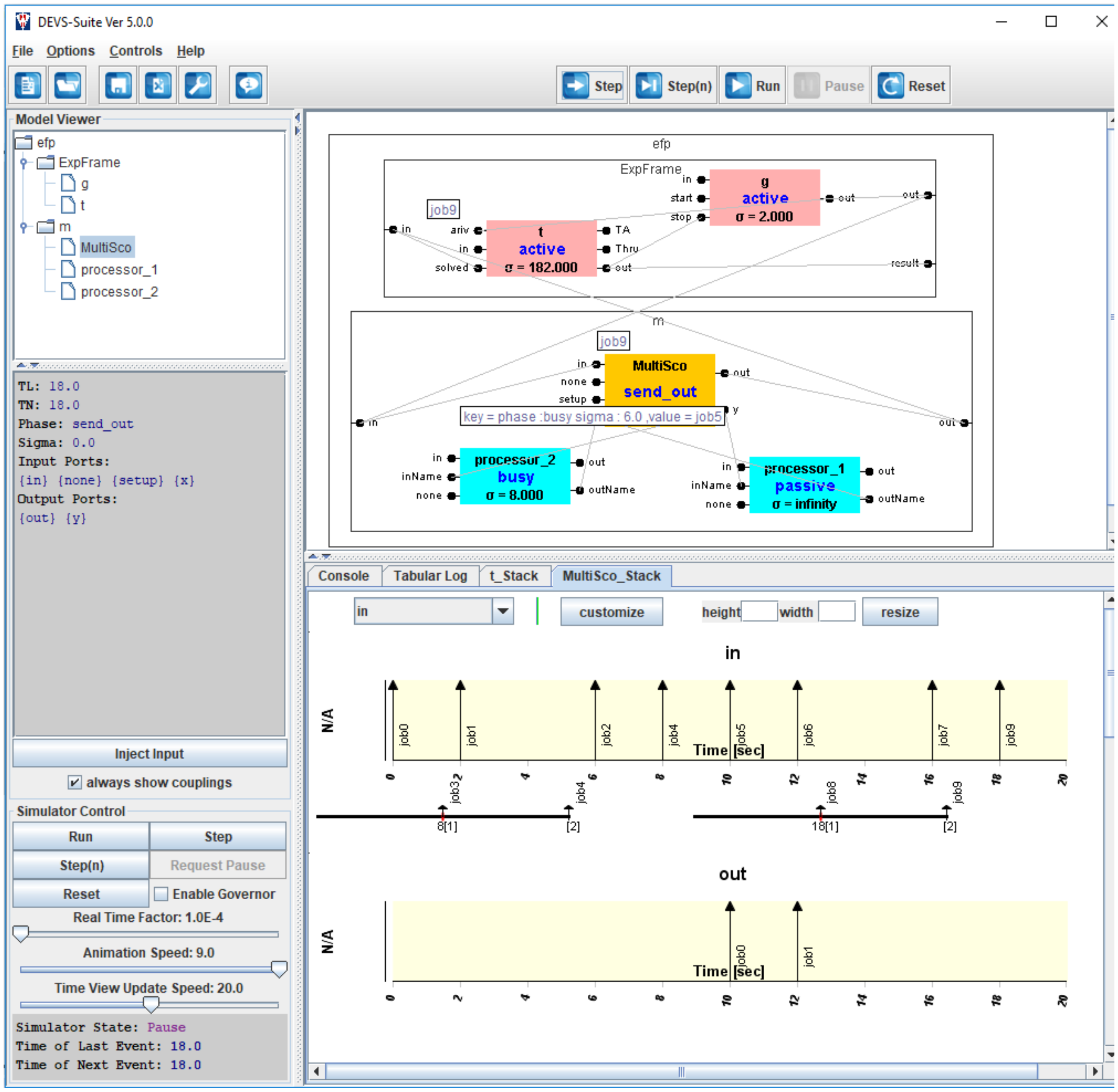
```
TL: 0.0
TN: Infinity
Phase: passive
Sigma: Infinity
Input Ports:
{in} {none} {setup} {x}
Output Ports:
{out} {y}
```

✓ always show couplings

```
Simulator State: Ready
Time of Last Event: 0.0
Time of Next Event: 0.0
```

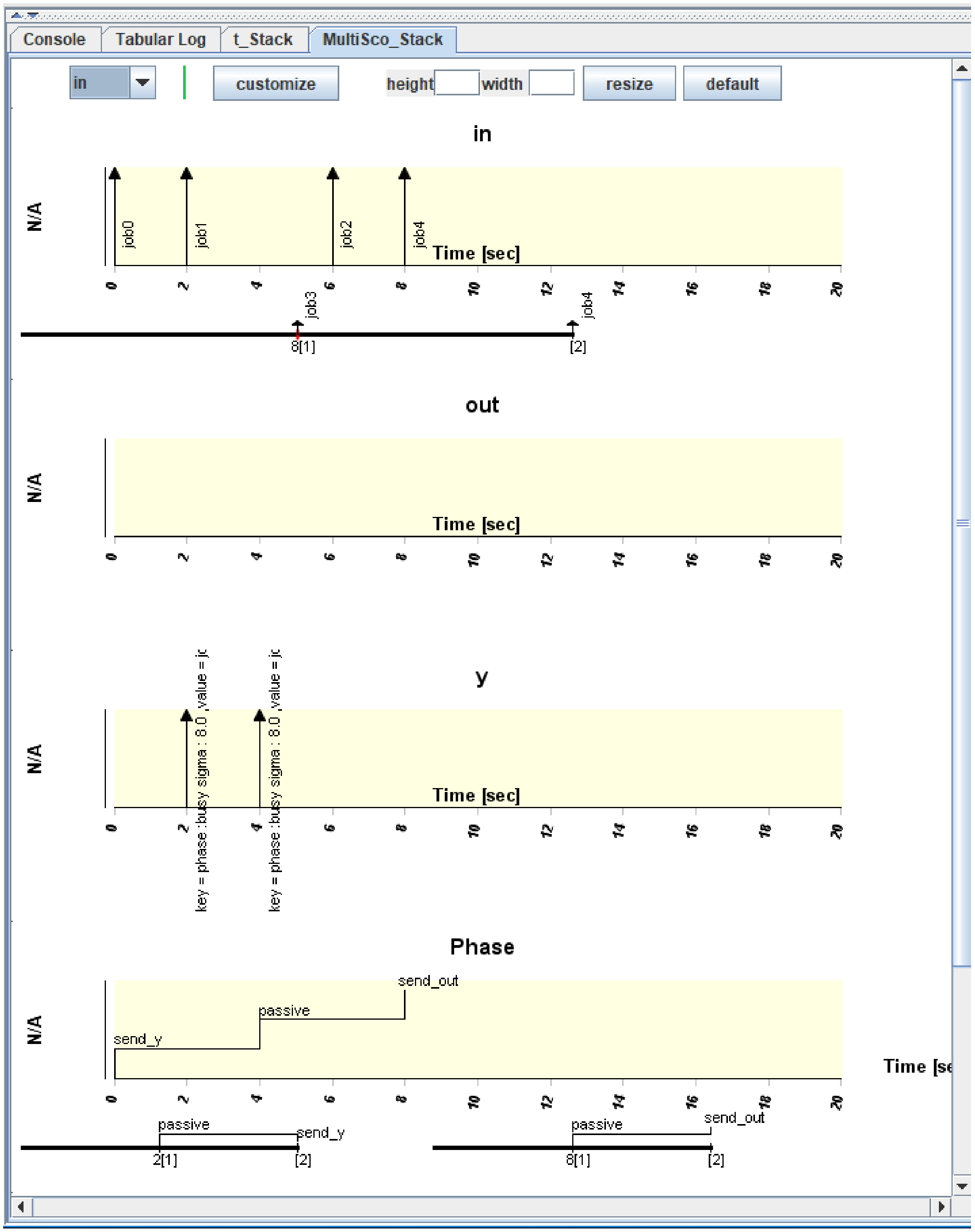
```
number of jobs: 0
number of procs: 2
number of available procs: 0
arrived: 0
solved: 0
TA: 0.0
Thruput: 0.0
int_arr_t: 2.0
number of jobs: 0
number of procs: 2
number of available procs: 0
arrived: 0
solved: 0
TA: 0.0
Thruput: 0.0
int_arr_t: 2.0
Welcome to the DEVS-Suite Simulation Environment!
To Begin, Select [Load Model...] From The [File] Menu
```

The following figure depicts both the messages that are being exchanged between models in the SimView and the tabs that are for the console along with the tabular and trajectories tabs for the selected model components.


DEVS-Suite Ver 5.0.0
File Options Controls Help
Step Step(n) Run Pause Reset
Model Viewer
efp
ExpFrame
g
t
m
MultiSco
processor_1
processor_2
Inject Input
always show couplings
Simulator Control
Run Step Step(n) Request Pause Reset Enable Governor
Real Time Factor: 1.0E-4
Animation Speed: 9.0
Time View Update Speed: 20.0
g active σ = 2.000
t active σ = 182.000
MultiSco send_out
processor_2 busy σ = 8.000
processor_1 passive σ = infinity
job9
key = phase :busy sigma : 6.0 ,value = job5
Console Tabular Log t_Stack MultiSco_Stack
in customize height width resize
in
out
N/A
Time [sec]
job0 job1 job2 job4 job5 job6 job7 job9 job3 job8

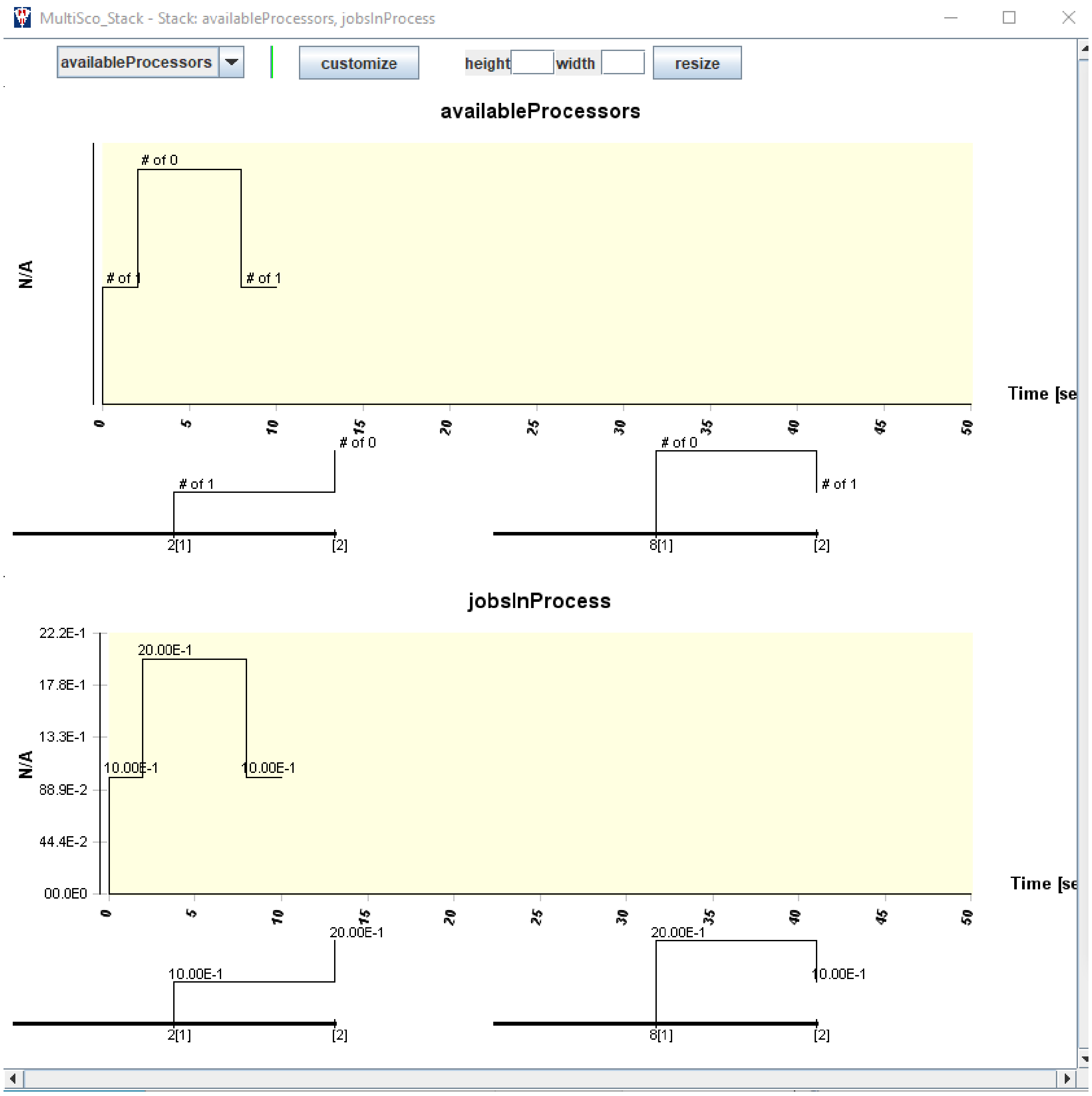
```
TL: 18.0
TN: 18.0
Phase: send_out
Sigma: 0.0
Input Ports:
{in} {none} {setup} {x}
Output Ports:
{out} {y}
```

```
Simulator State: Pause
Time of Last Event: 18.0
Time of Next Event: 18.0
```

