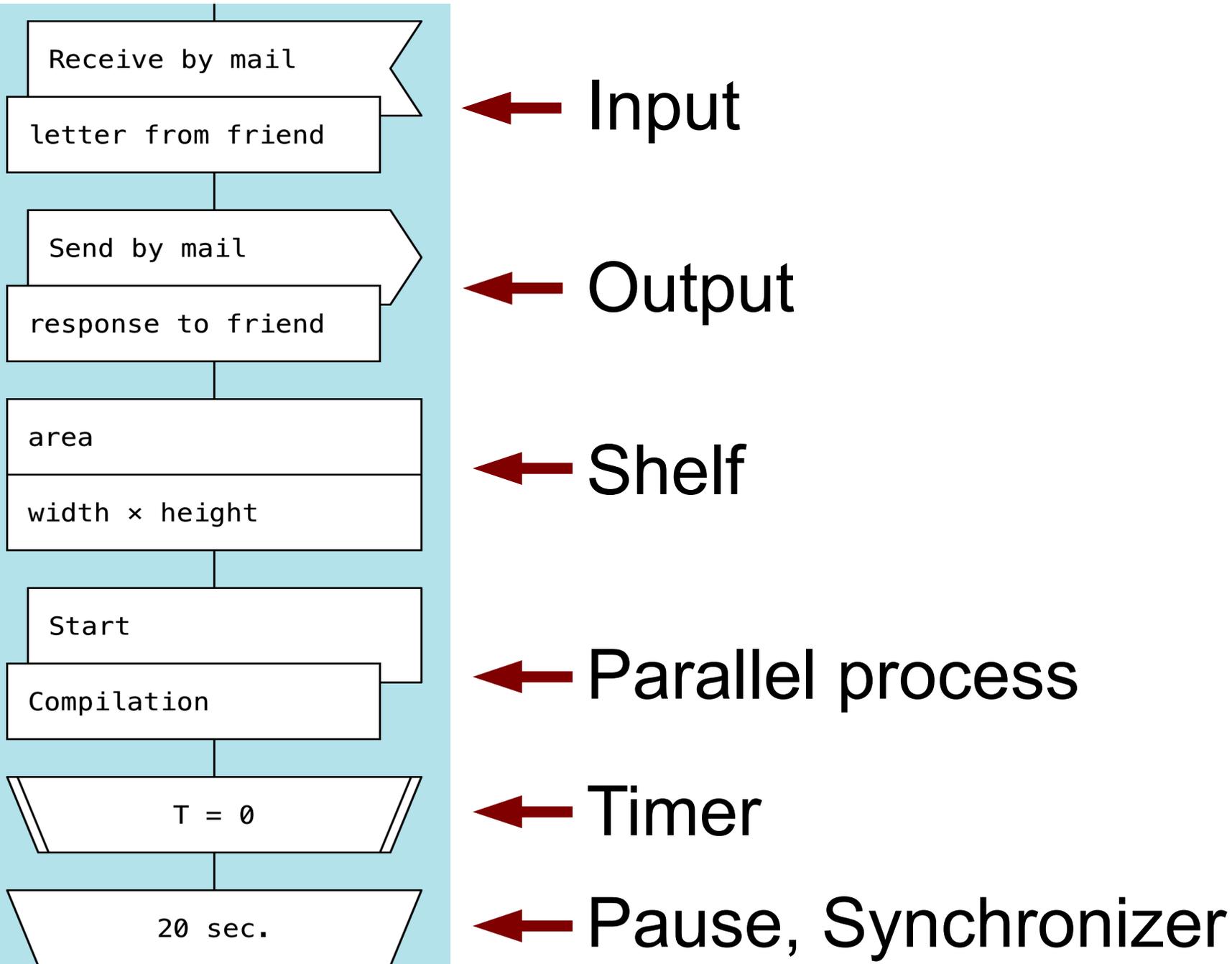


DRAKON Visual Language

Tutorial. Part 2:

Interaction with the outside world,
parallel algorithms and real time

The extended set of DRAKON icons



What can a “Shelf” icon do?

Put a value on the shelf

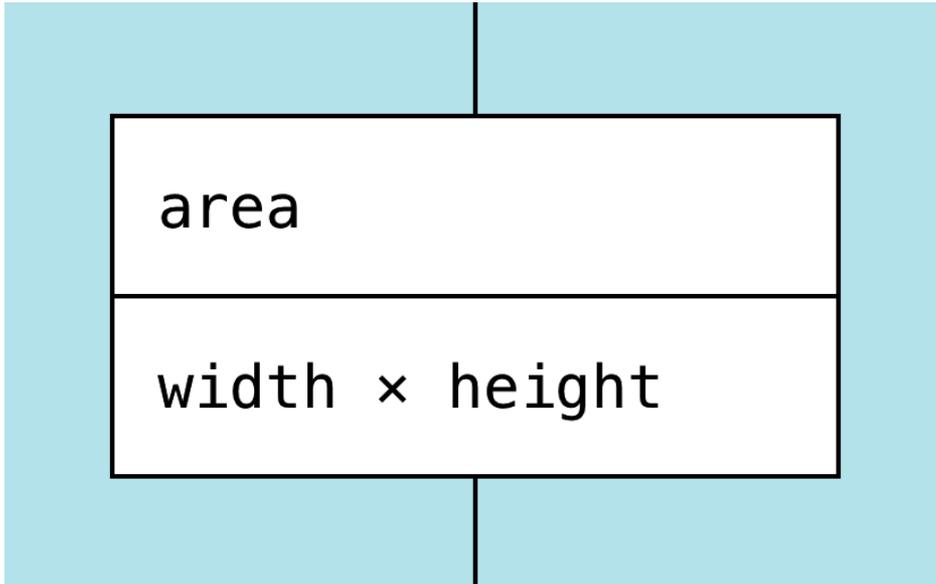
Send a command to the doer

Terminate the algorithm

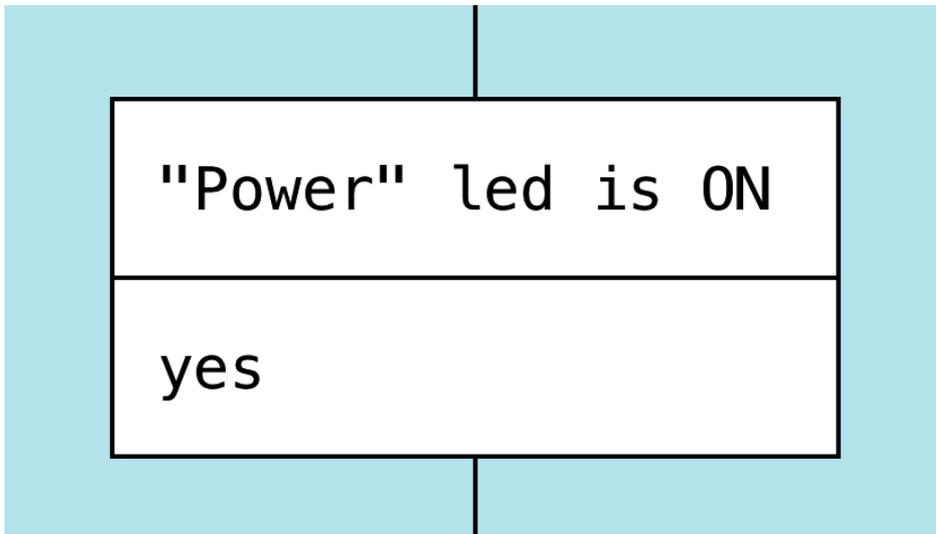
Put a value on the shelf

- Assign a new value to the property
- Put a new value in the variable
- Set or clear a flag

