Examples (sct)

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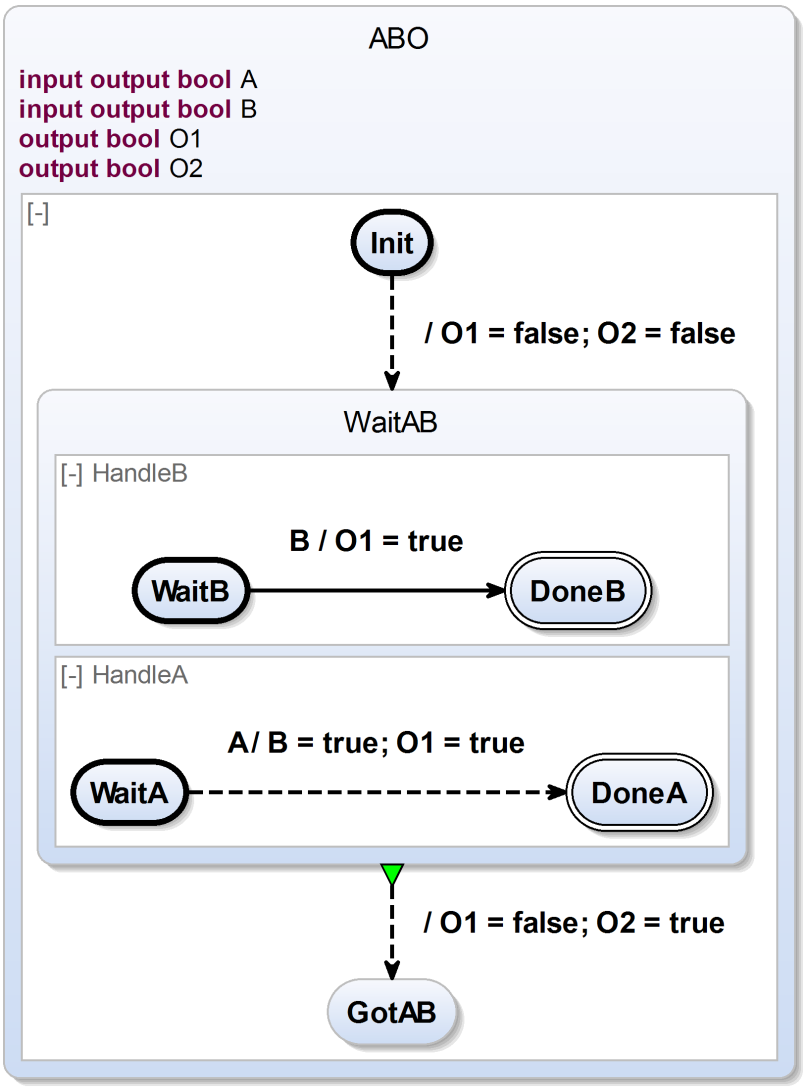
SCCharts Examples

A few SCCharts examples...

Example		SCChart (Graphical)	SCChart (Textual SCT)

ABO



ABO.sct

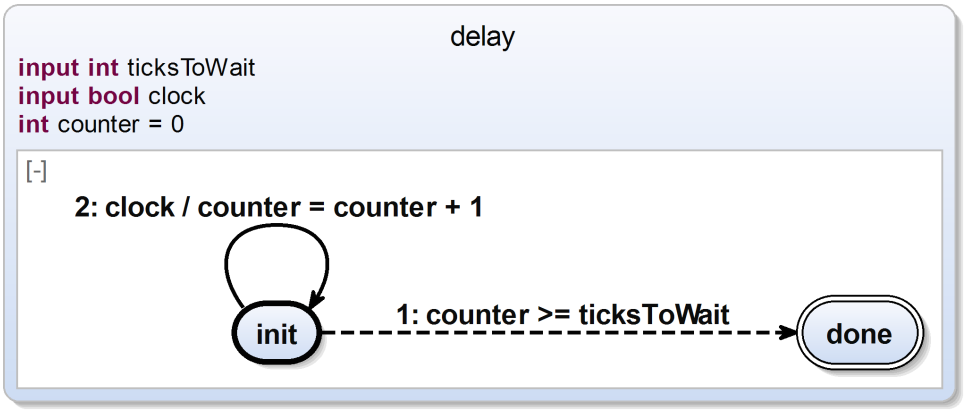
```
@VHLayout
scchart ABO {
  input
output bool
A;
  input
output bool
B;
  output
bool O1;
  output
bool O2;
  region:

  initial
state Init
  --> WaitAB
immediate
with / O1 =
false; O2 =
false;
  state
WaitAB {
    region
HandleA:
    initial
state WaitA
    -->
DoneA
immediate
with A / B =
true; O1 =
true;
    final
state DoneA;
    region
HandleB:
    initial
state WaitB
    -->
DoneB with B
/ O1 = true;
    final
state DoneB;
  }
  >-> GotAB
with / O1 =
false; O2 =
true;
  state
GotAB;
}
```