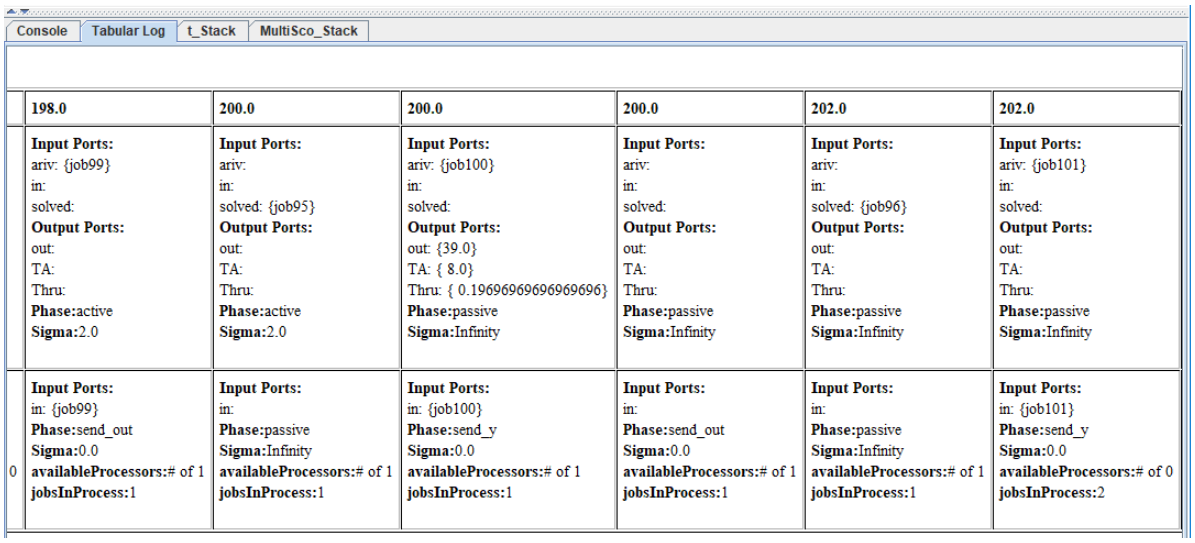

Console
Tabular Log
t_Stack
MultiSco_Stack
in
customize
height
width
resize
default
in
N/A
job0
job1
job2
job4
Time [sec]
0 2 4 6 8 10 12 14 16 18 20
job3
job4
8[1]
[2]
out
N/A
Time [sec]
y
N/A
key = phase : busy sigma : 8.0 ,value = jc
key = phase : busy sigma : 8.0 ,value = jc
Time [sec]
Phase
N/A
send_y
passive
send_out
Time [se
passive
send_y
2[1]
[2]
passive
send_out
8[1]
[2]

6. The following figures shows two state variables (availableProcessors and JobsInProcess) in the MultiSco are declared to be tracked. The following is added to the `multiServerCoord.java` model. Note that the name “MultiSco” is the name given to the instance of the `multiServerCoord.java` in the coupled model “m”.

```
@state(log = state.DEFAULT_CHECKED)
private int jobsInProcess = 0; // number of jobs in the queue
@state(log = state.DEFAULT_CHECKED)
private String availableProcessors = "zero"; // number of processors
```



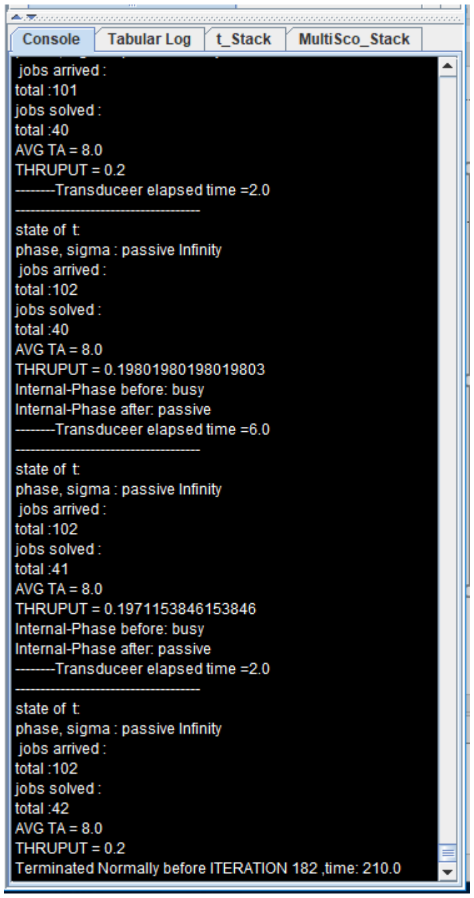
7. The following is an example of variables being tracked. The table contains any state variable designated to be tracked.



Console | Tabular Log | t_Stack | MultiSco_Stack

	198.0	200.0	200.0	200.0	202.0	202.0
	Input Ports: ariv: {job99} in: solved: **Output Ports:** out: TA: Thru: **Phase:**active **Sigma:**2.0	**Input Ports:** ariv: in: solved: {job95} **Output Ports:** out: TA: Thru: **Phase:**active **Sigma:**2.0	**Input Ports:** ariv: {job100} in: solved: **Output Ports:** out: {39.0} TA: { 8.0} Thru: { 0.19696969696969696} **Phase:**passive **Sigma:**Infinity	**Input Ports:** ariv: in: solved: **Output Ports:** out: TA: Thru: **Phase:**passive **Sigma:**Infinity	**Input Ports:** ariv: in: solved: {job96} **Output Ports:** out: TA: Thru: **Phase:**passive **Sigma:**Infinity	**Input Ports:** ariv: {job101} in: solved: **Output Ports:** out: TA: Thru: **Phase:**passive **Sigma:**Infinity
0	**Input Ports:** in: {job99} **Phase:**send_out **Sigma:**0.0 **availableProcessors:**# of 1 **jobsInProcess:**1	**Input Ports:** in: **Phase:**passive **Sigma:**Infinity **availableProcessors:**# of 1 **jobsInProcess:**1	**Input Ports:** in: {job100} **Phase:**send_y **Sigma:**0.0 **availableProcessors:**# of 1 **jobsInProcess:**1	**Input Ports:** in: **Phase:**send_out **Sigma:**0.0 **availableProcessors:**# of 1 **jobsInProcess:**1	**Input Ports:** in: **Phase:**passive **Sigma:**Infinity **availableProcessors:**# of 1 **jobsInProcess:**1	**Input Ports:** in: {job101} **Phase:**send_y **Sigma:**0.0 **availableProcessors:**# of 0 **jobsInProcess:**2

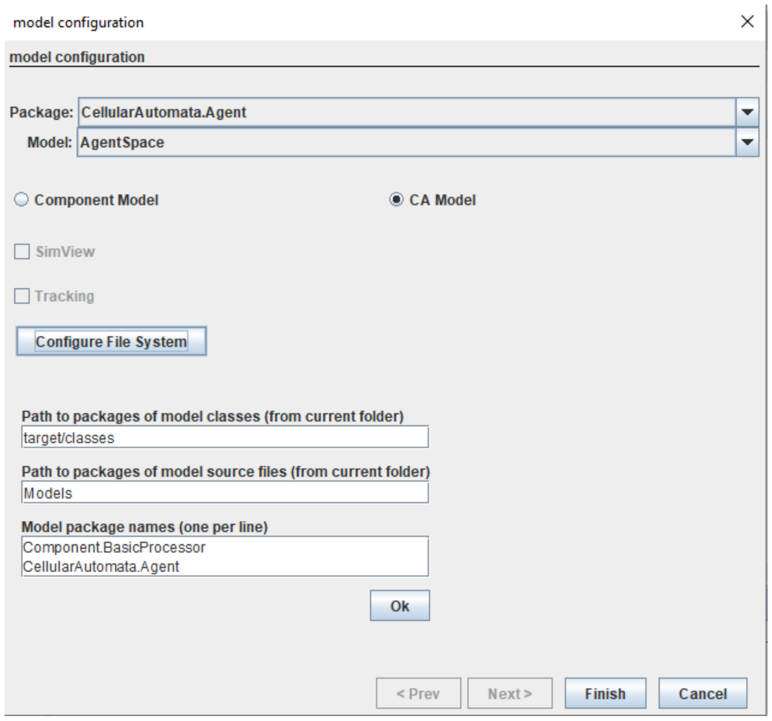
8. The following figure shows the console output. This information in the console is printed using the Java System.out.println() method.



Console | Tabular Log | t_Stack | MultiSco_Stack

```
 jobs arrived :
total :101
jobs solved :
total :40
AVG TA = 8.0
THRUPUT = 0.2
--------Transduceer elapsed time =2.0
---------------------------------------
state of t:
phase, sigma : passive Infinity
 jobs arrived :
total :102
jobs solved :
total :40
AVG TA = 8.0
THRUPUT = 0.19801980198019803
Internal-Phase before: busy
Internal-Phase after: passive
--------Transduceer elapsed time =6.0
---------------------------------------
state of t:
phase, sigma : passive Infinity
 jobs arrived :
total :102
jobs solved :
total :41
AVG TA = 8.0
THRUPUT = 0.1971153846153846
Internal-Phase before: busy
Internal-Phase after: passive
--------Transduceer elapsed time =2.0
---------------------------------------
state of t:
phase, sigma : passive Infinity
 jobs arrived :
total :102
jobs solved :
total :42
AVG TA = 8.0
THRUPUT = 0.2
Terminated Normally before ITERATION 182 ,time: 210.0
```

9. Similar to the Component models, Cellular Automata models can be developed, loaded, and simulated by selecting "CA Model".



model configuration

model configuration

Package: CellularAutomata.Agent

Model: AgentSpace

( ) Component Model (●) CA Model

☐ SimView

☐ Tracking

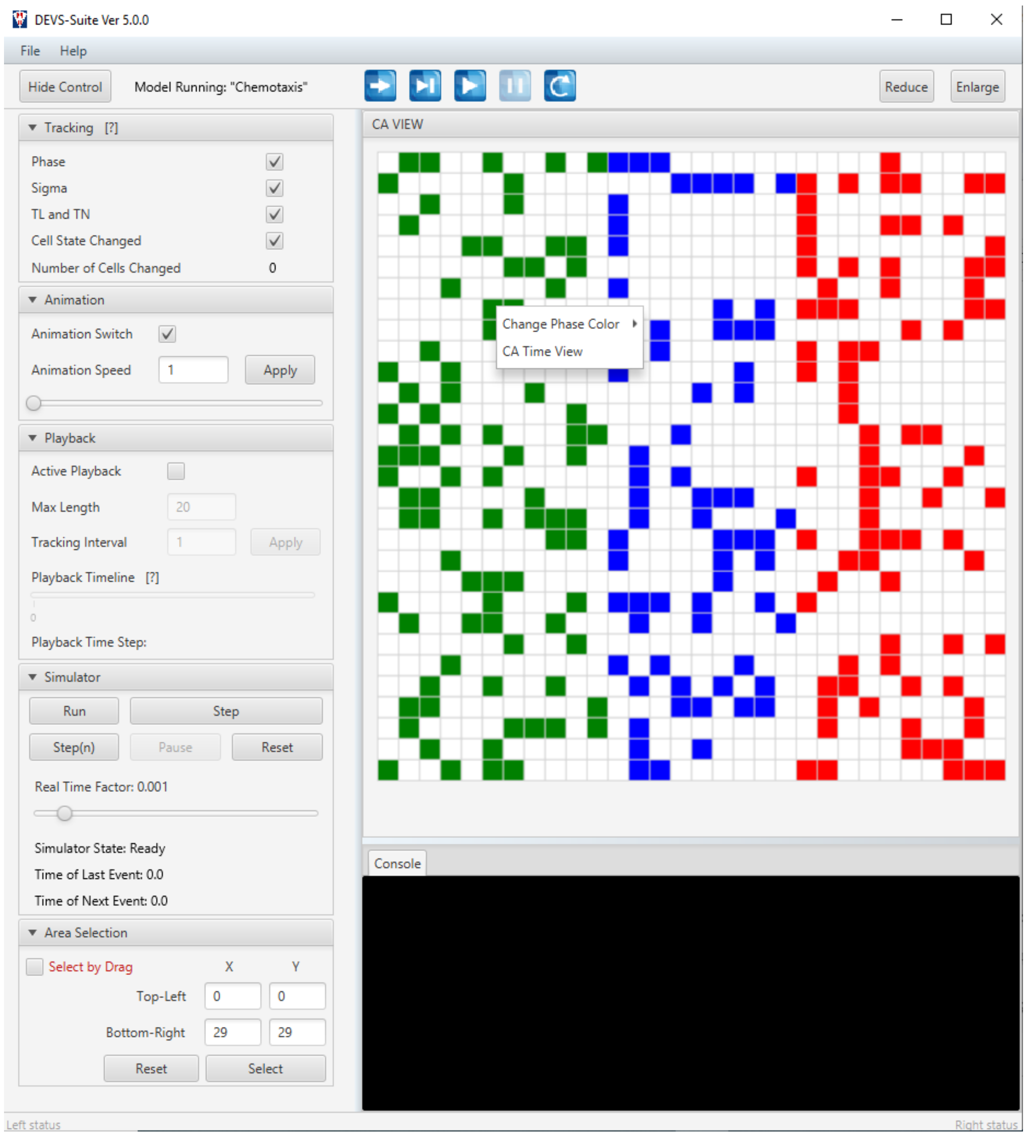
Configure File System

Path to packages of model classes (from current folder)
target/classes

Path to packages of model source files (from current folder)
Models

Model package names (one per line)
Component.BasicProcessor
CellularAutomata.Agent

Due to structural and other aspects of CA modeling, a different UI with additional features is provided. As shown below, special features include playback (animation in reverse time), selecting a portion of the CA to be viewed (zooming), and independent timeview tracking for each cell.