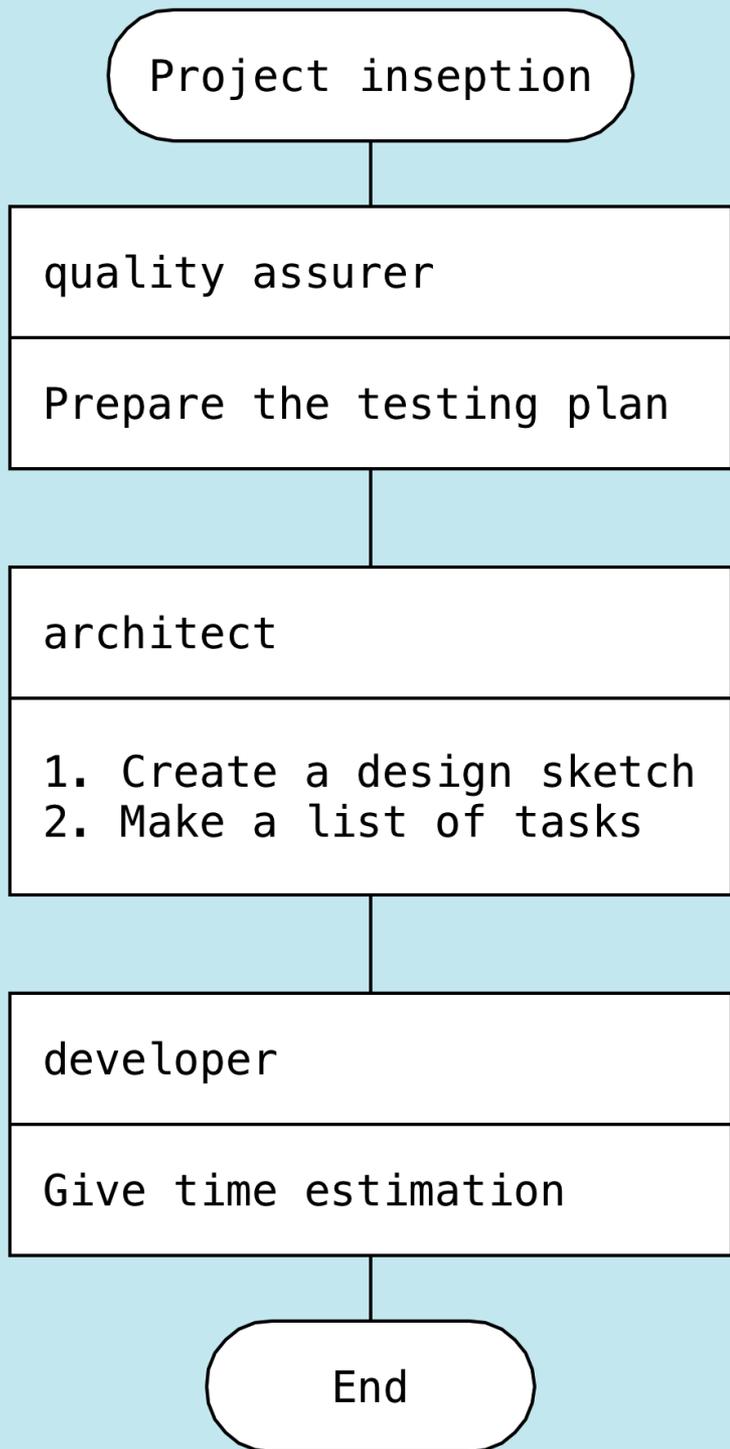
Put a value on the shelf



Place the product of width and height in the “area” variable

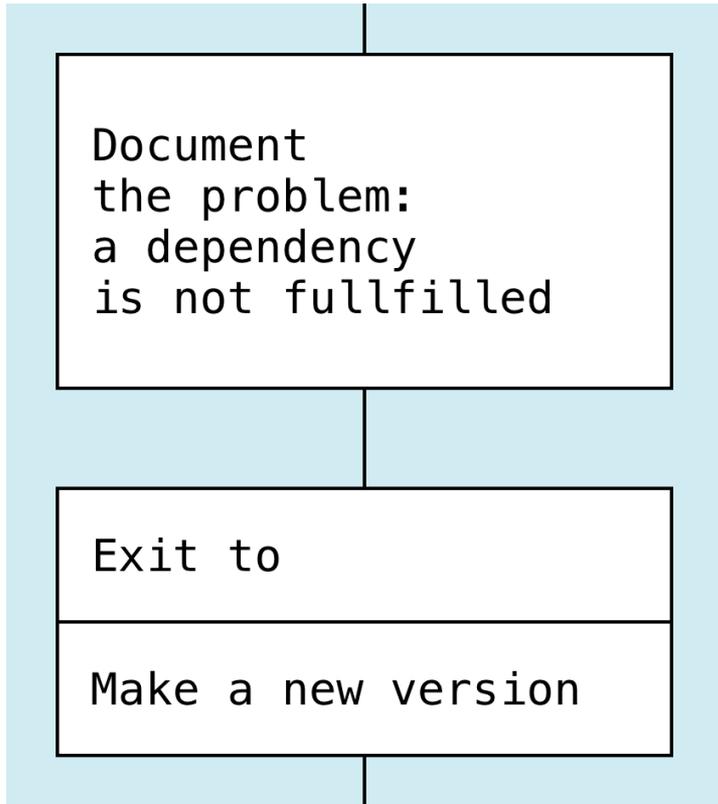


Set the “Power ON” flag



Shelf: send a command to the doer

Shelf: terminate the algorithm



Example:

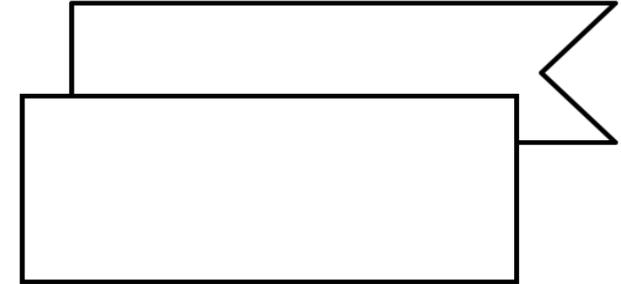
- “Make a new version” algorithm invokes “Development task” algorithm
- “Development task” algorithm invokes “Analyze dependencies” algorithm
- This “Shelf” icon is executed inside “Analyze dependencies” algorithm

What happens next?

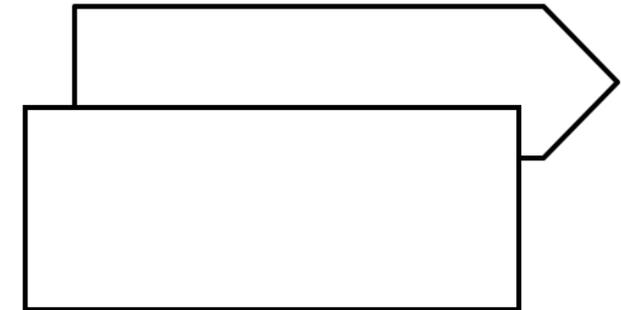
- “Analyze dependencies” terminates
- “Development task” terminates
- The control is returned to “Make a new version”