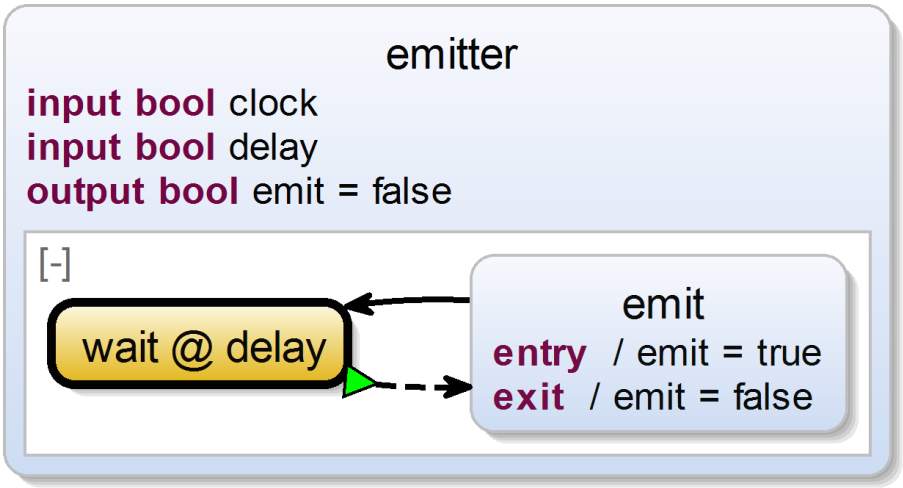
clock

(Referenced SCCharts Example)

To enable the referenced SCCharts feature,

activate the Xtext nature for your project!