DEVS-Suite Ver 5.0.0

File Help

Hide Control   Model Running: "Chemotaxis"   Reduce   Enlarge

CA VIEW

Tracking [?]
- Phase ✓
- Sigma ✓
- TL and TN ✓
- Cell State Changed ✓
- Number of Cells Changed 0

Animation
- Animation Switch ✓
- Animation Speed 1 Apply

Playback
- Active Playback ☐
- Max Length 20
- Tracking Interval 1 Apply
- Playback Timeline [?]
- Playback Time Step:

Simulator
- Run Step
- Step(n) Pause Reset
- Real Time Factor: 0.001
- Simulator State: Ready
- Time of Last Event: 0.0
- Time of Next Event: 0.0

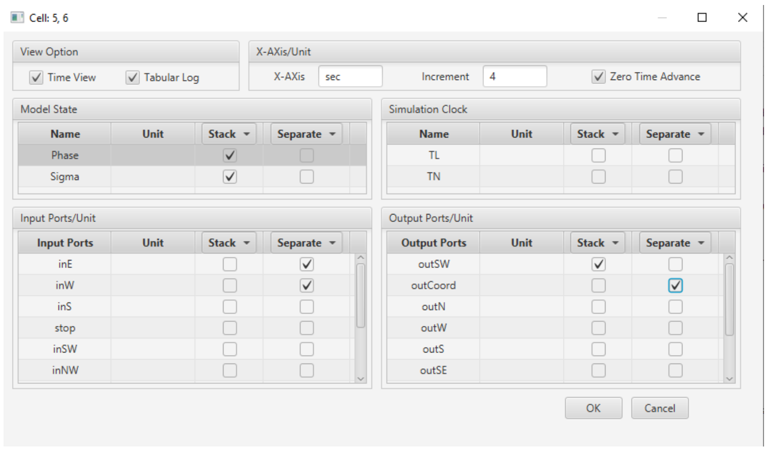
Area Selection

	X	Y
Select by Drag ☐		
Top-Left	0	0
Bottom-Right	29	29

Reset Select

Console

Left status   Right status


Cell: 5, 6

View Option: ✓ Time View ✓ Tabular Log

X-AXis/Unit: X-AXis sec Increment 4 ✓ Zero Time Advance

Model State

Name	Unit	Stack	Separate
Phase		✓	☐
Sigma		✓	☐

Simulation Clock

Name	Unit	Stack	Separate
TL		☐	☐
TN		☐	☐

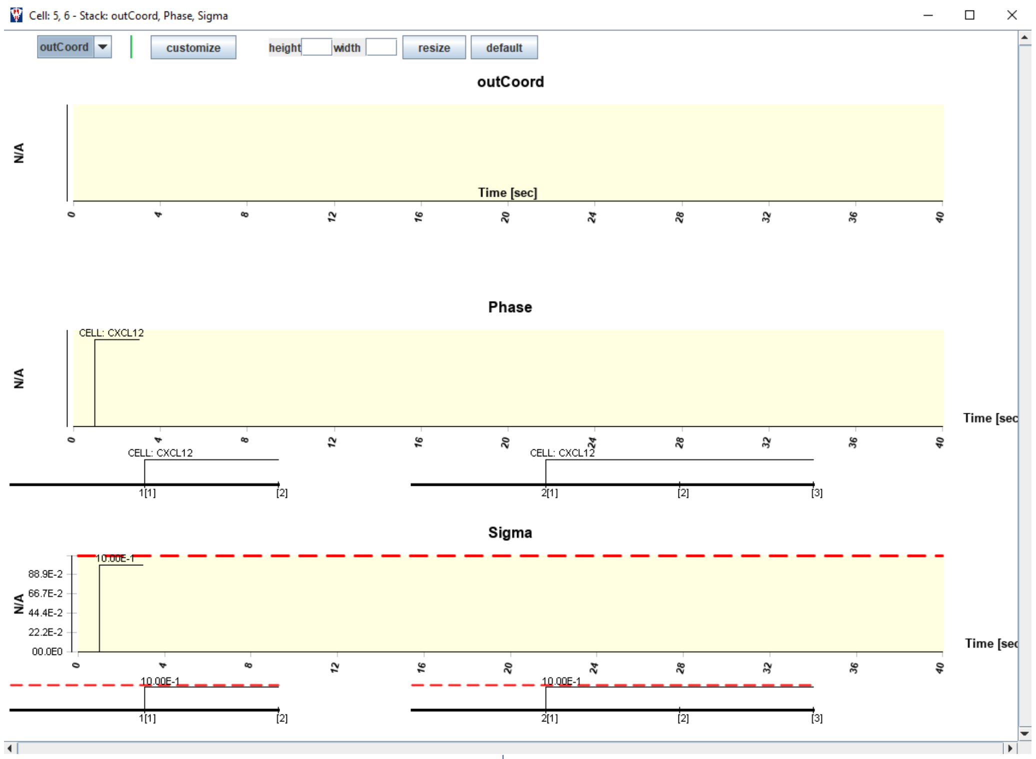
Input Ports/Unit

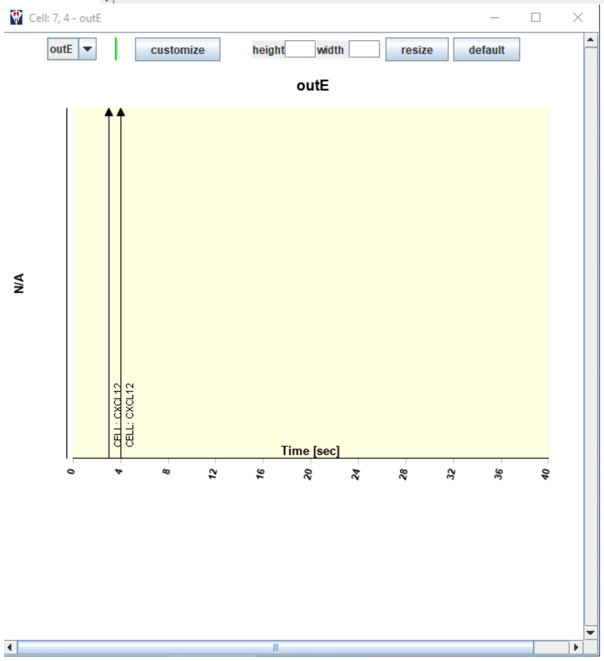
Input Ports	Unit	Stack	Separate
inE		☐	✓
inW		☐	✓
inS		☐	☐
stop		☐	☐
inSW		☐	☐
inNW		☐	☐

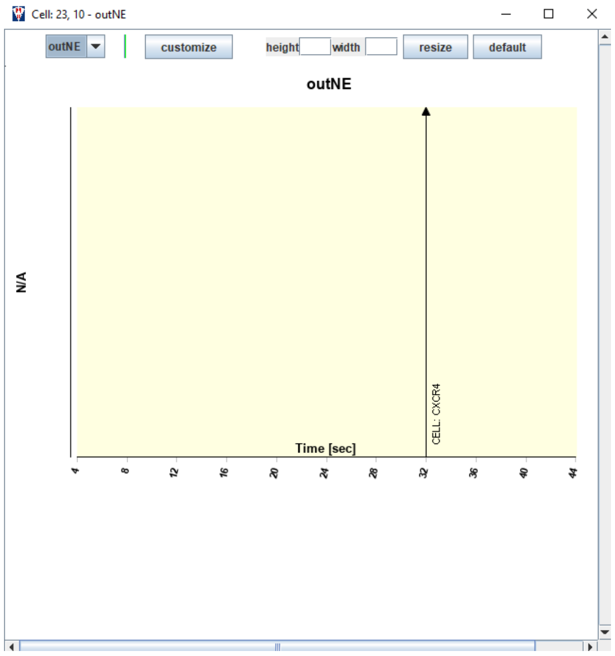
Output Ports/Unit

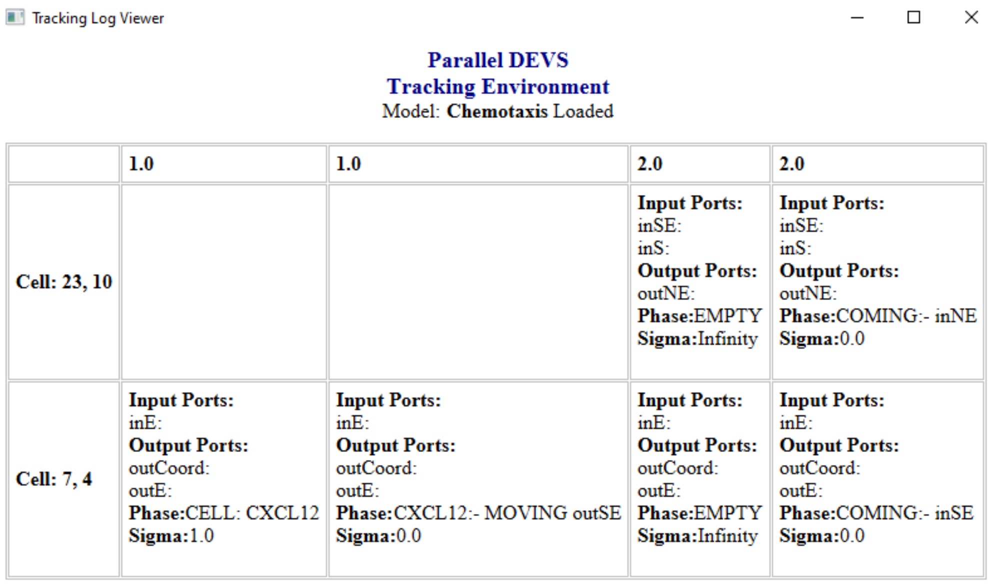
Output Ports	Unit	Stack	Separate
outSW		✓	☐
outCoord		☐	✓
outN		☐	☐
outW		☐	☐
outS		☐	☐
outSE		☐	☐

OK Cancel


Cell: 5, 6 - Stack: outCoord, Phase, Sigma
outCoord
customize
height
width
resize
default
outCoord
N/A
Time [sec]
Phase
CELL: CXCL12
Time [sec
Sigma
10.00E-1
88.9E-2
66.7E-2
44.4E-2
22.2E-2
00.0E0


Cell: 7, 4 - outE
outE
customize
height
width
resize
default
outE
N/A
CELL: CXCL12
CELL: CXCL12
Time [sec]


Cell: 23, 10 - outNE
outNE
customize
height
width
resize
default
outNE
N/A
CELL: CXCR4
Time [sec]

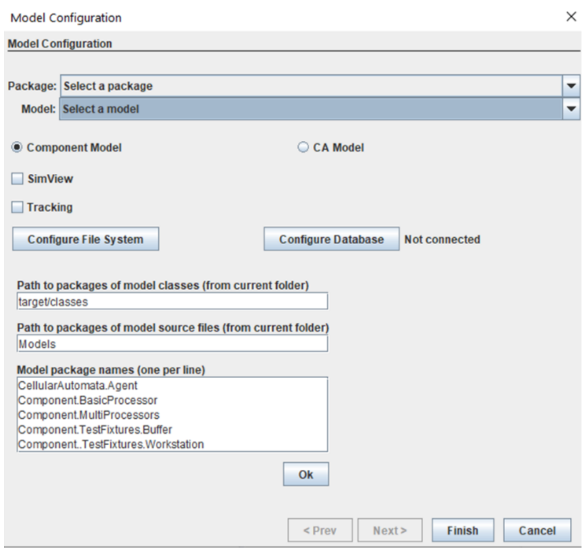

Tracking Log Viewer

Parallel DEVS
Tracking Environment
Model: **Chemotaxis** Loaded

	1.0	**1.0**	**2.0**	**2.0**
Cell: 23, 10			**Input Ports:** inSE: inS: **Output Ports:** outNE: **Phase:**EMPTY **Sigma:**Infinity	**Input Ports:** inSE: inS: **Output Ports:** outNE: **Phase:**COMING:- inNE **Sigma:**0.0
Cell: 7, 4	**Input Ports:** inE: **Output Ports:** outCoord: outE: **Phase:**CELL: CXCL12 **Sigma:**1.0	**Input Ports:** inE: **Output Ports:** outCoord: outE: **Phase:**CXCL12:- MOVING outSE **Sigma:**0.0	**Input Ports:** inE: **Output Ports:** outCoord: outE: **Phase:**EMPTY **Sigma:**Infinity	**Input Ports:** inE: **Output Ports:** outCoord: outE: **Phase:**COMING:- inSE **Sigma:**0.0

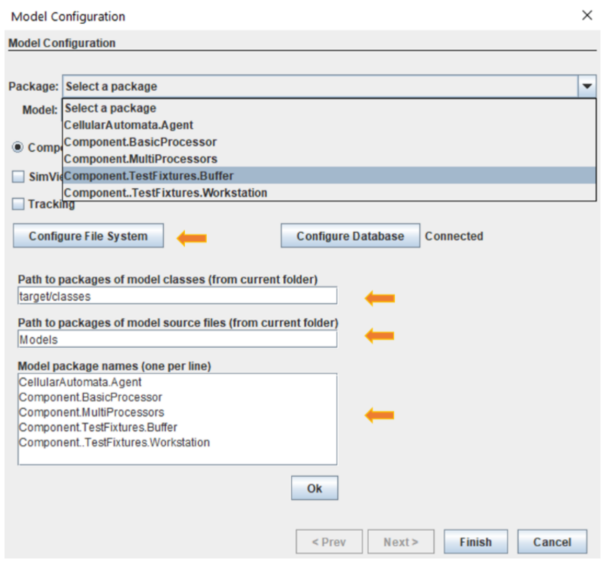
B. Black-Box I/O Testing

Details on Test Frames / JUnit testing and reference API are provided in [1].