Interaction with the outside world

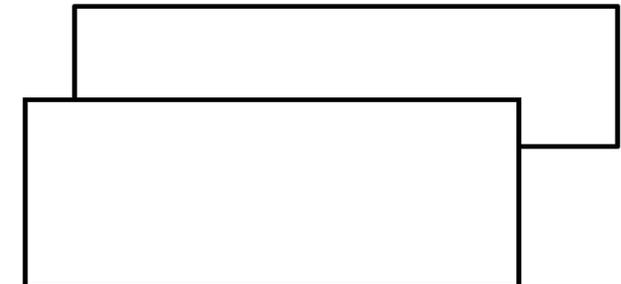
“Input” icon



“Output” icon



“Parallel process” icon



Input

Receive by mail

letter from the friend

Output

Send by mail

response to the friend

Parallel process

Start

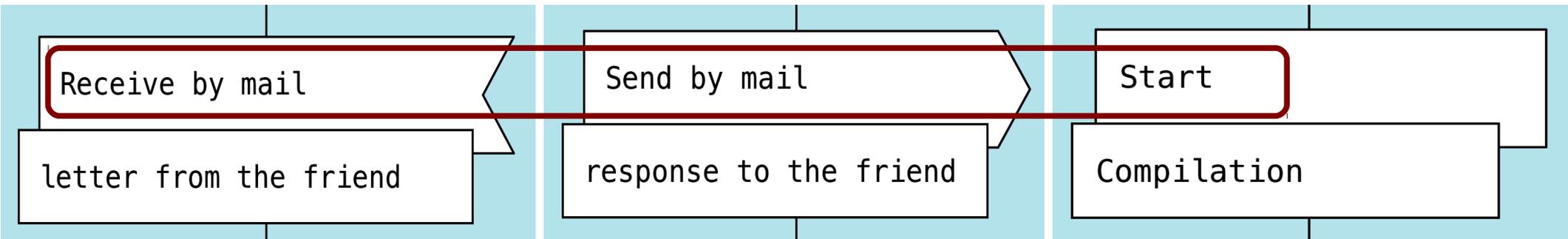
Compilation

The upper floor

Input

Output

Parallel process



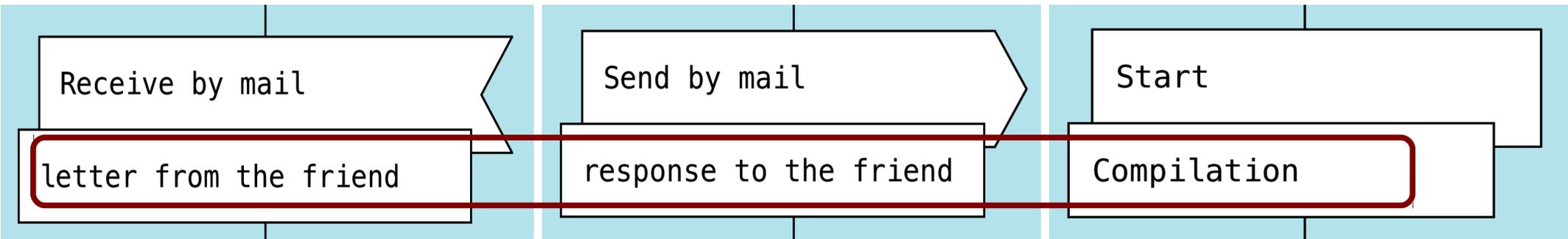
A keyword or a key phrase

The lower floor

Input

Output

Parallel process



The details

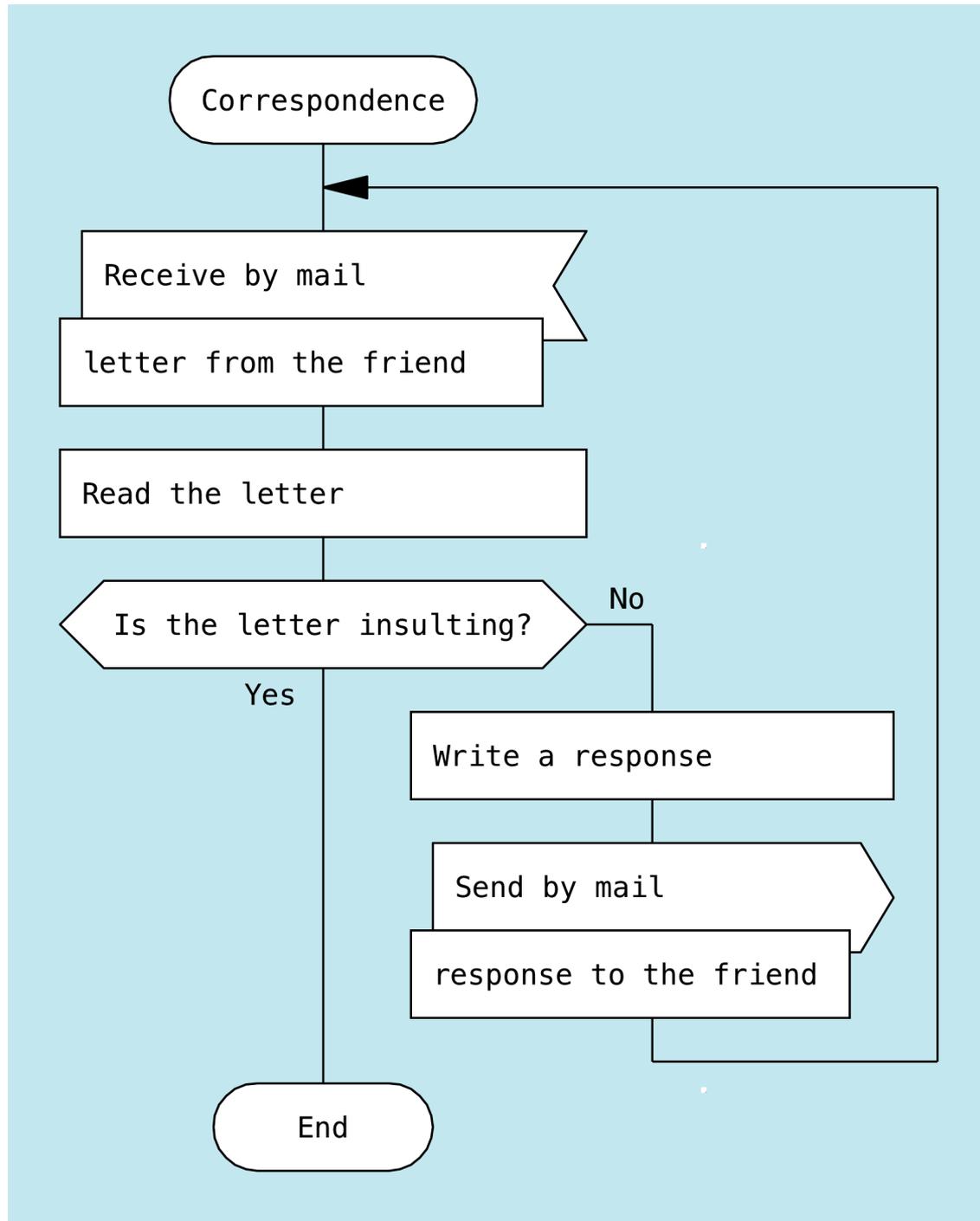
What does “Input” icon do?

- Receives information from external senders
- Gets messages from a parallel process
- Performs data input into the computer:
 - Receives data from the user via keyboard and mouse
 - Reads data from disk
 - Receives data from the network

What does “Output” icon do?

- Sends information to external recipients
- Sends messages to a parallel process
- Performs data output from the computer :
 - Shows data on the screen
 - Writes data to disk
 - Sends data over the network

An example with “Input” and “Output”



What is the difference between “Shelf” and “Output”?