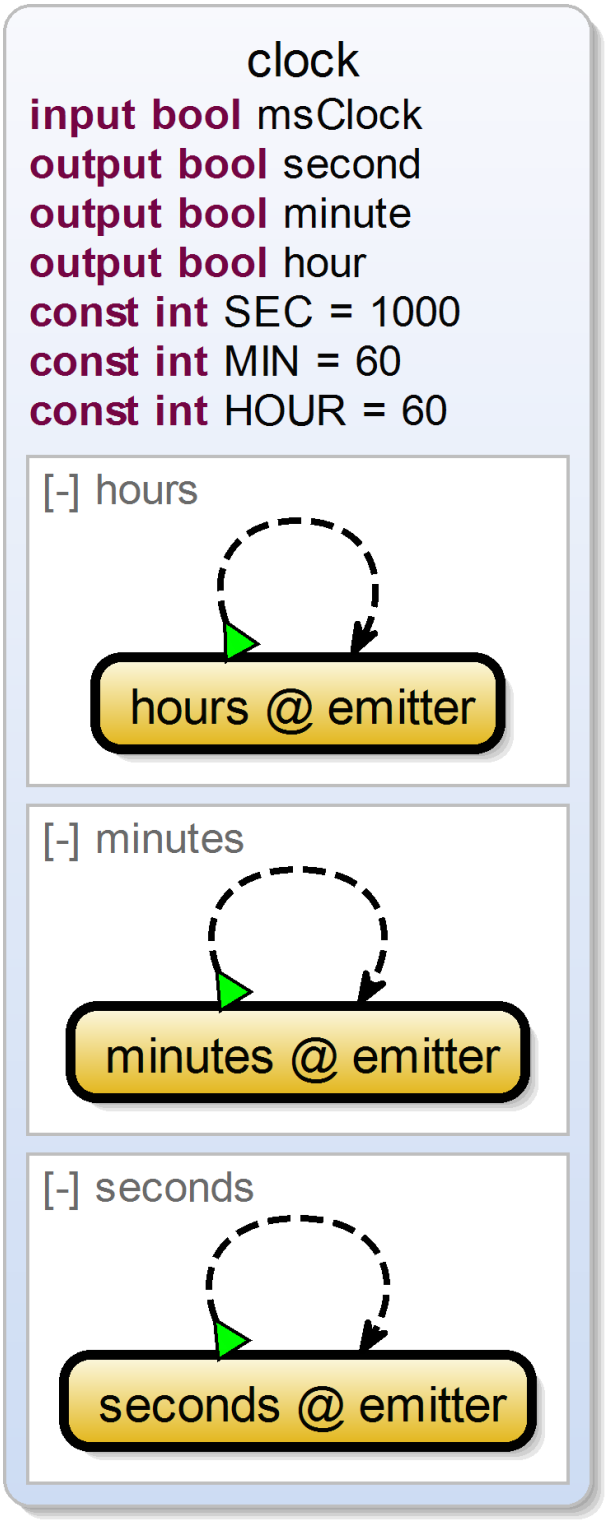


shifter3.sct

```
scchart
delay {
  input int
ticksToWait;
  input bool
clock;
  int
counter = 0;
  initial
state init
  --> done
immediate
with
    counter
>=
ticksToWait
  --> init
with
    clock /
counter =
counter + 1;
  final
state done;
}
```

shifter3.sct

```
scchart
emitter {
  input bool
clock;
  input bool
delay;
  output
bool emit =
false;
  initial
state wait
  references
delay
  bind clock
to clock,

ticksToWait
to delay
  >-> emit;

  state emit
{
    entry /
emit = true;
    exit /
emit = false;
  }
  --> wait;
}
```



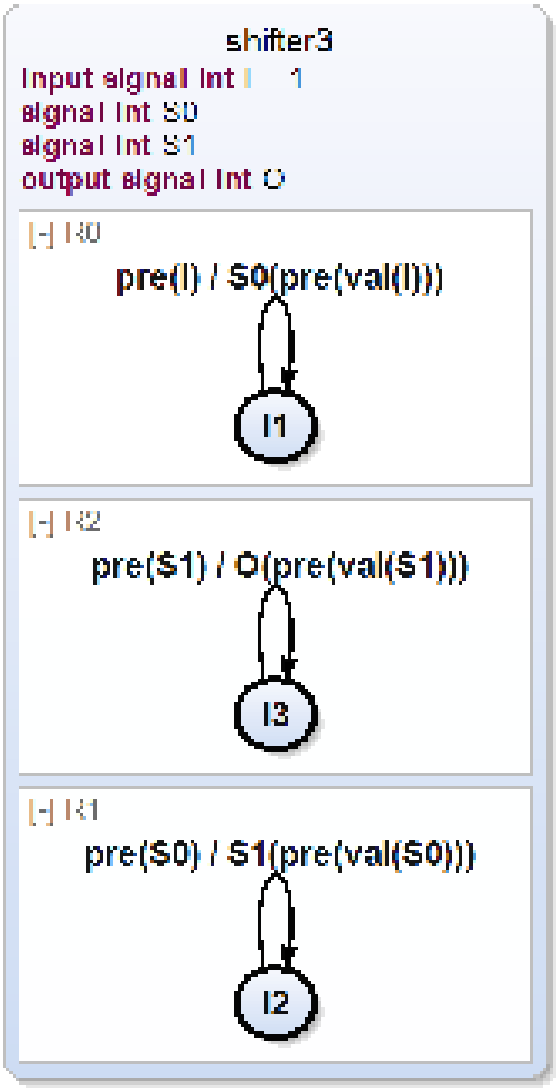
shifter3.sct

```
scchart
clock {
  input bool
msClock;
  output
bool second;
  output
bool minute;
  output
bool hour;
  const int
SEC = 1000;
  const int
MIN = 60;
  const int
HOUR = 60;
  region
seconds:
  initial
state seconds
  references
emitter
  bind clock
to msClock,

metrum to
SEC,
       emit
to second
  >->
seconds;

  region
minutes:
  initial
state minutes
  references
emitter
  bind clock
to second,

metrum to
MIN,
       emit
to minute
  >->
minutes;

  region
hours:
  initial
state hours
  references
emitter
  bind clock
to minute,

metrum to
HOUR,
       emit
to hour
  >-> hours;
}
```