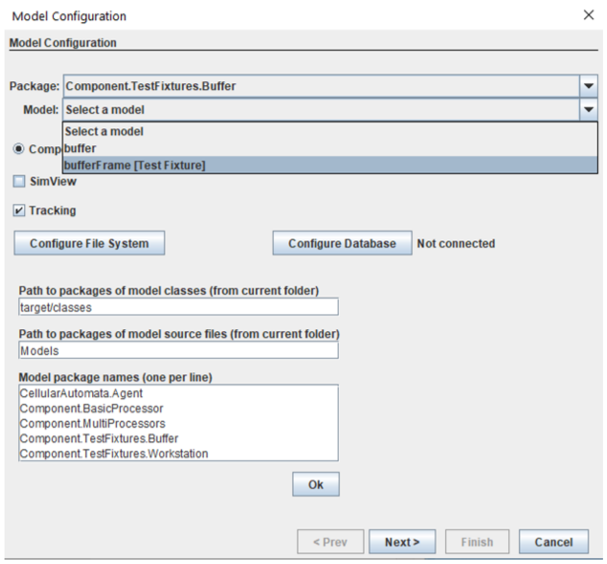
Package: Select a package
Model: Select a model
Not connected
Path to packages of model classes (from current folder): target/classes
Path to packages of model source files (from current folder): Models
Model package names (one per line):
CellularAutomata.Agent
Component.BasicProcessor
Component.MultiProcessors
Component.TestFixtures.Buffer
Component..TestFixtures.Workstation

Paths and model package names configurations



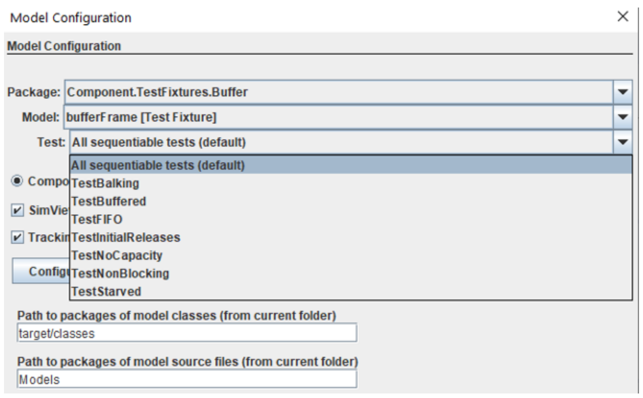
Package: Select a package
Model: Select a package
CellularAutomata.Agent
Component.BasicProcessor
Component.MultiProcessors
Component.TestFixtures.Buffer
Component..TestFixtures.Workstation
Connected
Path to packages of model classes (from current folder): target/classes
Path to packages of model source files (from current folder): Models
Model package names (one per line):
CellularAutomata.Agent
Component.BasicProcessor
Component.MultiProcessors
Component.TestFixtures.Buffer
Component..TestFixtures.Workstation

Package selection



Package: Component.TestFixtures.Buffer
Model: Select a model
Select a model
buffer
bufferFrame [Test Fixture]
Not connected
Path to packages of model classes (from current folder): target/classes
Path to packages of model source files (from current folder): Models
Model package names (one per line):
CellularAutomata.Agent
Component.BasicProcessor
Component.MultiProcessors
Component.TestFixtures.Buffer
Component.TestFixtures.Workstation

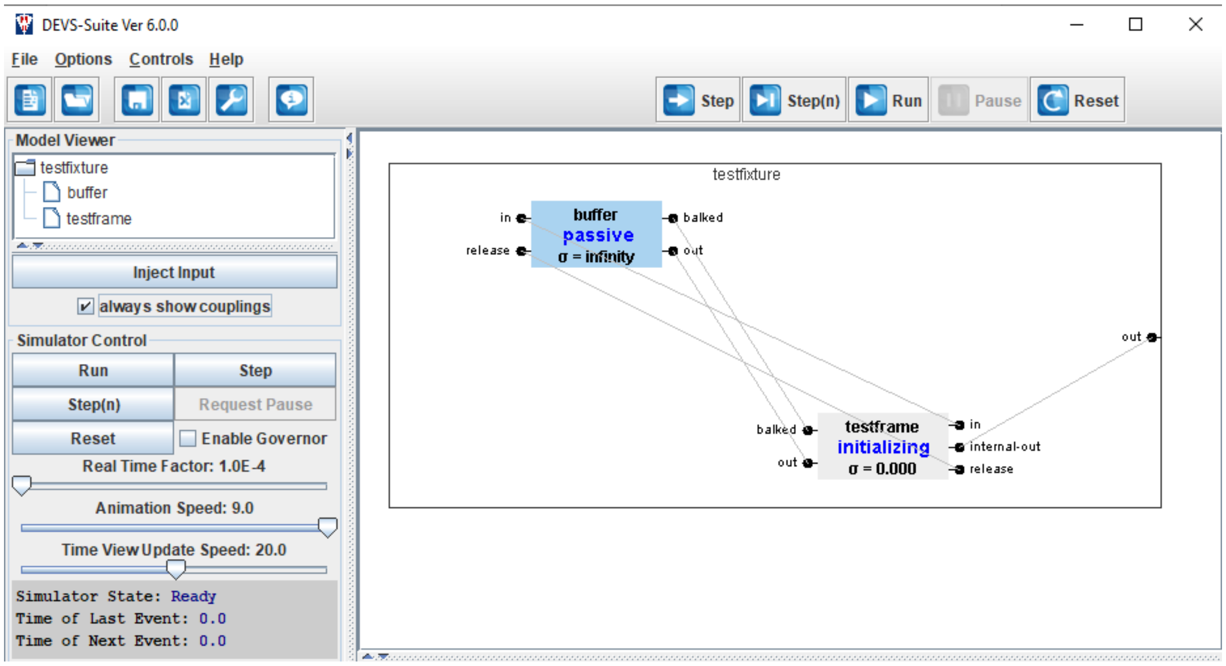
Model selection



Package: Component.TestFixtures.Buffer
Model: bufferFrame [Test Fixture]
Test: All sequentiable tests (default)
All sequentiable tests (default)
TestBalking
TestBuffered
TestFIFO
TestInitialReleases
TestNoCapacity
TestNonBlocking
TestStarved
Path to packages of model classes (from current folder): target/classes
Path to packages of model source files (from current folder): Models

Test Frame selection

Note: The `Component.TestFixtures.Homework` does not support SimView animation. The tests defined in the `procHomework.java` can be tested using Test Frame JUnit [1].



✓ always show couplings

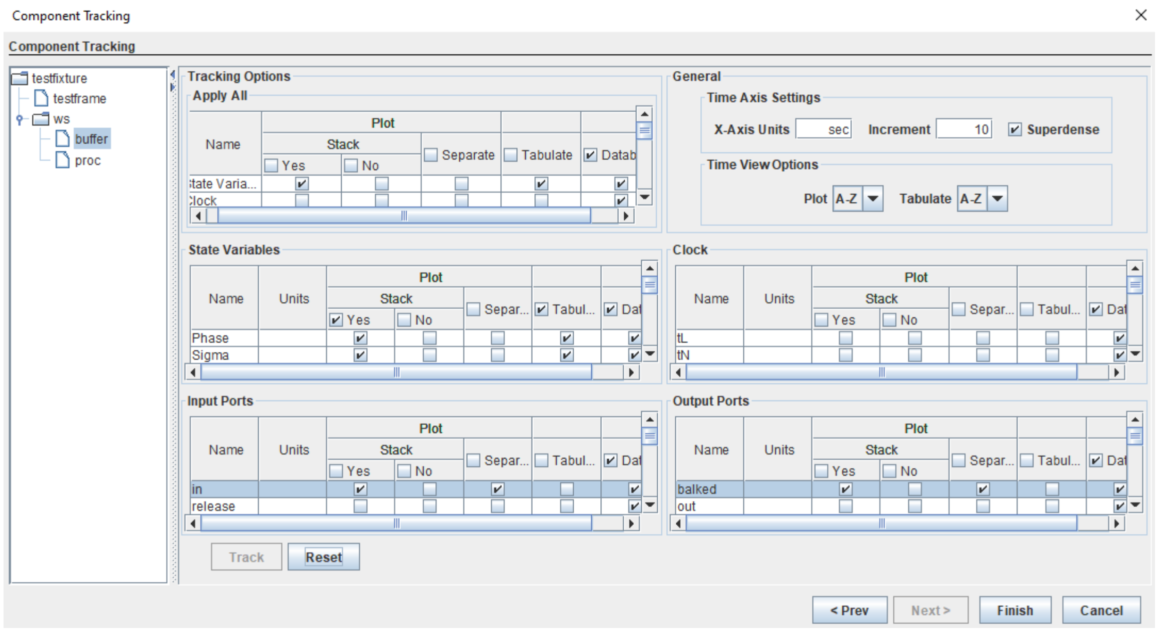
☐ Enable Governor

Real Time Factor: 1.0E-4

Animation Speed: 9.0

Time View Update Speed: 20.0

```
Simulator State: Ready
Time of Last Event: 0.0
Time of Next Event: 0.0
```



Tracking Options

Apply All

Name	Plot				
	Stack		☐ Separate	☐ Tabulate	✓ Datab
	☐ Yes	☐ No			
tate Varia...	✓			✓	✓
lock					✓

General

Time Axis Settings

X-Axis Units: sec Increment: 10 ✓ Superdense

Time View Options

Plot: A-Z Tabulate: A-Z

State Variables

Name	Units	Plot				
		Stack		☐ Separ...	✓ Tabul...	✓ Dat
		✓ Yes	☐ No			
Phase		✓			✓	✓
Sigma		✓			✓	✓

Clock

Name	Units	Plot				
		Stack		☐ Separ...	☐ Tabul...	✓ Dat
		☐ Yes	☐ No			
tL						✓
tN						✓