Shelf

Assigns a value to an internal variable

Gives an order to an internal doer

Output

Sends a message to an external process

Sends information to an external recipient

The commands that control parallel processes

Start

Starts a parallel process

Stop

Stops the parallel process forever

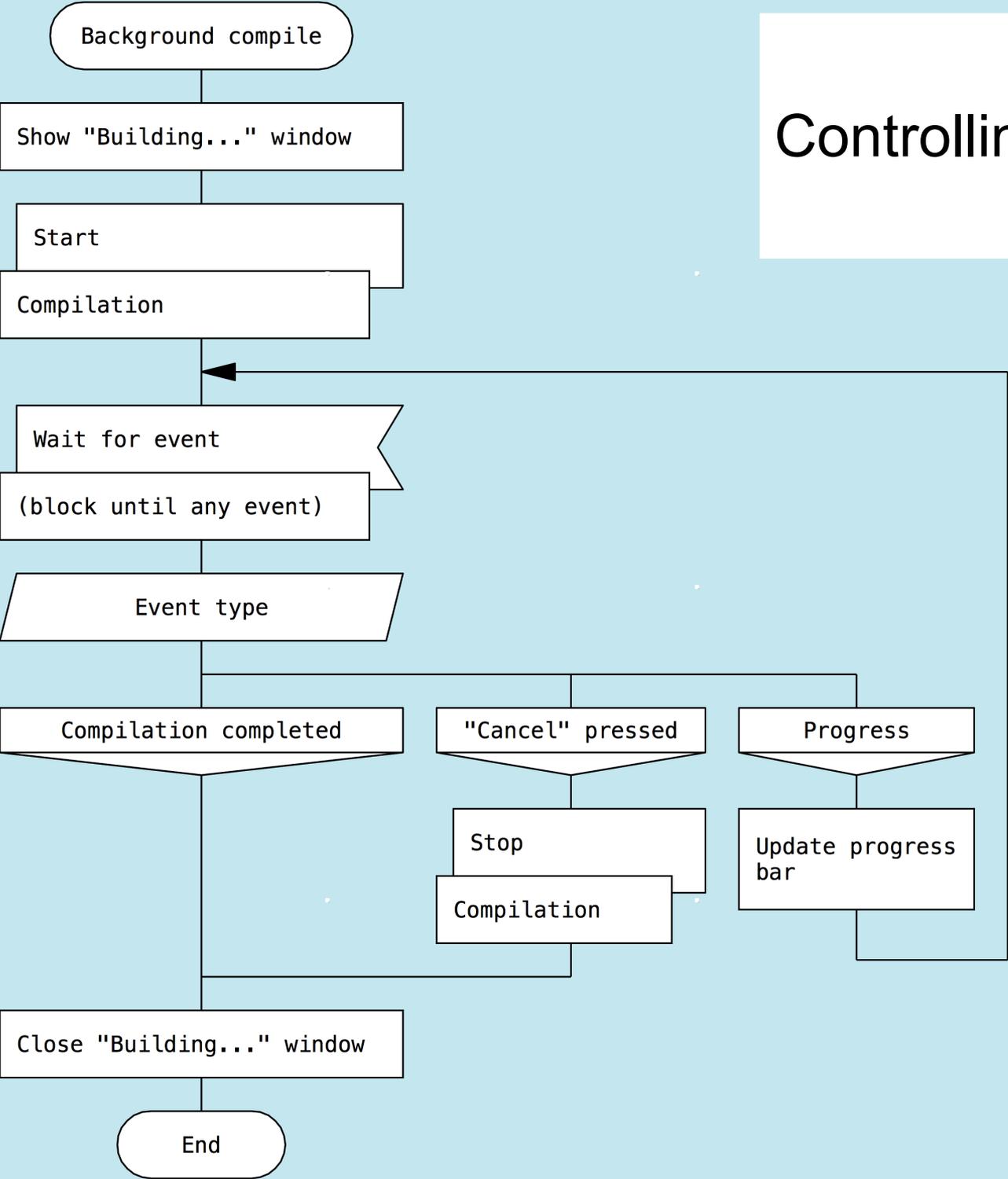
Suspend