SCCharts Evaluation Examples

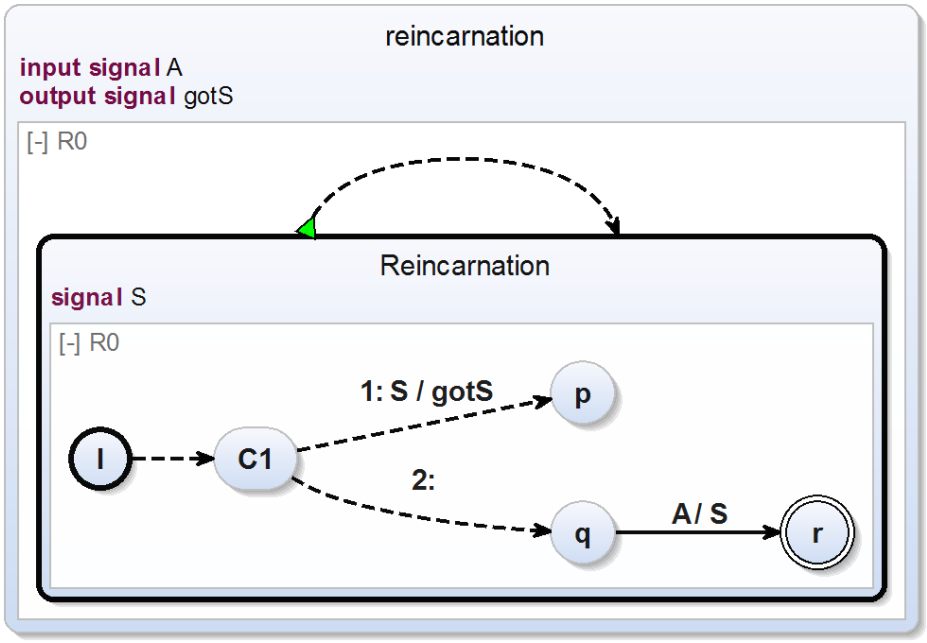
In the following, you find some examples used for evaluation. Be advised that there currently is no tool integrated evaluation possible. Please refer to the SCCharts superpage for the project status and known limitations. You may use our online compiler or the command line compiler to play around with the following SCCharts. On the right side you'll find the textual SCChart (SCT) description, on the left side you see the equivalent synthesized SCChart diagram for it. You can use our online SCChart synthesis for rendering SCCharts diagrams from textual SCCharts descriptions.

Example		SCChart (Graphical)	SCChart (Textual SCT)

shifter3			**shifter3.sct**
			`scchart shifter3 {`
			`input signal int I = 1;`
			`signal int S0;`
			`signal int S1;`
			`output signal int O;`
			`region R1:`
			`initial state I2 --> I2 with pre(S0) / S1(pre(val(S0)));`
			`region R0:`
			`initial state I1 --> I1 with pre(I) / S0(pre(val(I)));`

```
region
R2:

initia
l
state
I3
 -->
I3
with
pre
(S1)
/ O
(pre
(val
(S1)))
;
}
```

