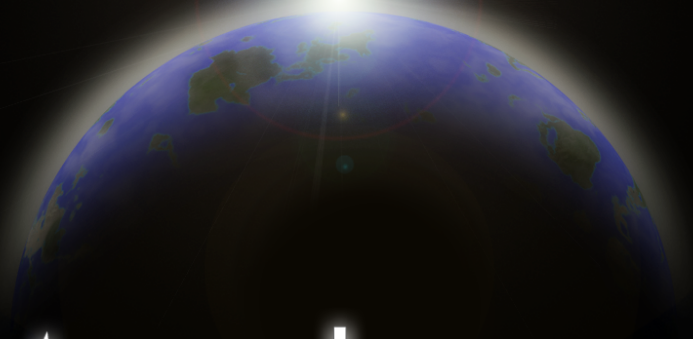
O S M



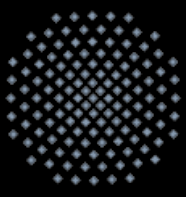
Membrane

Manual

SoPra 2010/11
Gruppe 09

Christian Endres Jakob Jarosch Tobias Kuhn

28. Februar 2011
Version 1



Inhaltsverzeichnis

Kapitel 1
Introduction

1.1. Project

The project OSMembrane develops a graphical user interface for the tool Osmosis for Open Street Maps. Osmosis is a program on the command line and can handle very complex commands. To support the work with Osmosis the project wants to provide a tool which is easy to use.

1.2. Authors and Website

The project is the task of the practical software training and executed by Christian Endres, Jakob Jarosch and Tobias Kuhn. Holger Röder, Igor Podolskiy, Daniel Kulesz and Ivan Bogicevic supported the practice training with technical advice and as customer.
The project OSMembrane can be visited on the website http://www.osmembrane.de/.

1.3. Audience

This document describes a program which is a graphical user interface for another program named Osmosis. To understand all the details the reader of this document needs previous knowledge about Osmosis. To support the understanding there is a list of crucial definitions in the appendix (see section A.1 Definitions).

Kapitel 2

General informations

2.1. Supported OS

OSMembrane is programed in Java, so all operating systems with the current Java JDK installed can execute OSMembrane. But due to the possibilities of mobile devices we can not ensure that OSMembrane is displayed correctly on special devices like mobiles.
To use OSMembrane you need at least a device for textual input like a keyboard and a pointing device like a mouse and a display with a minimal resolution of 1024x768.

2.2. Download

The program can be downloaded for free on the webpage of the project (see section 1.2 Authors and Website).

2.3. Installation

The program is delivered as an executable jar. First of all the java runtime hast to be installed on the client machine. Depending on the system the file has to be marked as executable and can be started via double click or the command *java -jar *filename** (replace *filename* with the name of the file, for example OSMembrane.jar).

Kapitel 3

User Interface

3.1. Welcome-Screen

If you start OSMembrane the usual way, you see the welcome screen. You can select a new pipeline, open a saved one and call the quick start tutorial (from left to right, see picture 3.1)