Suspends the parallel process

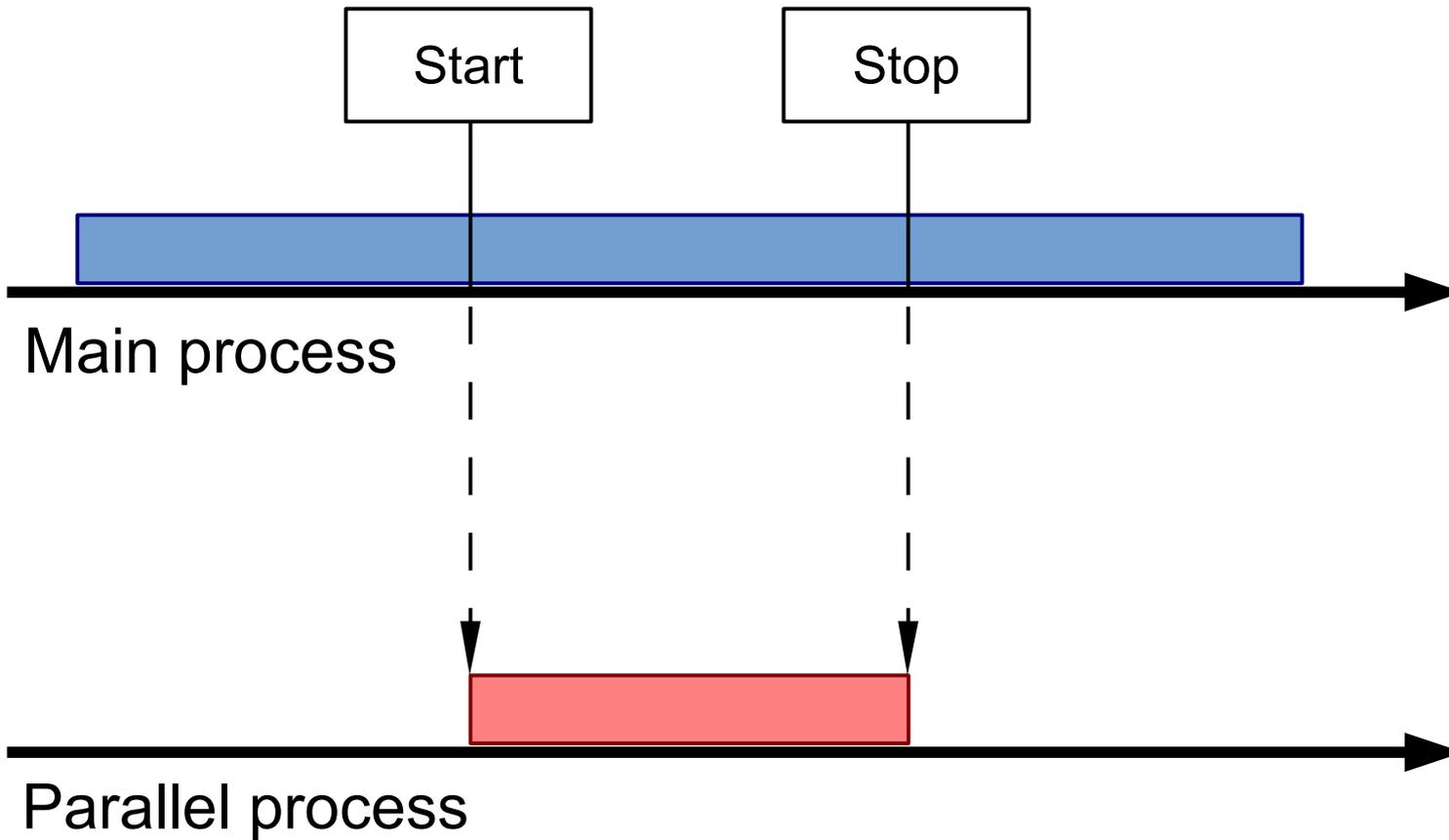
Resume

Resumes the suspended process

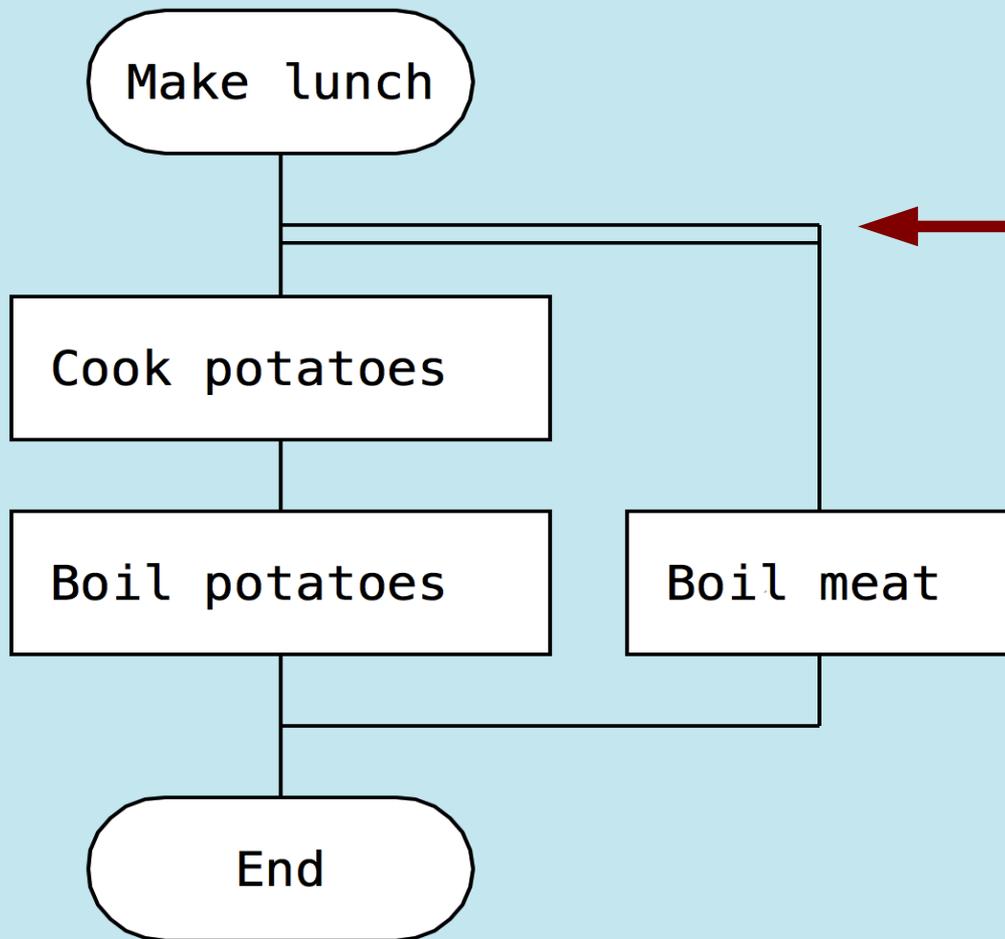
Controlling a parallel process



Commands sent to a parallel process do not suspend the main process



Internal parallel processes

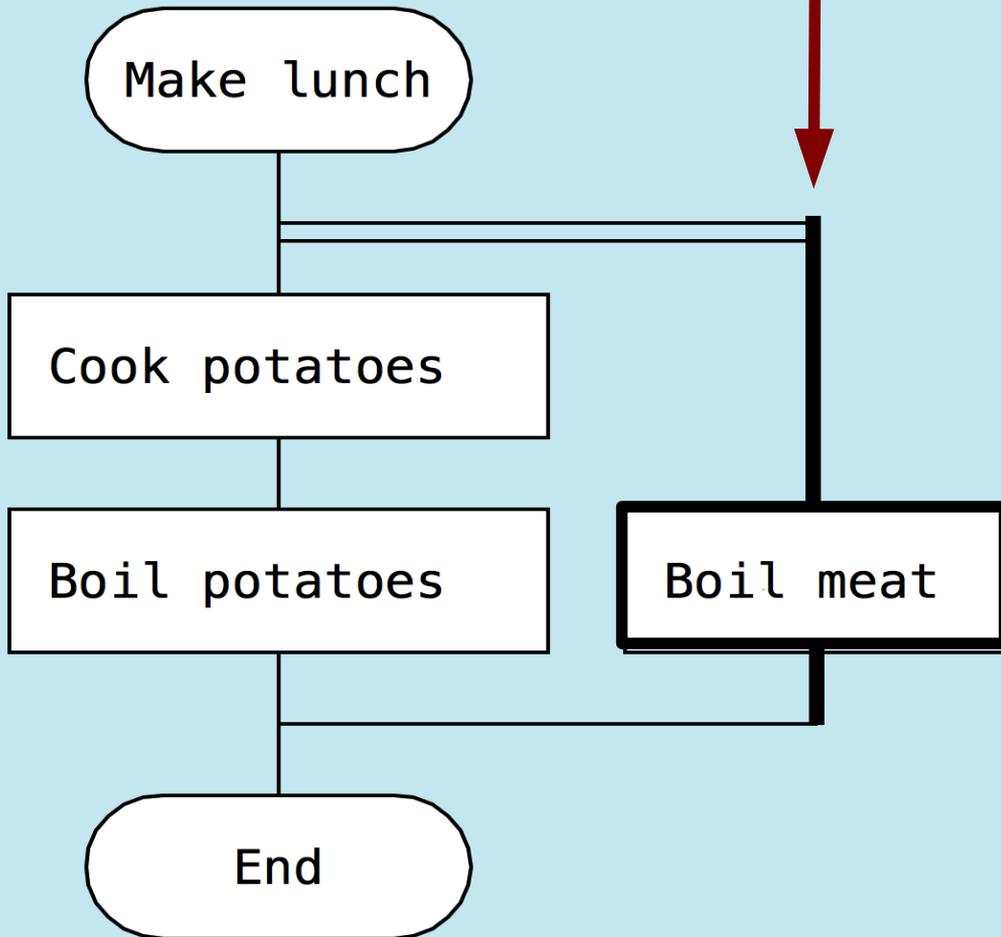