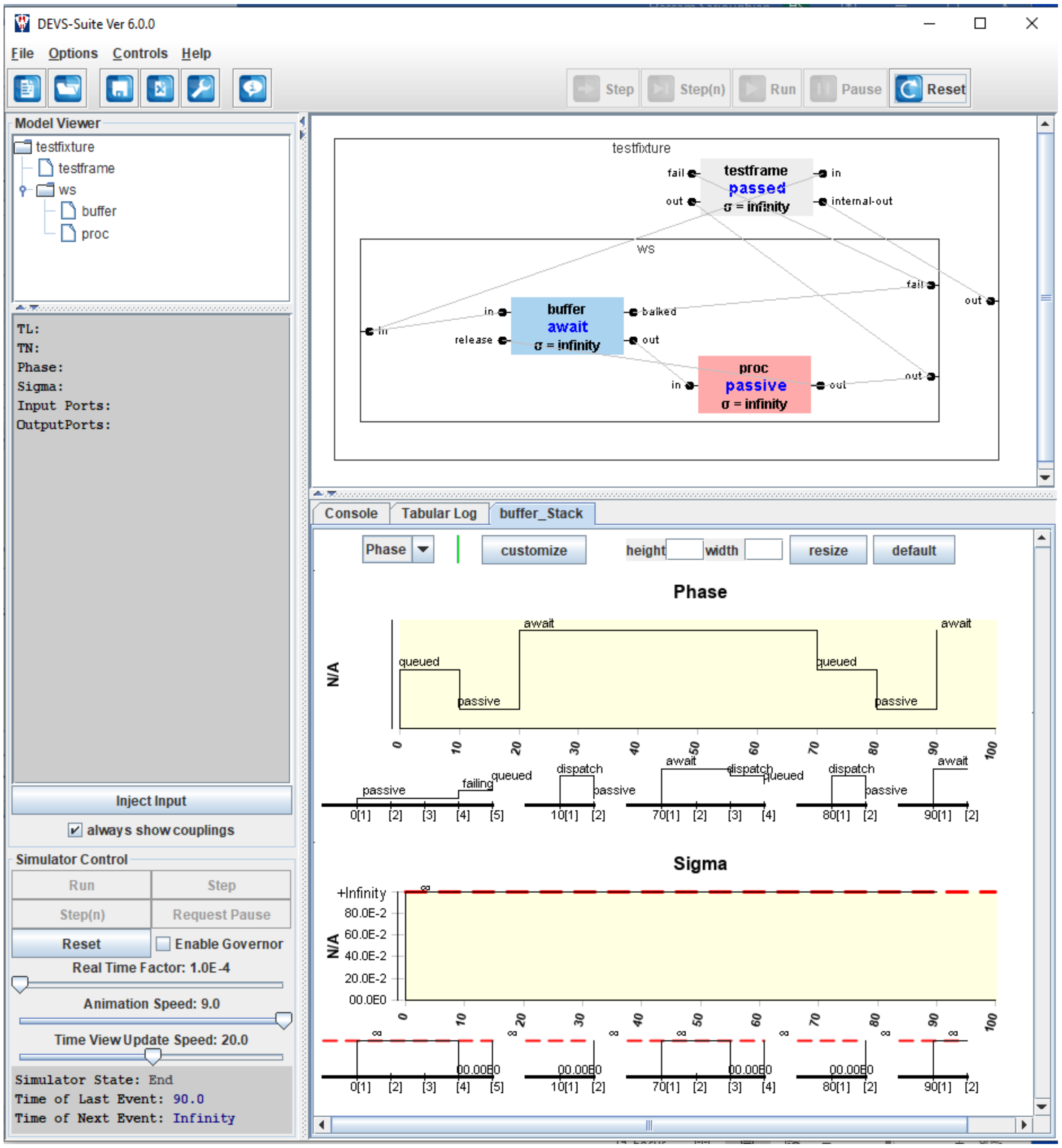
Input Ports

Name	Units	Plot				
		Stack		☐ Separ...	☐ Tabul...	✓ Dat
		☐ Yes	☐ No			
in		✓		✓		✓
release						✓

Output Ports

Name	Units	Plot				
		Stack		☐ Separ...	☐ Tabul...	✓ Dat
		☐ Yes	☐ No			
balked		✓		✓		✓
out						✓

Workstation example


DEVS-Suite Ver 6.0.0
File Options Controls Help
Step Step(n) Run Pause Reset
Model Viewer
testfixture
testframe
ws
buffer
proc
testframe passed σ = infinity
buffer await σ = infinity
proc passive σ = infinity
Inject Input
always show couplings
Simulator Control
Run Step Step(n) Request Pause Reset Enable Governor
Real Time Factor: 1.0E-4
Animation Speed: 9.0
Time View Update Speed: 20.0
Console Tabular Log buffer_Stack
Phase customize height width resize default
Phase
Sigma

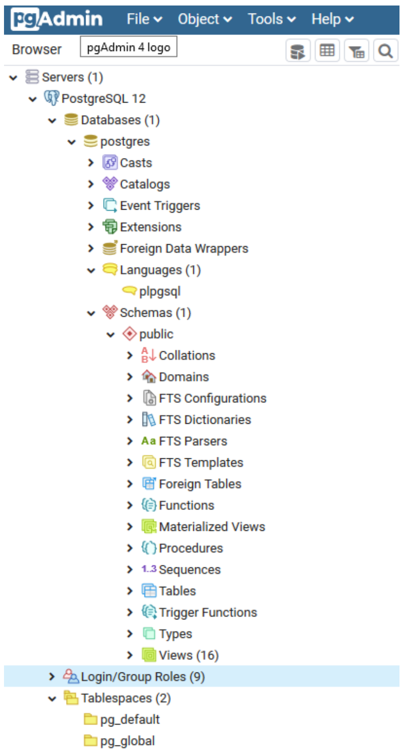
```
TL:
TN:
Phase:
Sigma:
Input Ports:
OutputPorts:
```

```
Simulator State: End
Time of Last Event: 90.0
Time of Next Event: Infinity
```

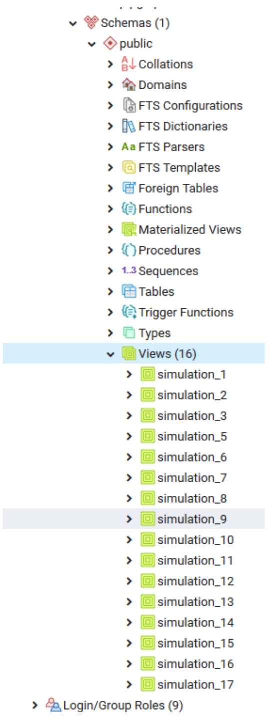
Superdense Timeview trajectories with component view

C. PostgreSQL Database Installation

Details are provided in [2].

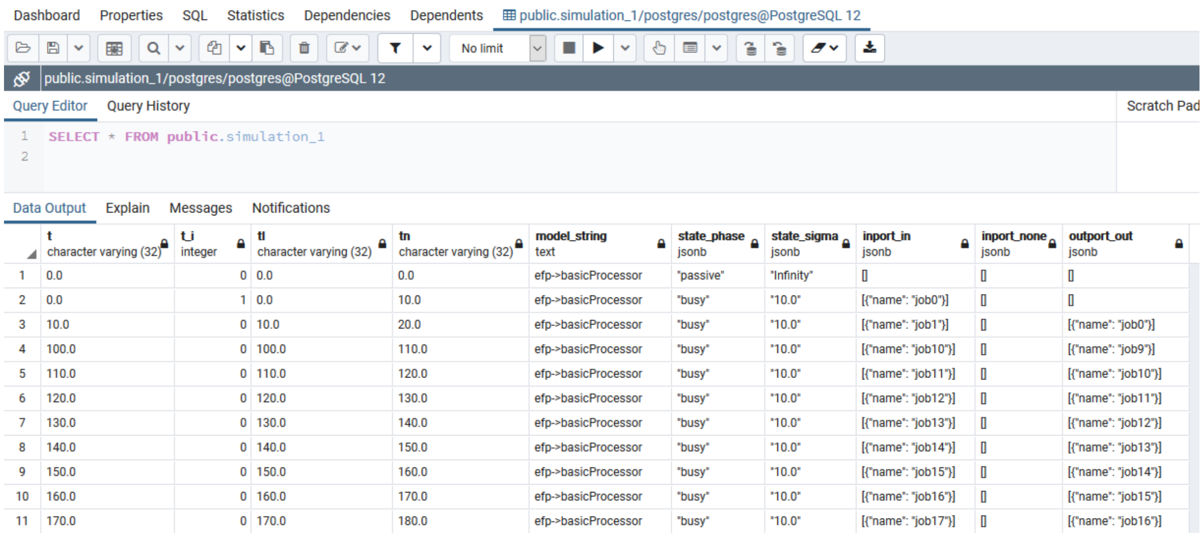


PostgreSQL application main view.



This database stored simulation data.

Basic instructions are provided in PostreSQL installations.PDF.



```
SELECT * FROM public.simulation_1
```

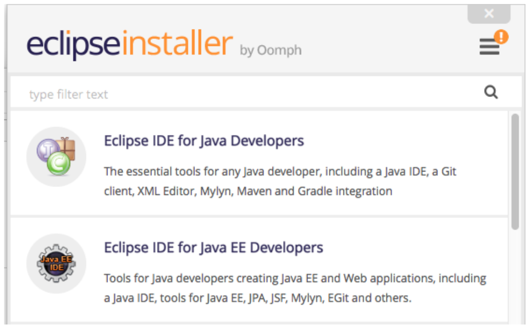
	t character varying (32)	t_i integer	tl character varying (32)	tn character varying (32)	model_string text	state_phase jsonb	state_sigma jsonb	inport_in jsonb	inport_none jsonb	outport_out jsonb
1	0.0	0	0.0	0.0	efp->basicProcessor	"passive"	"Infinity"	[]	[]	[]
2	0.0	1	0.0	10.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job0"}]	[]	[]
3	10.0	0	10.0	20.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job1"}]	[]	[{"name": "job0"}]
4	100.0	0	100.0	110.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job10"}]	[]	[{"name": "job9"}]
5	110.0	0	110.0	120.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job11"}]	[]	[{"name": "job10"}]
6	120.0	0	120.0	130.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job12"}]	[]	[{"name": "job11"}]
7	130.0	0	130.0	140.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job13"}]	[]	[{"name": "job12"}]
8	140.0	0	140.0	150.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job14"}]	[]	[{"name": "job13"}]
9	150.0	0	150.0	160.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job15"}]	[]	[{"name": "job14"}]
10	160.0	0	160.0	170.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job16"}]	[]	[{"name": "job15"}]
11	170.0	0	170.0	180.0	efp->basicProcessor	"busy"	"10.0"	[{"name": "job17"}]	[]	[{"name": "job16"}]

A simulation execution named "simulation_1" is the the first stored simulation. The content of this database is defined using Component Tracking.

D. Eclipse, Java 11 and JavaFX 11, and DEVS-Suite Installations

1. Download Java 11 from: https://www.oracle.com/technetwork/java/javase/downloads/jdk11-downloads-5066655.html . Accept License Agreement and choose the right platform. Install the Java file. You can use JRE 1.7 and 1.8. JRE 9 and 10 which support computers (e.g., Microsoft's Surface and MacBook Air) that have high-resolution displays are no longer supported. If you have access to JRE 9 or 10, unlike JREs 7 and 8, can correctly display all UIs and time trajectories on displays with setting greater than 1920 × 1080. The following are for the Windows 10 OS. ***Note:*** Few of the followings are slightly different for the Mac OS. Although some of the screenshots has the "DEVS-Suite-Plus-5" label, these screenshots are the same as those in "DEVS-Suite-Plus-6".

2. Download an Eclipse Java IDE from: https://www.eclipse.org/downloads/. Run the Eclipse installer and choose the "Eclipse IDE for Java Developers".



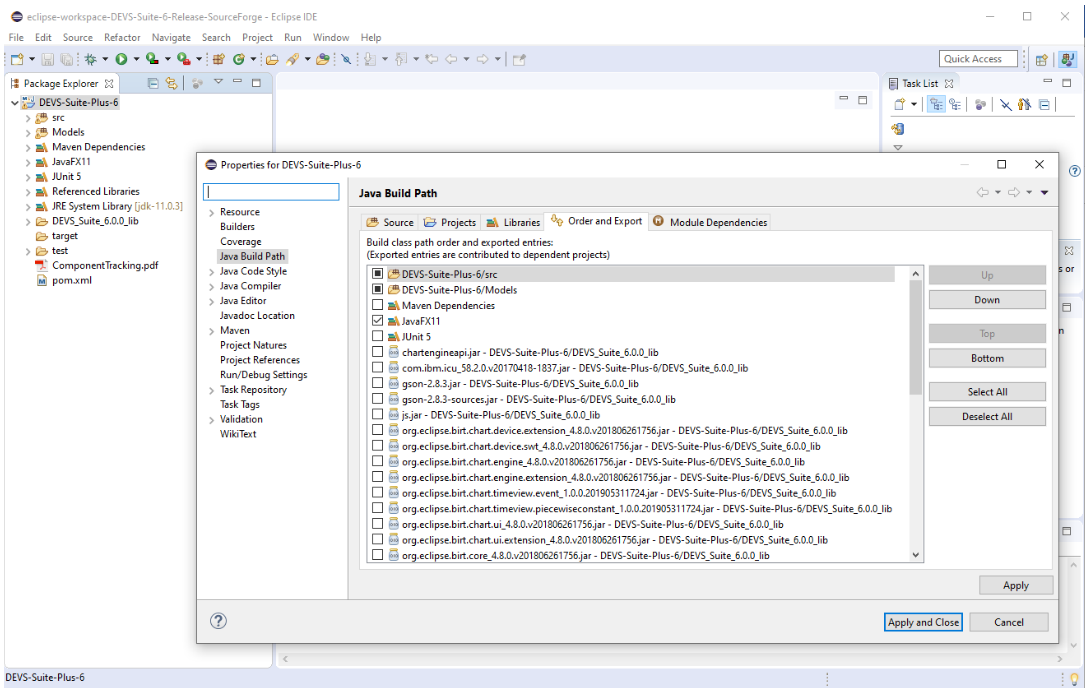
Eclipse IDE for Java Developers

The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Mylyn, Maven and Gradle integration

Eclipse IDE for Java EE Developers

Tools for Java developers creating Java EE and Web applications, including a Java IDE, tools for Java EE, JPA, JSF, Mylyn, EGit and others.