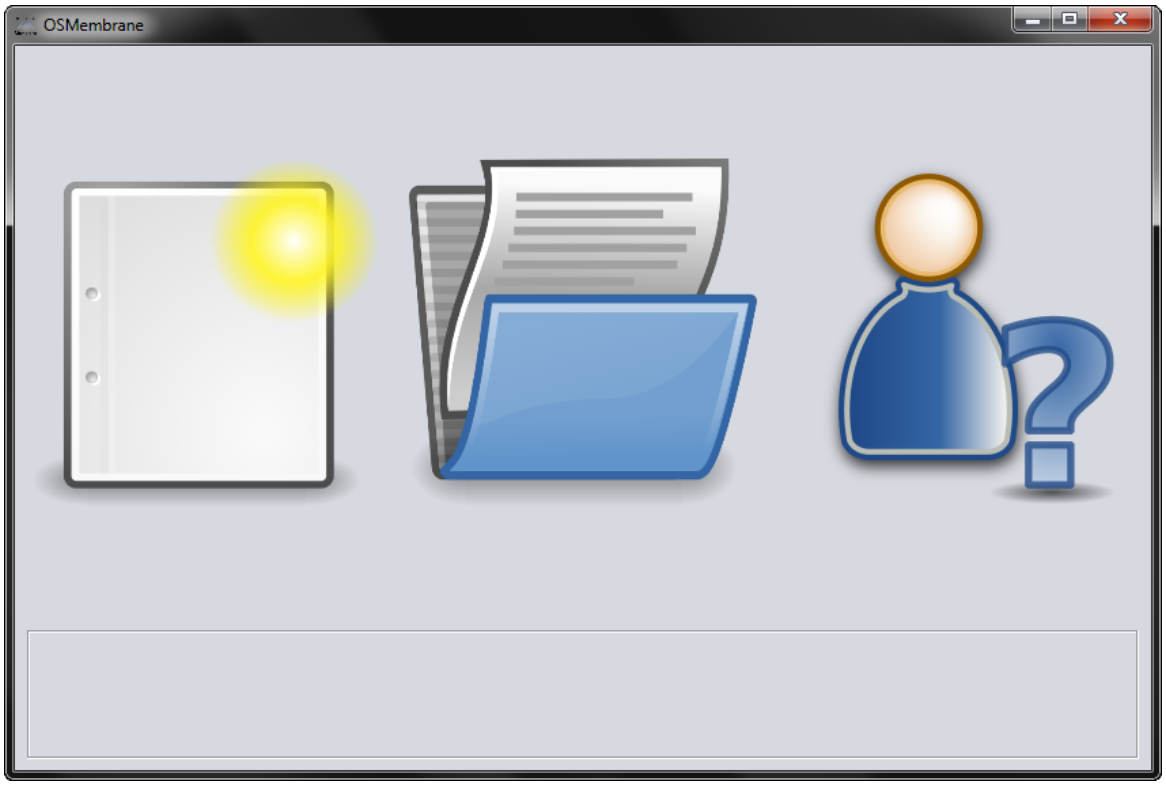


Abbildung 3.1.: the welcome screen

3.2. Quick Start Tutorial

If you are starting OSMembrane for the first time, you should open the quick start tutorial and read it. You can open it in the welcome-screen or in the menu bar (see 3.4.5 About)