This double horizontal line starts a parallel skewer

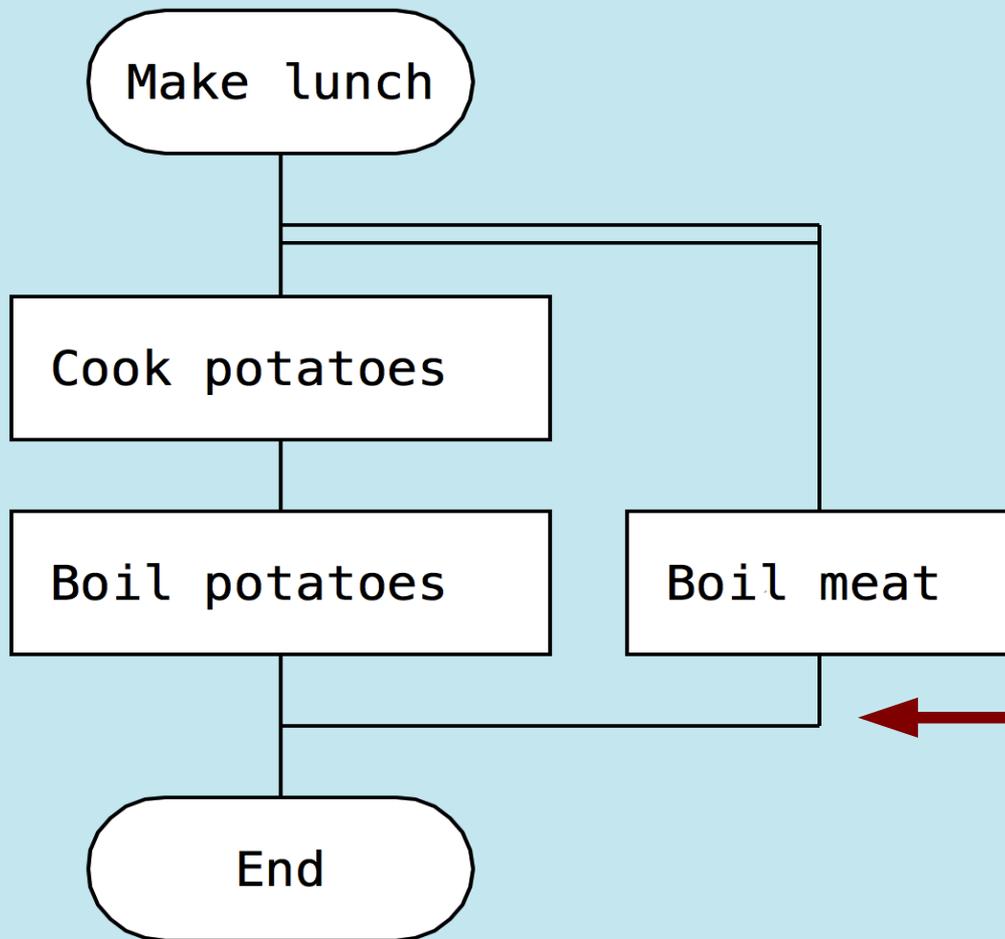


Internal parallel processes

The parallel skewer executes simultaneously with the main skewer

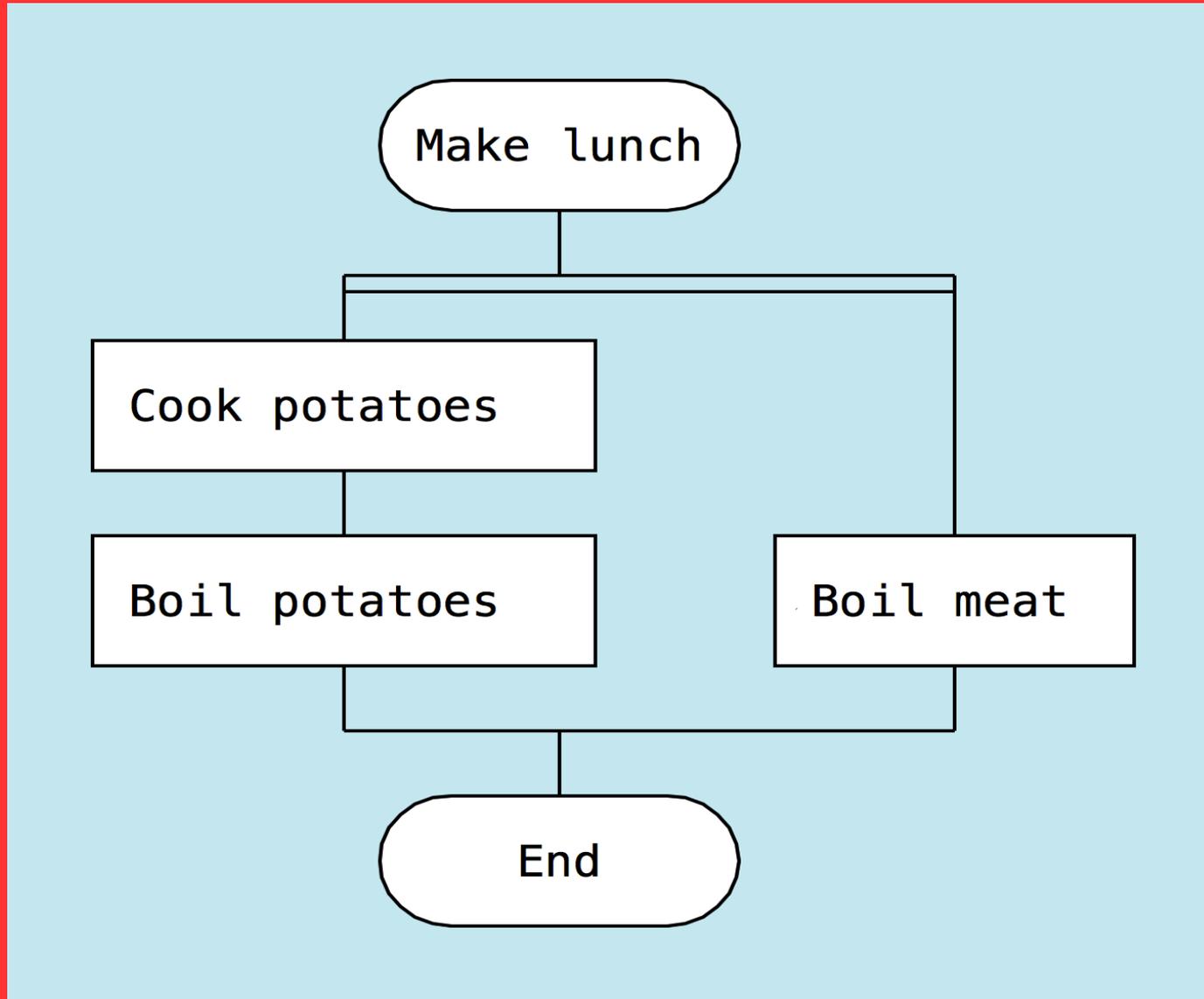


Internal parallel processes



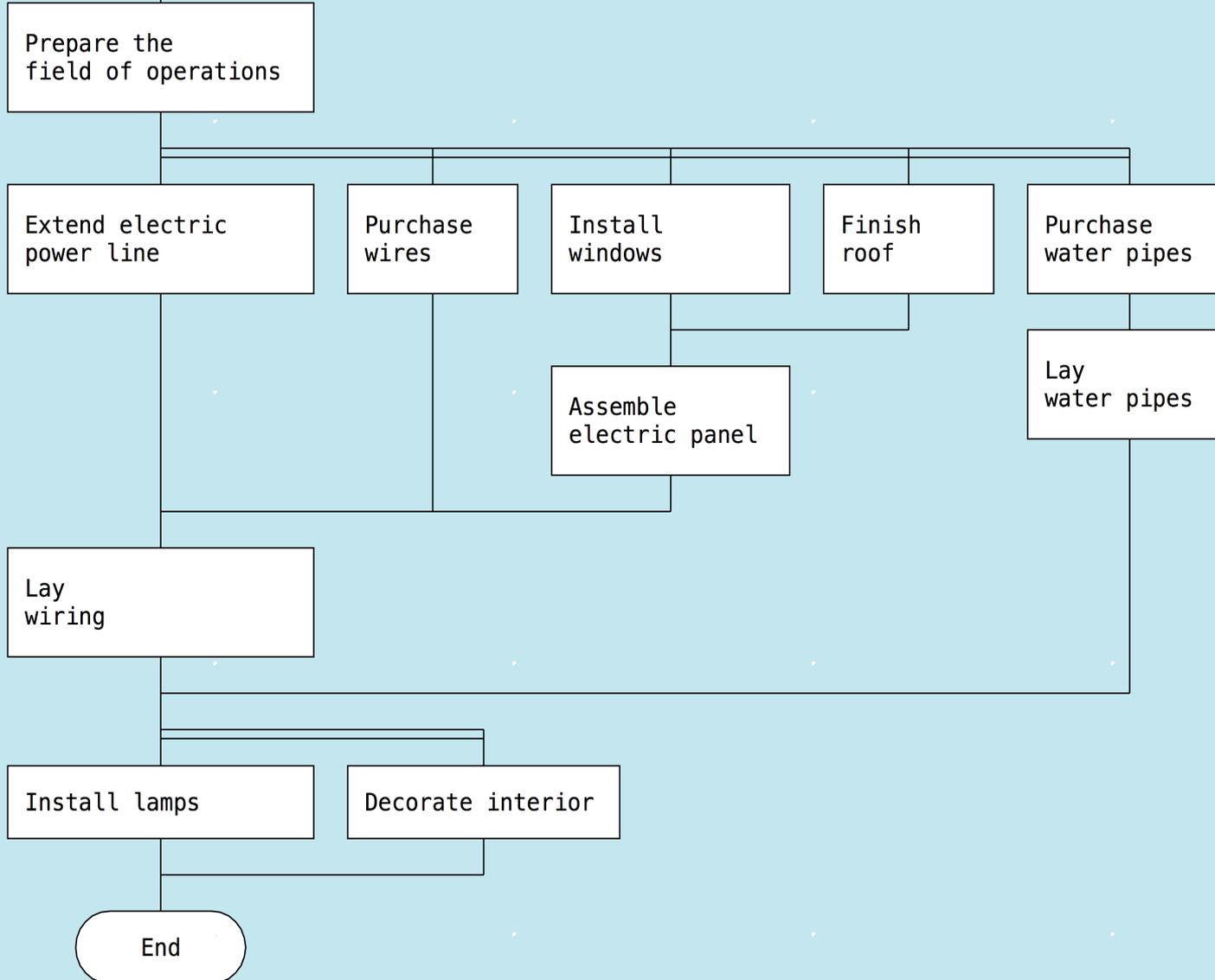
This horizontal line stops the parallel skewer