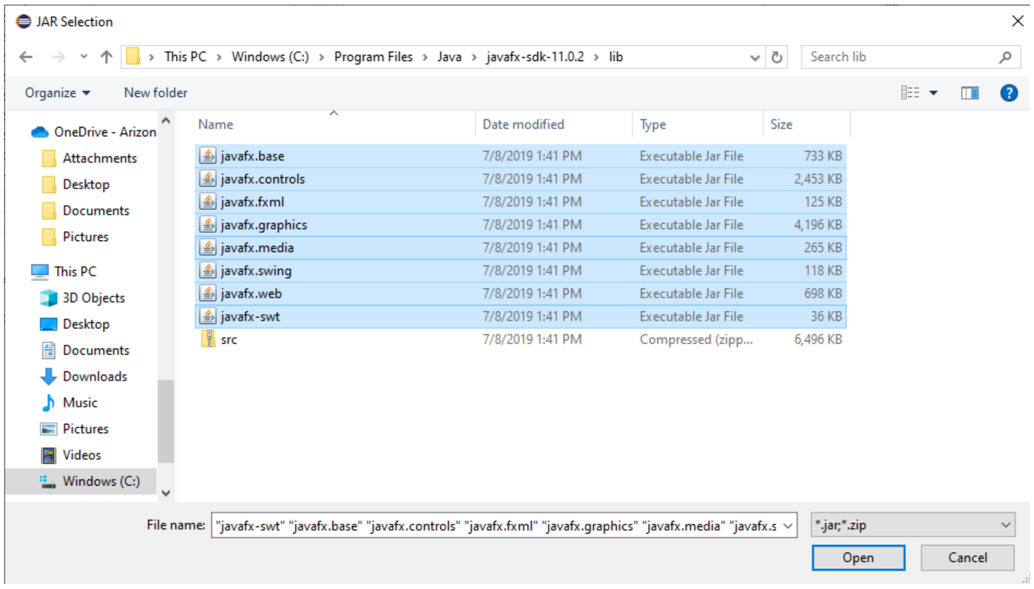
3. Open Eclipse. Choose file->import->General->Existing Projects into Workspace. The source code with the Eclipse project for **DEVS-Suite-Plus-6** is available at https://sourceforge.net/projects/devs-suitesim/files/DEVS_Suite_6.0.0/. Set the JRE to the one installed on your machine. Continue to the steps 4-6 if you prefer to use JDK 11 and JavaFX 11.



Build class path order and exported entries:
(Exported entries are contributed to dependent projects)

- ▣ DEVS-Suite-Plus-6/src
- ▣ DEVS-Suite-Plus-6/Models
- ☐ Maven Dependencies
- ☑ JavaFX11
- ☐ JUnit 5
- ☐ chartengineapi.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ com.ibm.icu_58.2.0.v20170418-1837.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ gson-2.8.3.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ gson-2.8.3-sources.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ js.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.device.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.device.swt_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.engine_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.engine.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.timeview.event_1.0.0.201905311724.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.timeview.piecewiseconstant_1.0.0.201905311724.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.ui_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.chart.ui.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- ☐ org.eclipse.birt.core_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib

4. Download JavaFX 11 from https://gluonhq.com/products/javafx/. Unzip the JavaFX file to a directory.


JAR Selection

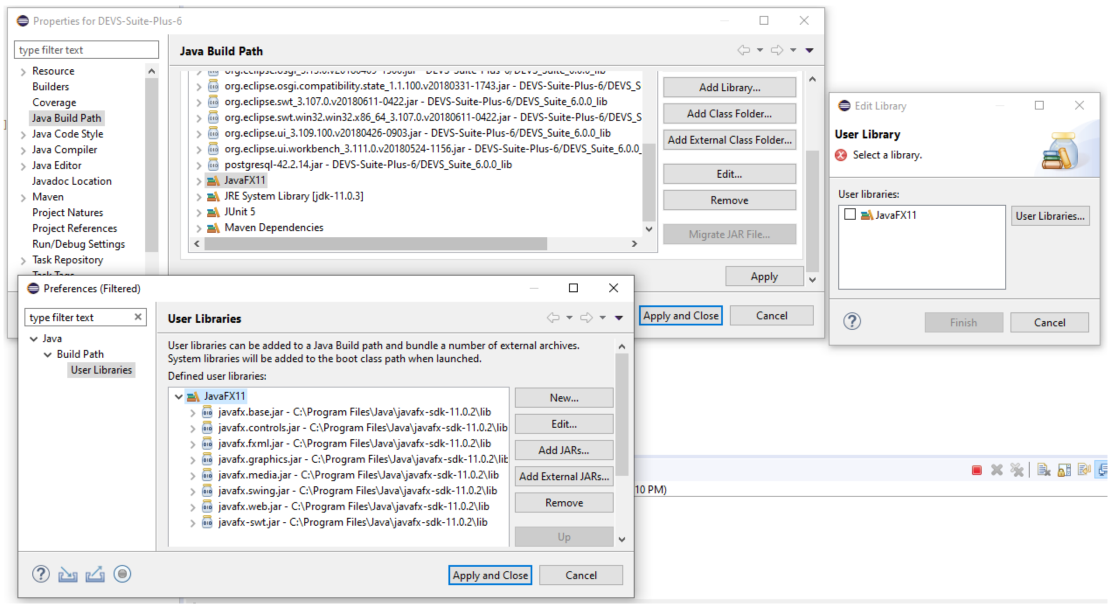
This PC > Windows (C:) > Program Files > Java > javafx-sdk-11.0.2 > lib

Name	Date modified	Type	Size
javafx.base	7/8/2019 1:41 PM	Executable Jar File	733 KB
javafx.controls	7/8/2019 1:41 PM	Executable Jar File	2,453 KB
javafx.fxml	7/8/2019 1:41 PM	Executable Jar File	125 KB
javafx.graphics	7/8/2019 1:41 PM	Executable Jar File	4,196 KB
javafx.media	7/8/2019 1:41 PM	Executable Jar File	265 KB
javafx.swing	7/8/2019 1:41 PM	Executable Jar File	118 KB
javafx.web	7/8/2019 1:41 PM	Executable Jar File	698 KB
javafx-swt	7/8/2019 1:41 PM	Executable Jar File	36 KB
src	7/8/2019 1:41 PM	Compressed (zipp...	6,496 KB

File name: "javafx-swt" "javafx.base" "javafx.controls" "javafx.fxml" "javafx.graphics" "javafx.media" "javafx.s

.jar;.zip

5. Create a User Library: Eclipse -> Windows- > Preferences -> Java -> Build Path -> Add Library … -> User Libraries -> New (for Mac use Eclipse -> Preferences -> Java -> Build Path -> Add Library ..> User Libraries -> New). Name it JavaFX11 and then add external JARs and choose the jar files under the lib folder from the downloaded JavaFX11. You may choose a name other than JavaFX11 as long as it is a unique name within your workspace.


Properties for DEVS-Suite-Plus-6 — Java Build Path

- org.eclipse.osgi.compatibility.state_1.1.100.v20180331-1743.jar - DEVS-Suite-Plus-6/DEVS_S
- org.eclipse.swt_3.107.0.v20180611-0422.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.swt.win32.win32.x86_64_3.107.0.v20180611-0422.jar - DEVS-Suite-Plus-6/DEVS_S
- org.eclipse.ui_3.109.100.v20180426-0903.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.ui.workbench_3.111.0.v20180524-1156.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_
- postgresql-42.2.14.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- JavaFX11
- JRE System Library [jdk-11.0.3]
- JUnit 5
- Maven Dependencies

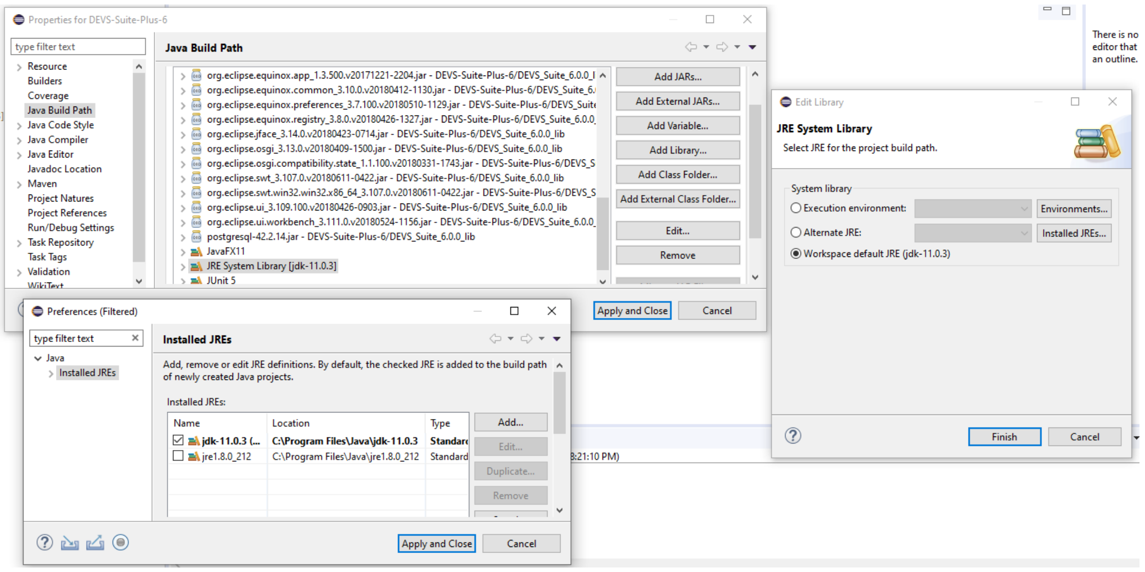
Edit Library — User Library. Select a library. User libraries: JavaFX11

Preferences (Filtered) — User Libraries

User libraries can be added to a Java Build path and bundle a number of external archives. System libraries will be added to the boot class path when launched.

Defined user libraries:

- JavaFX11
  - javafx.base.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib
  - javafx.controls.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib
  - javafx.fxml.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib
  - javafx.graphics.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib
  - javafx.media.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib
  - javafx.swing.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib
  - javafx.web.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib
  - javafx-swt.jar - C:\Program Files\Java\javafx-sdk-11.0.2\lib



Java Build Path

- org.eclipse.equinox.app_1.3.500.v20171221-2204.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_l
- org.eclipse.equinox.common_3.10.0.v20180412-1130.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.
- org.eclipse.equinox.preferences_3.7.100.v20180510-1129.jar - DEVS-Suite-Plus-6/DEVS_Suite
- org.eclipse.equinox.registry_3.8.0.v20180426-1327.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_
- org.eclipse.jface_3.14.0.v20180423-0714.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.osgi_3.13.0.v20180409-1500.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.osgi.compatibility.state_1.1.100.v20180331-1743.jar - DEVS-Suite-Plus-6/DEVS_S
- org.eclipse.swt_3.107.0.v20180611-0422.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.swt.win32.win32.x86_64_3.107.0.v20180611-0422.jar - DEVS-Suite-Plus-6/DEVS_S
- org.eclipse.ui_3.109.100.v20180426-0903.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.ui.workbench_3.111.0.v20180524-1156.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_
- postgresql-42.2.14.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- JavaFX11
- JRE System Library [jdk-11.0.3]
- JUnit 5

There is no editor that an outline.

JRE System Library

Select JRE for the project build path.

System library
- ( ) Execution environment:
- ( ) Alternate JRE:
- (●) Workspace default JRE (jdk-11.0.3)

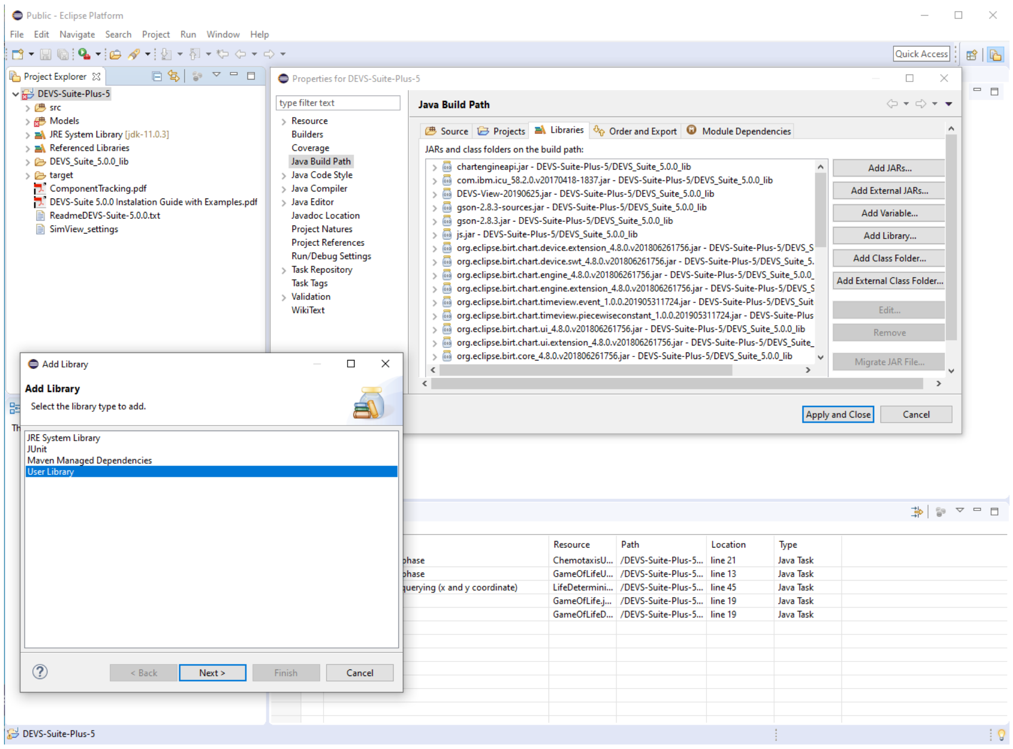
Installed JREs

Add, remove or edit JRE definitions. By default, the checked JRE is added to the build path of newly created Java projects.