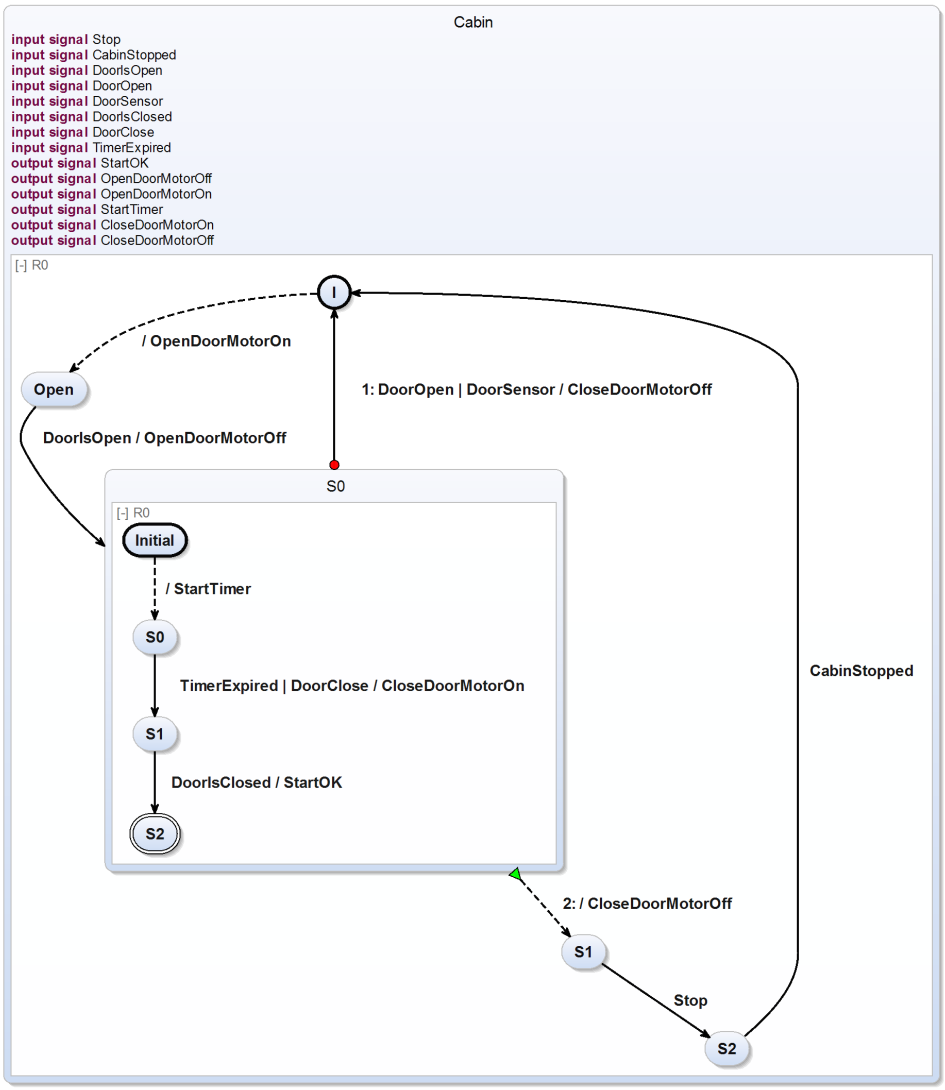
reincarnation



reincarnation.sct

```
scchar
t
reinca
rnatio
n {

input
signal
A;

output
signal
gotS;

region
R0:

initia
l
state
Reinca
rnatio
n {

signal
S;

region
R0:

initia
l
state
I
    --
> C1
immedi
ate;

state
p;
```

			final state r; state q --> r with A / S; state C1 --> p immediate with S / gotS --> q immediate; } >-> Reincarnation; }
cabin			**cabin.sct** scchart Cabin { input signal Stop; input signal CabinStopped; input signal DoorIsOpen; input signal DoorOpen; input signal DoorSensor; input signal DoorIs