Wrong! The main skewer must not be broken



A complex parallel algorithm

The final construction phase

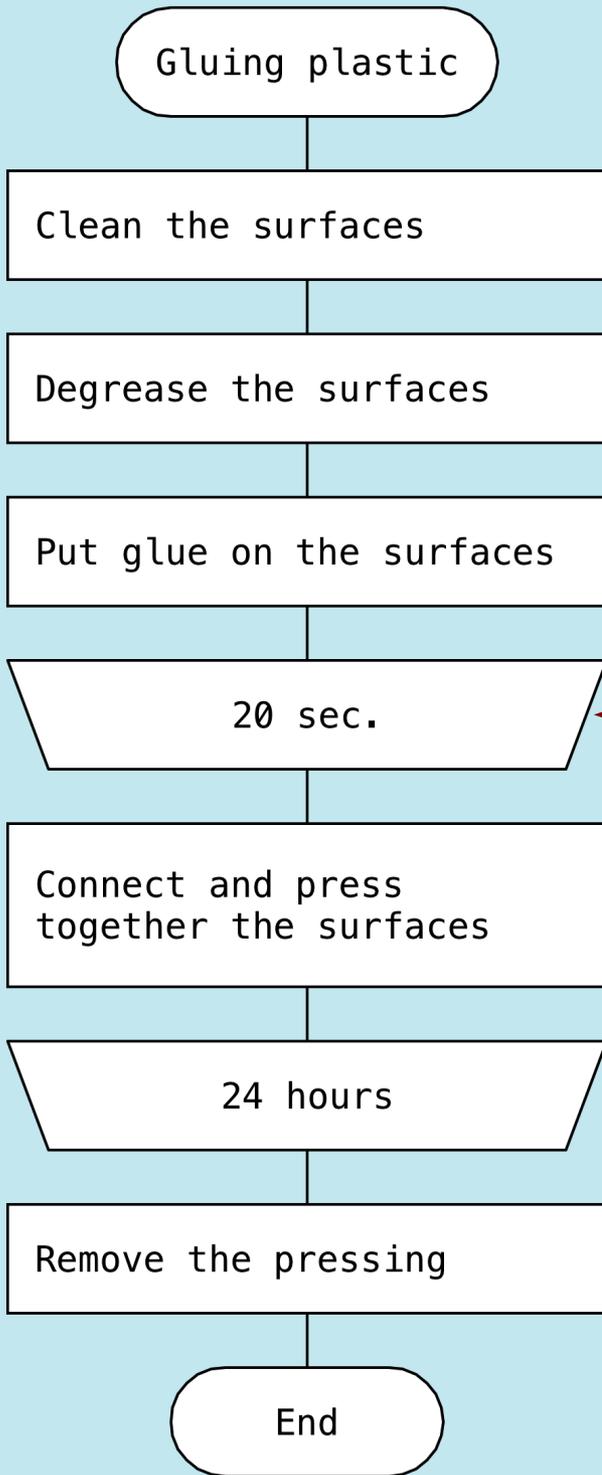


The following actions can be done in any order after the field of operations is prepared:

- Extend electric power line
- Purchase wires
- Install windows
- Finish roof
- Purchase water pipes

The assembling of the electric panel cannot be started before the installing of windows and finishing the roof are complete.