Installed JREs:

	Name	Location	Type
☑	jdk-11.0.3 (...	C:\Program Files\Java\jdk-11.0.3	Standard
☐	jre1.8.0_212	C:\Program Files\Java\jre1.8.0_212	Standard

6. Edit the project Properties. Java Build Path-> Libraries->Add Library...->Choose User Library-> use the JavaFX 11, and finish.



- DEVS-Suite-Plus-5
  - src
  - Models
  - JRE System Library [jdk-11.0.3]
  - Referenced Libraries
  - DEVS_Suite_5.0.0_lib
  - target
  - ComponentTracking.pdf
  - DEVS-Suite 5.0.0 Instalation Guide with Examples.pdf
  - ReadmeDEVS-Suite-5.0.0.txt
  - SimView_settings

Java Build Path

JARs and class folders on the build path:

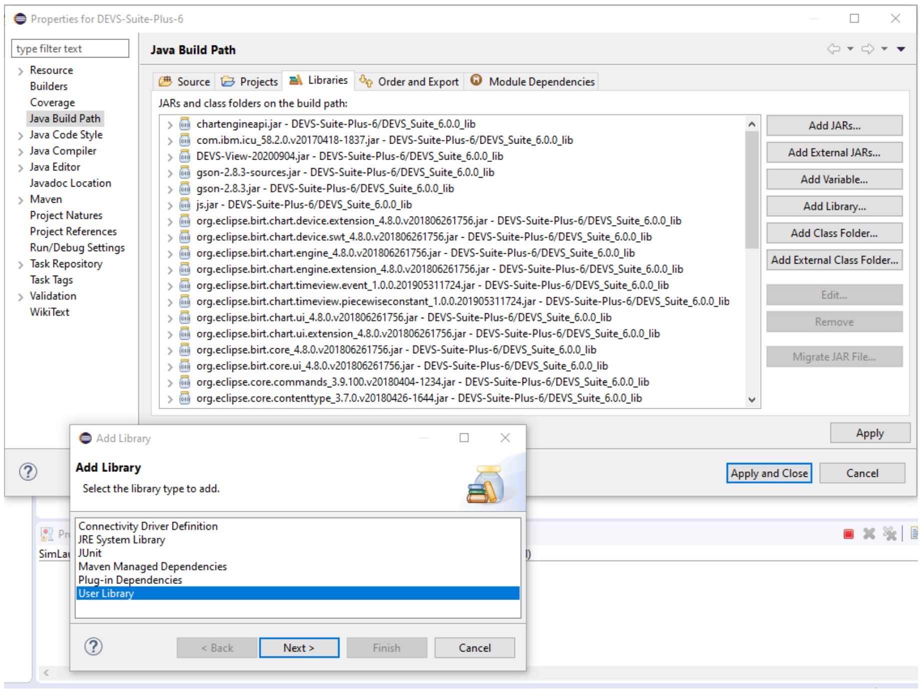
- chartengineapi.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib
- com.ibm.icu_58.2.0.v20170418-1837.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib
- DEVS-View-20190625.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib
- gson-2.8.3-sources.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib
- gson-2.8.3.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib
- js.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib
- org.eclipse.birt.chart.device.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-5/DEVS_S
- org.eclipse.birt.chart.device.swt_4.8.0.v201806261756.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.
- org.eclipse.birt.chart.engine_4.8.0.v201806261756.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_
- org.eclipse.birt.chart.engine.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-5/DEVS_S
- org.eclipse.birt.chart.timeview.event_1.0.0.201905311724.jar - DEVS-Suite-Plus-5/DEVS_Suit
- org.eclipse.birt.chart.timeview.piecewiseconstant_1.0.0.201905311724.jar - DEVS-Suite-Plus
- org.eclipse.birt.chart.ui_4.8.0.v201806261756.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib
- org.eclipse.birt.chart.ui.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-5/DEVS_Suite_
- org.eclipse.birt.core_4.8.0.v201806261756.jar - DEVS-Suite-Plus-5/DEVS_Suite_5.0.0_lib

Add Library

Select the library type to add.

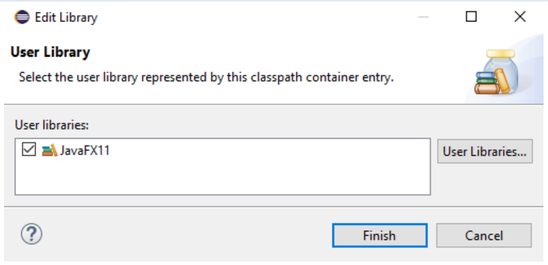
- JRE System Library
- JUnit
- Maven Managed Dependencies
- User Library

	Resource	Path	Location	Type
phase	ChemotaxisU...	/DEVS-Suite-Plus-5...	line 21	Java Task
phase	GameOfLifeU...	/DEVS-Suite-Plus-5...	line 13	Java Task
querying (x and y coordinate)	LifeDetermini...	/DEVS-Suite-Plus-5...	line 45	Java Task
	GameOfLife.j...	/DEVS-Suite-Plus-5...	line 19	Java Task
	GameOfLifeD...	/DEVS-Suite-Plus-5...	line 19	Java Task



JARs and class folders on the build path:

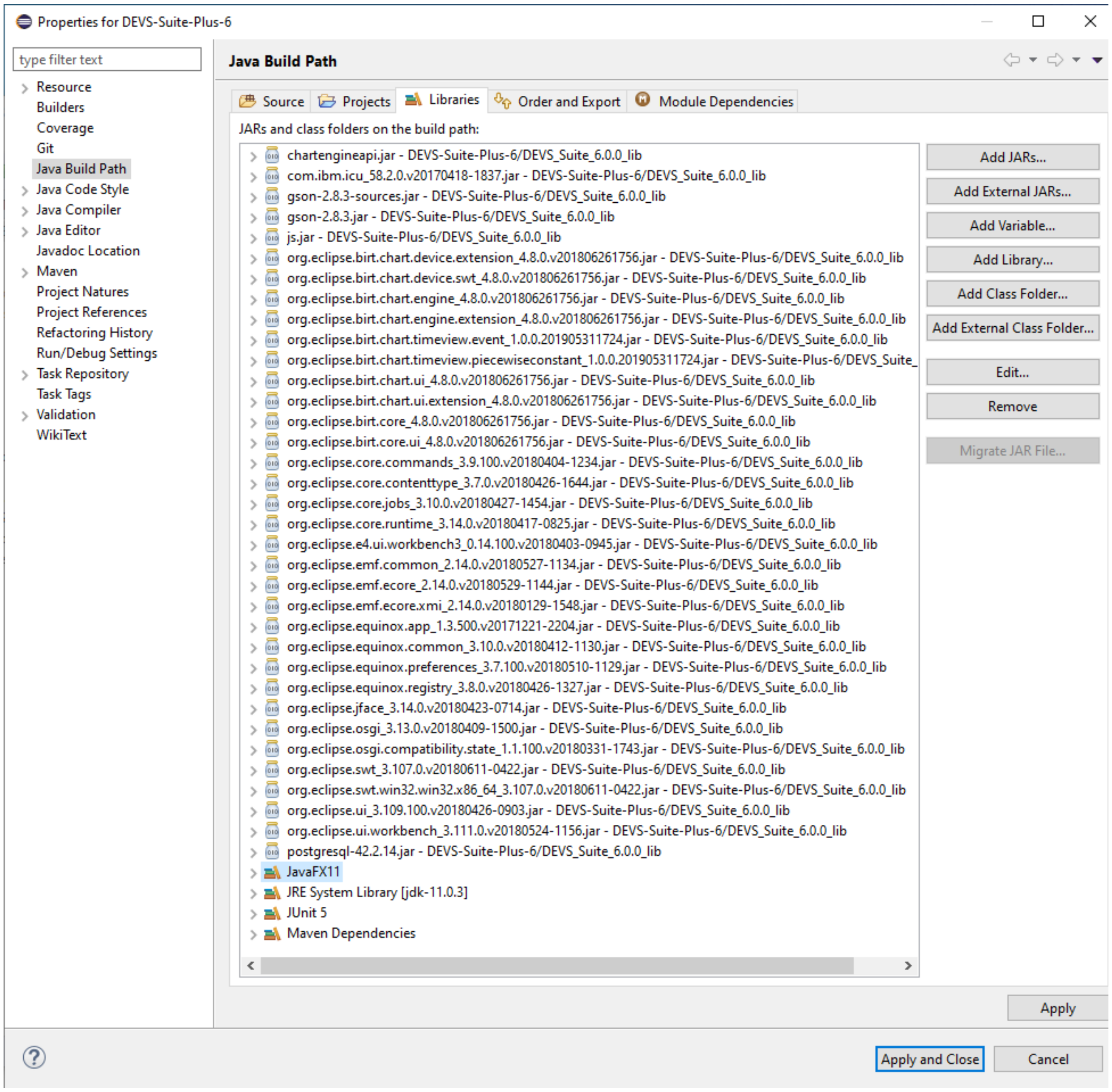
```
chartengineapi.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
com.ibm.icu_58.2.0.v20170418-1837.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
DEVS-View-20200904.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
gson-2.8.3-sources.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
gson-2.8.3.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
js.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.device.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.device.swt_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.engine_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.engine.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.timeview.event_1.0.0.201905311724.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.timeview.piecewiseconstant_1.0.0.201905311724.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.ui_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.chart.ui.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.core_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.birt.core.ui_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.core.commands_3.9.100.v20180404-1234.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
org.eclipse.core.contenttype_3.7.0.v20180426-1644.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
```



Select the user library represented by this classpath container entry.

[✓ JavaFX11]

Note: The library folder must have the necessary plugin packages, jar, and all other library files shown below. The `JavaFX11` and `JRE System Library [jdk-11.0.3]` installations are specific to each computer. Use the *"Edit"* to set the `JavaFX11` to point to your own installation. If the `JRE System Library [jdk-11.0.3]` is not installed on the computer, then use *"Remove"* to delete it and add your the JRE System Library installed on the computer using *"Add Library …"*.


Properties for DEVS-Suite-Plus-6

Java Build Path

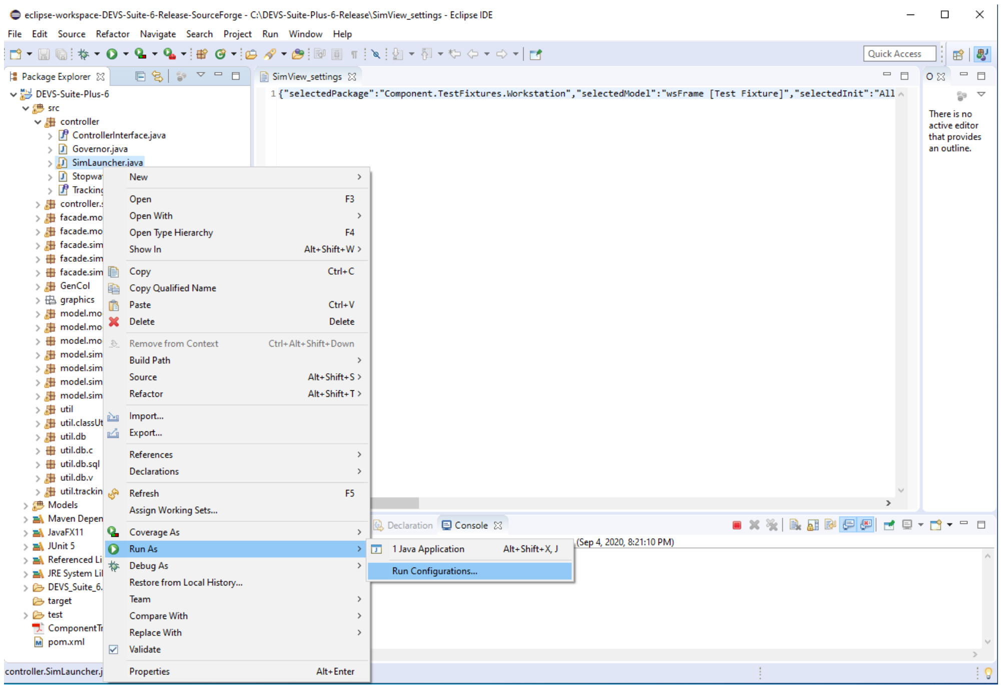
Source | Projects | Libraries | Order and Export | Module Dependencies

JARs and class folders on the build path:

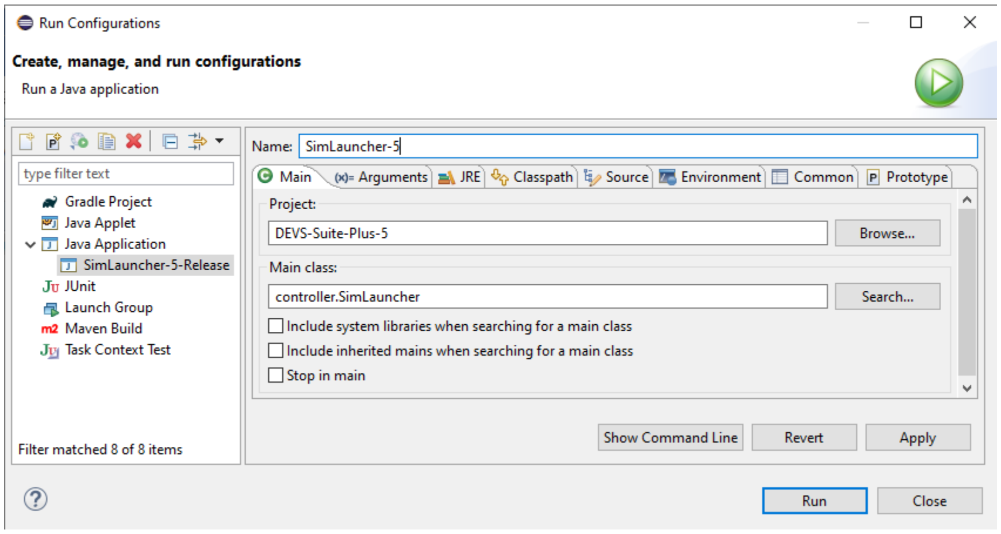
- chartengineapi.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- com.ibm.icu_58.2.0.v20170418-1837.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- gson-2.8.3-sources.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- gson-2.8.3.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- js.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.chart.device.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.chart.device.swt_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.chart.engine_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.chart.engine.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.chart.timeview.event_1.0.0.201905311724.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.chart.timeview.piecewiseconstant_1.0.0.201905311724.jar - DEVS-Suite-Plus-6/DEVS_Suite_
- org.eclipse.birt.chart.ui_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.chart.ui.extension_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.core_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.birt.core.ui_4.8.0.v201806261756.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.core.commands_3.9.100.v20180404-1234.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.core.contenttype_3.7.0.v20180426-1644.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.core.jobs_3.10.0.v20180427-1454.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.core.runtime_3.14.0.v20180417-0825.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.e4.ui.workbench3_0.14.100.v20180403-0945.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.emf.common_2.14.0.v20180527-1134.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.emf.ecore_2.14.0.v20180529-1144.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.emf.ecore.xmi_2.14.0.v20180129-1548.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.equinox.app_1.3.500.v20171221-2204.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.equinox.common_3.10.0.v20180412-1130.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.equinox.preferences_3.7.100.v20180510-1129.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.equinox.registry_3.8.0.v20180426-1327.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.jface_3.14.0.v20180423-0714.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.osgi_3.13.0.v20180409-1500.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.osgi.compatibility.state_1.1.100.v20180331-1743.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.swt_3.107.0.v20180611-0422.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.swt.win32.win32.x86_64_3.107.0.v20180611-0422.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.ui_3.109.100.v20180426-0903.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- org.eclipse.ui.workbench_3.111.0.v20180524-1156.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- postgresql-42.2.14.jar - DEVS-Suite-Plus-6/DEVS_Suite_6.0.0_lib
- JavaFX11
- JRE System Library [jdk-11.0.3]
- JUnit 5
- Maven Dependencies

7. Starting the simulator

To start the simulator, the “SimLauncher.java” has to be executed either as a “Java Application” or “Run Configuration …” shown below.



```
1 {"selectedPackage":"Component.TestFixtures.Workstation","selectedModel":"wsFrame [Test Fixture]","selectedInit":"All
```

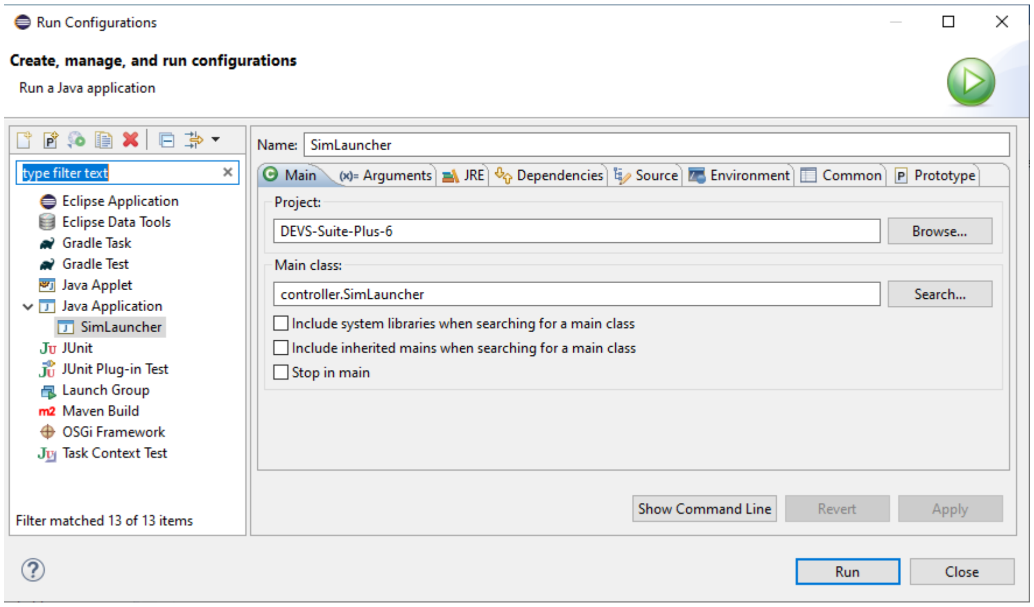


Name: SimLauncher-5

Project: DEVS-Suite-Plus-5

Main class: controller.SimLauncher

☐ Include system libraries when searching for a main class
☐ Include inherited mains when searching for a main class
☐ Stop in main


Run Configurations

Create, manage, and run configurations

Run a Java application

type filter text

- Eclipse Application
- Eclipse Data Tools
- Gradle Task
- Gradle Test
- Java Applet
- Java Application
  - SimLauncher
- JUnit
- JUnit Plug-in Test
- Launch Group
- Maven Build
- OSGi Framework
- Task Context Test

Filter matched 13 of 13 items

Name: SimLauncher

Main | Arguments | JRE | Dependencies | Source | Environment | Common | Prototype

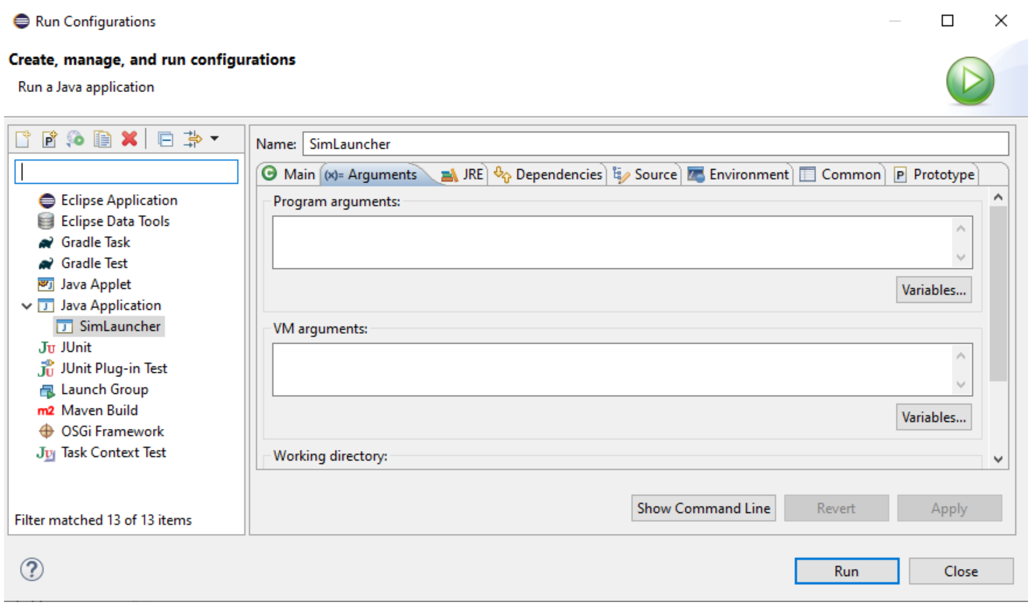
Project: DEVS-Suite-Plus-6

Main class: controller.SimLauncher

- [ ] Include system libraries when searching for a main class
- [ ] Include inherited mains when searching for a main class
- [ ] Stop in main

- *Running DEVS-Suite Simulator on Mac OS:*

For Mac OS, de-select the “Use the X-startOnFirstThread argument when launching with SWT” checkbox as shown below.


Run Configurations

Create, manage, and run configurations

Run a Java application

- Eclipse Application
- Eclipse Data Tools
- Gradle Task
- Gradle Test
- Java Applet
- Java Application
  - SimLauncher
- JUnit
- JUnit Plug-in Test
- Launch Group
- Maven Build
- OSGi Framework
- Task Context Test

Filter matched 13 of 13 items

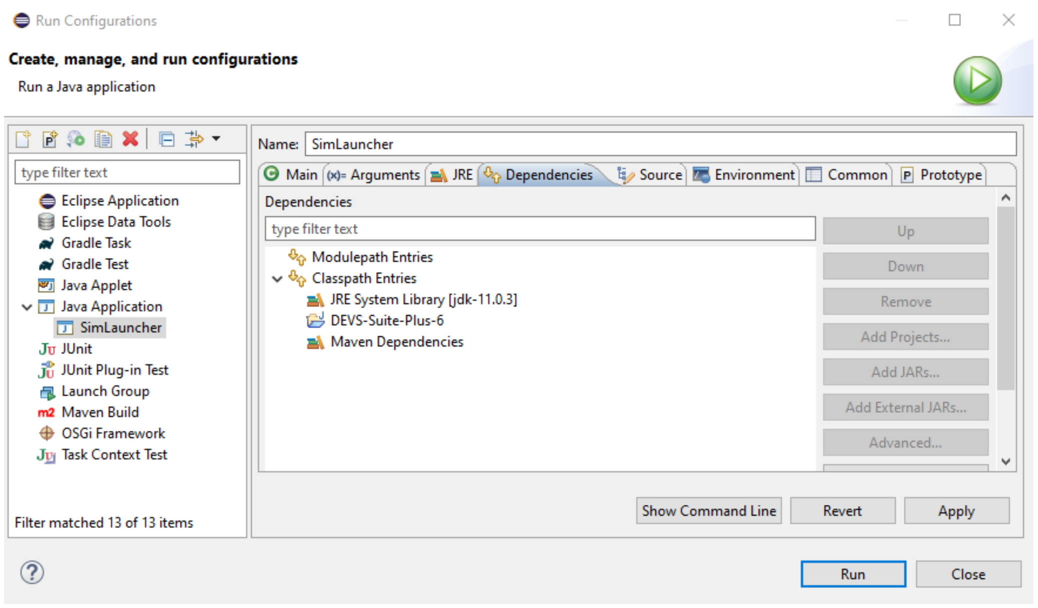
Name: SimLauncher

Main | Arguments | JRE | Dependencies | Source | Environment | Common | Prototype

Program arguments:

VM arguments:

Working directory:


Run Configurations
Create, manage, and run configurations
Run a Java application
type filter text
Eclipse Application
Eclipse Data Tools
Gradle Task
Gradle Test
Java Applet
Java Application
SimLauncher
JUnit
JUnit Plug-in Test
Launch Group
Maven Build
OSGi Framework
Task Context Test
Filter matched 13 of 13 items
Name: SimLauncher
Main
Arguments
JRE
Dependencies
Source
Environment
Common
Prototype
Dependencies
type filter text
Modulepath Entries
Classpath Entries
JRE System Library [jdk-11.0.3]
DEVS-Suite-Plus-6
Maven Dependencies
Up
Down
Remove
Add Projects...
Add JARs...
Add External JARs...
Advanced...
Show Command Line
Revert
Apply
Run
Close

References:

[1] DEVS-Suite Simulator, (2020), https://acims.asu.edu/software/devs-suite/.

[2] M.B. McLaughlin, H.S. Sarjoughian, (2020), *"Developing Test Frames for DEVS Models: Black-Box Testing with White-Box Debugging"*, School of Computing, Informatics, and Systems Engineering, Tempe, Arizona, USA.

[3] M.B. McLaughlin and H.S. Sarjoughian, (2020), "DEVS-Scripting: A Black-Box Test Frame for DEVS Models", Winter Simulation Conference, Virtual Conference, December 14-18, USA.

[3] H.S. Sarjoughian, S. Sundaramoorthi, (2015), "Superdense Time Trajectories for DEVS Simulation Models", TMS/DEVS Symposium, Wash. DC.

[4] G. Scherer, H.S. Sarjoughian, (2020), "DEVS-Suite 6.0.0 PostreSQL Installation Guide", School of Computing, Informatics, and Systems Engineering, Tempe, Arizona, USA.