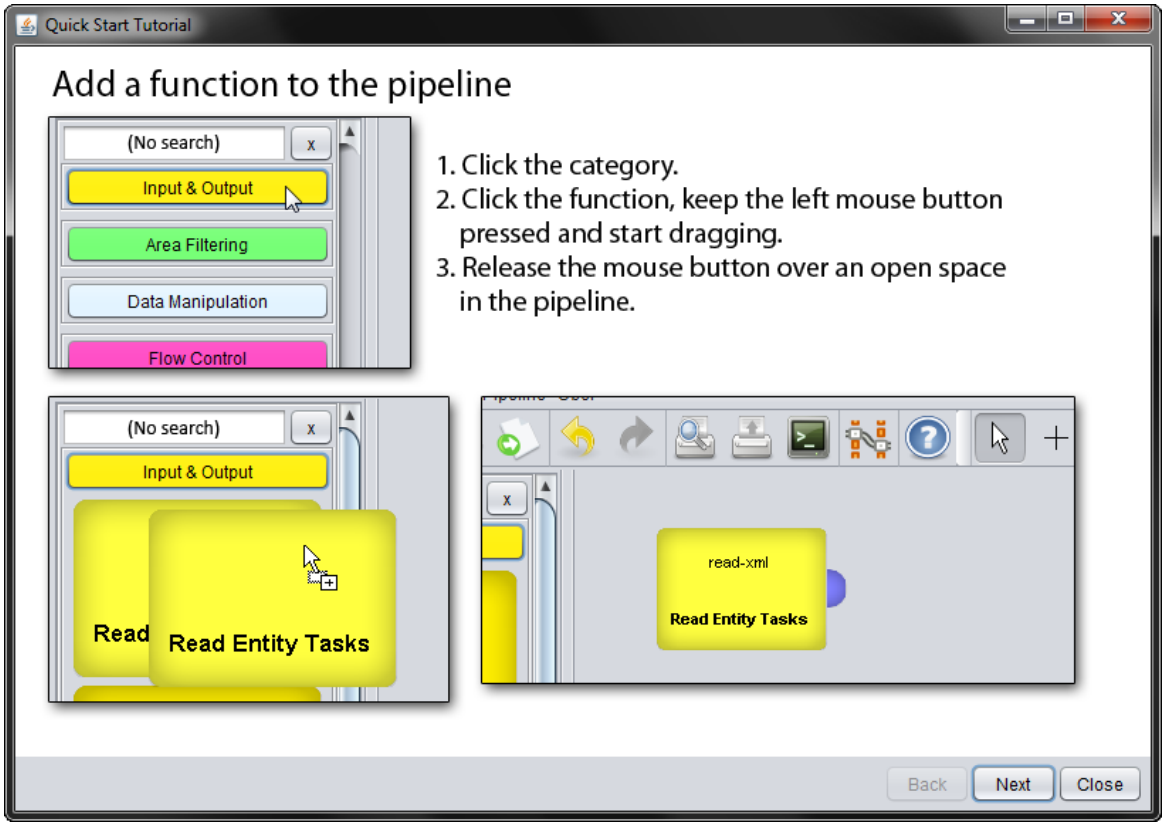


Abbildung 3.2.: the quick start tutorial

3.3. Main Window

Select a new pipeline in the welcome-screen and you see the main window. The main window consists of 5 parts marked with red numbers in the picture.