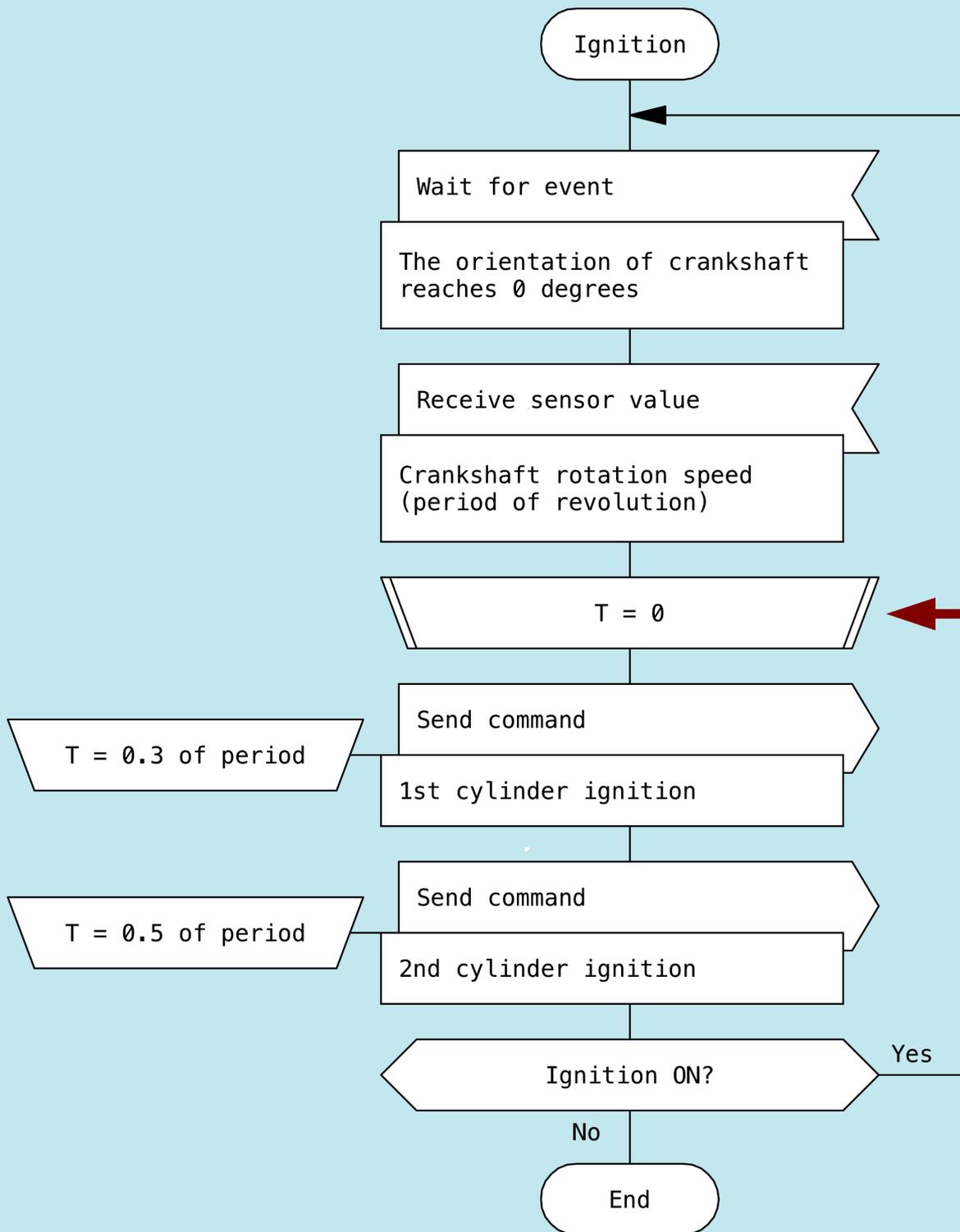
Pause



Adds a delay between two operators



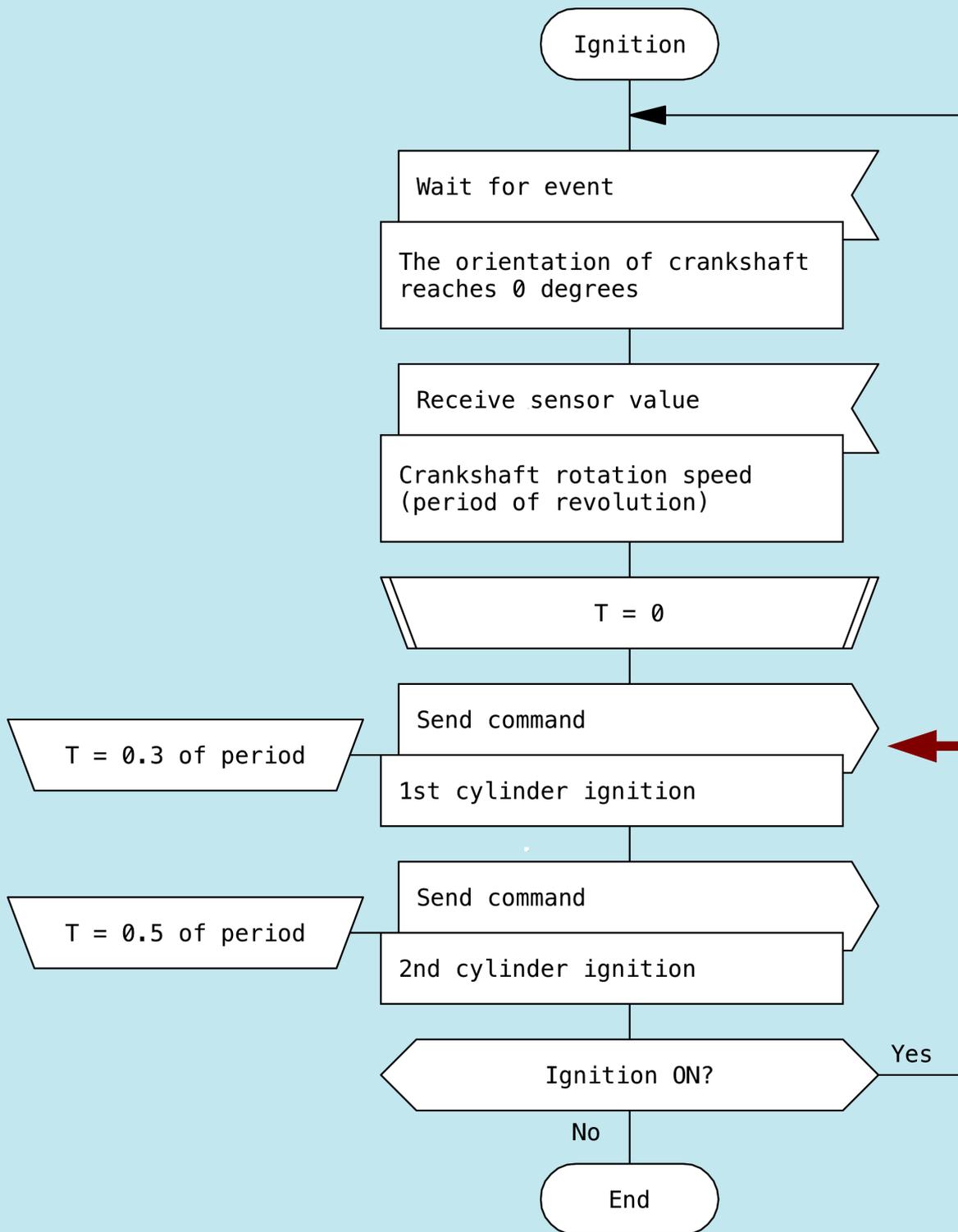
Timer and synchronizer



Timer "T" starts



Timer and synchronizer



This operator executes when the specified time has passed since the start of timer "T".
(0.3 of period of revolution of crankshaft)

What is the difference between “Pause” and “Synchronizer”?

Pause

Runs the next operator
after some time has passed
since the previous operator

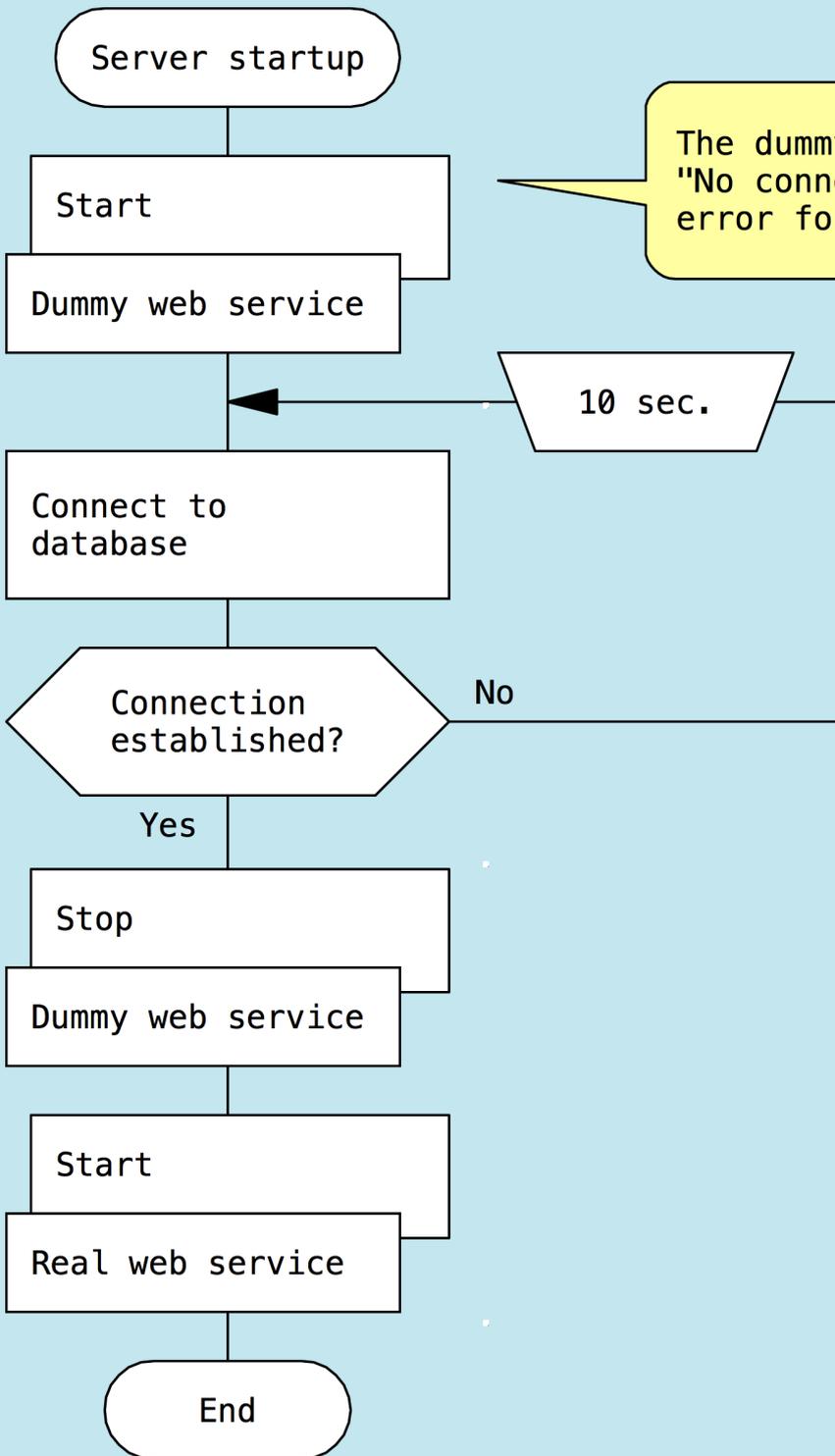
No need for a timer

Synchronizer

Runs the operator after
some time has passed
since the timer start

The timer must be started

“Wait” loop



The dummy web service sends "No connection to database" error for each request.

10 sec.

A "Wait" loop sleeps between iterations

End

Stepan Mitkin

stipan.mitkin@gmail.com

The diagrams on the slides were made with
DRAKON Editor

<http://drakon-editor.sourceforge.net/>

June 2013