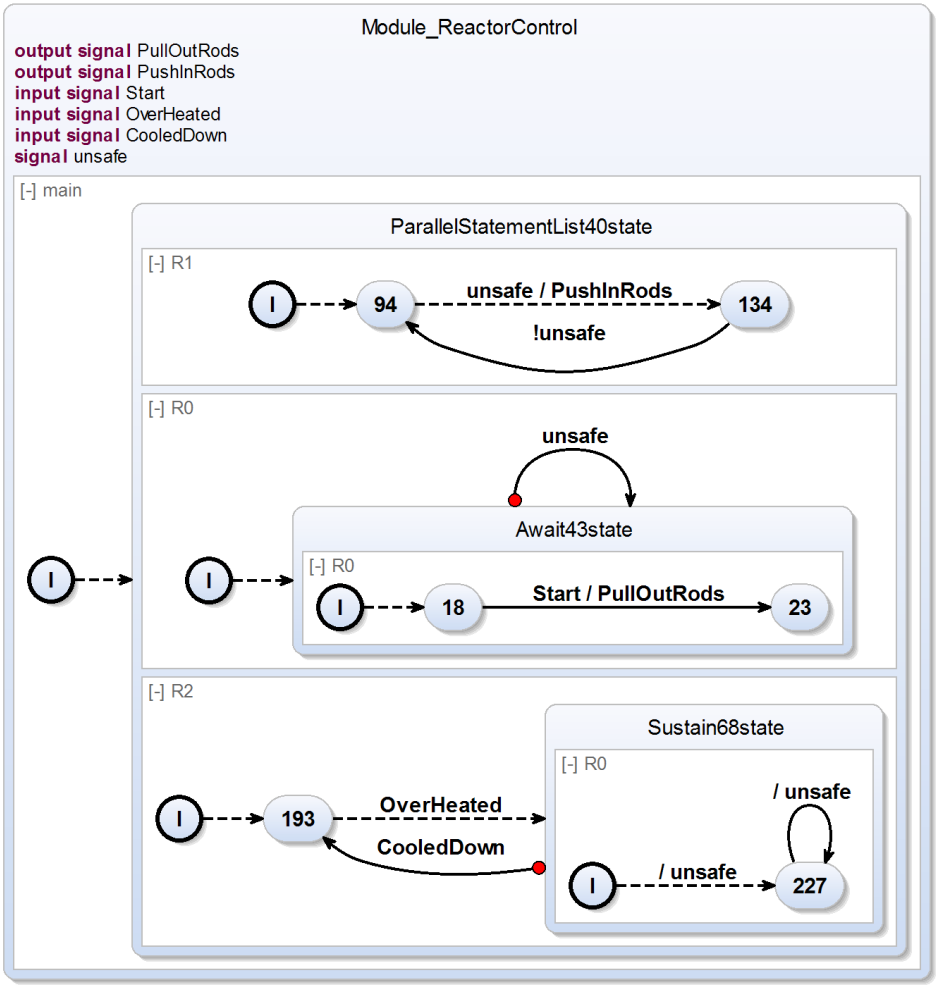



```
Closed
;

input
signal
DoorCl
ose;

input
signal
TimerE
xpired
;

output
signal
StartO
K;

output
signal
OpenDo
orMoto
rOff;

output
signal
OpenDo
orMoto
rOn;

output
signal
StartT
imer;

output
signal
CloseD
oorMot
orOn;

output
signal
CloseD
oorMot
orOff;

region
R0:

initia
l
state
I
  -->
Open
immedi
ate
with
/
OpenDo
orMoto
rOn;

state
Open
  -->
S0
with
DoorIs
```

```
Open
/
OpenDo
orMoto
rOff;

state
S0 {

region
R0:

initia
l
state
Initia
l
    --
> S0
immedi
ate
with
/
StartT
imer;

state
S0
    --
> S1
with
TimerE
xpired
|
DoorCl
ose /
CloseD
oorMot
orOn;

state
S1
    --
> S2
with
DoorIs
Closed
/
StartO
K;

final
state
S2;
  }
  o->
I
with
DoorOp
en |
DoorSe
nsor
/
CloseD
oorMot
orOff
  >->
S1
with
/
CloseD
```

```
oorMot
orOff;

state
S1
  -->
S2
with
Stop;

state
S2
  -->
I
with
CabinS
topped
;
}
```

reactor control



reactor-control.sct

```
scchar
t
Module
_React
orCont
rol {

output
signal
PullOu
tRods;

output
signal
PushIn
Rods;

input
signal
Start;

input
signal
OverHe
ated;

input
signal
Cooled
Down;

signal
unsafe
;

region
main:

initia
l
state
init0
```

```
"I"
  -->
ParallelStatementList40state
immediate;

state ParallelStatementList40state {

region R0:

initial state init1
"I"
    -->
Await43state
immediate;

state Await43state {

region R0:

initial state init2
"I"

-->
S18
immediate;

state S18
"18"

-->
S23
with Start/PullOutRods;

state S23
"23";
    }
    o->
Await43state
```

```
with
unsafe
;

region
R1:

initia
l
state
init3
"I"
    --
> S94
immedi
ate;

state
S94
"94"
    --
>
S134
immedi
ate
with
unsafe
/
PushIn
Rods;

state
S134
"134"
    --
> S94
with !
unsafe
;

region
R2:

initia
l
state
init4
"I"
    --
>
S193
immedi
ate;

state
S193
"193"
    --
>
Sustai
n68sta
te
immedi
ate
with
OverHe
ated;

state
Sustai
n68sta
```

			te {
			
			region
			R0:
			
			initia
			l
			state
			init5
			"I"
			
			-->S227
			immedi
			ate
			with
			/
			unsafe
			;
			
			state
			S227
			"227"
			
			-->S227
			with
			/
			unsafe
			;
			}
			o-
			>S193
			with
			Cooled
			Down;
			};
			}