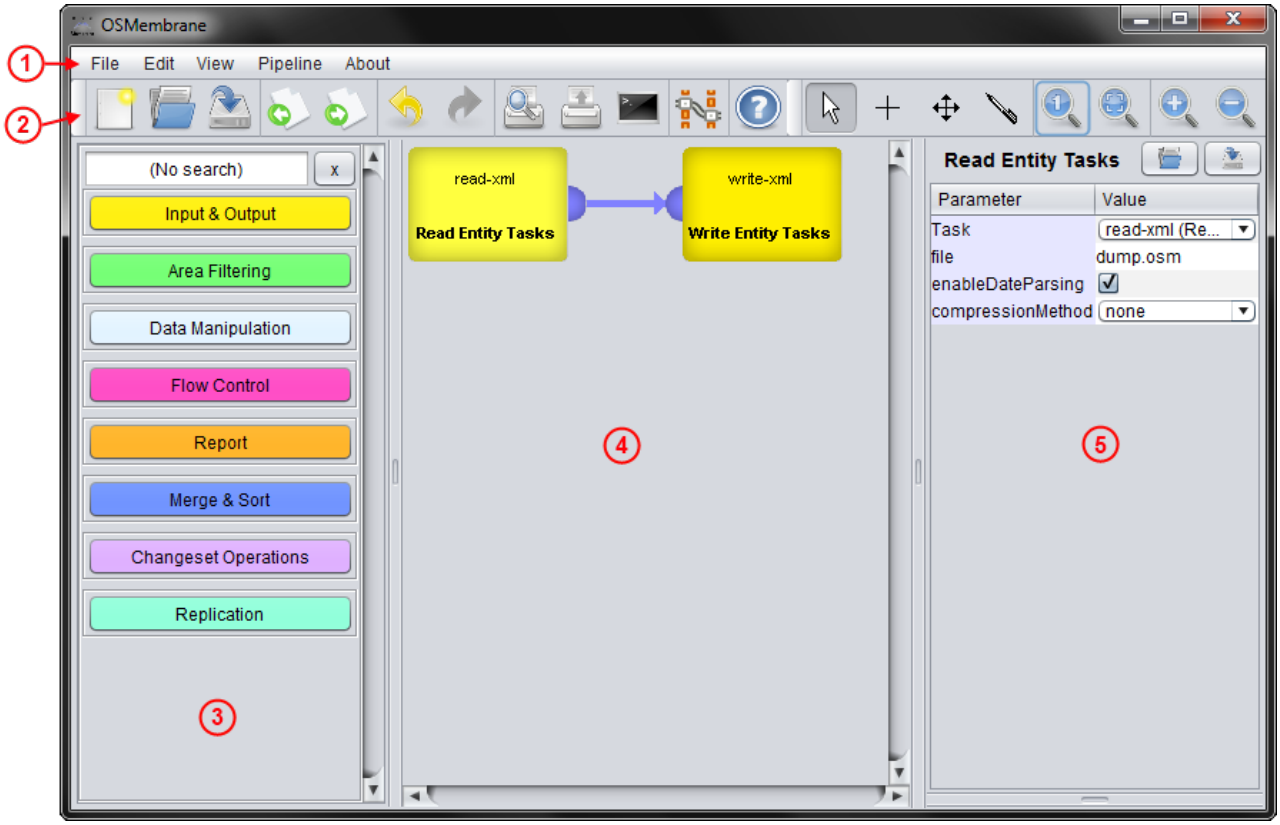


Abbildung 3.3.: main window

1. The first part is the menu bar. With the menu bar you can access all the functions provided through the program.

2. The second is the tool bar. In it are the tools the user uses mostly.

3. The function library is the third one. You can find the functions representing the tasks of Osmosis there.

4. The fourth part is the pipeline view. The pipeline can be seen and edited within this view.

5. Last but not least is the fifth part. The function inspector displays the options of a selected function.

3.4. Menu Bar

3.4.1. File

Here you can manage your pipelines: Create a new one, open a saved one or save the current (see 4.2 Load & Save). You can import and export pipelines (see 4.3 Import & Export), change the general settings (see 4.1 Change Settings) and quit the program.

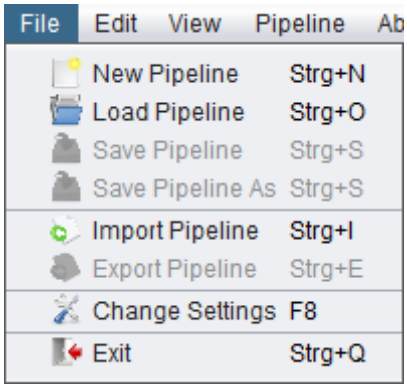


Abbildung 3.4.: menu bar entries file

3.4.2. Edit

If you want to edit the current pipeline you can undo and redo actions (see 4.4.6 Undo & Redo), duplicate a selected function (see 4.4.7 Duplicate Function) or delete it.

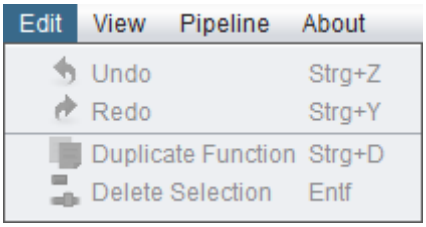


Abbildung 3.5.: menu bar entries edit

3.4.3. View

To control the pipeline view you can zoom in and out, reset the view to the usual size or zoom automaticly to show the whole pipeline.

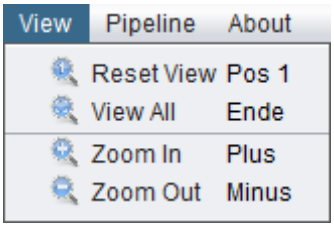


Abbildung 3.6.: menu bar entries view

3.4.4. Pipeline

In this menu you can generate a preview of your current pipeline, generate the command line of Osmosis, execute the current pipeline with Osmosis and rearrange all the functions for a better overview.

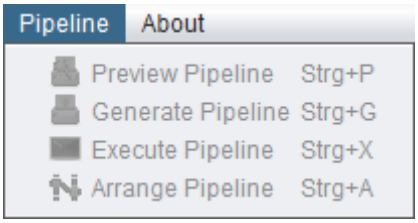


Abbildung 3.7.: menu bar entries pipeline

3.4.5. About

In this menu you can access the help function and read informations about OSMembrane.

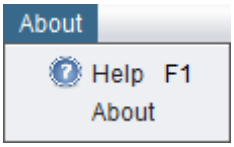


Abbildung 3.8.: menu bar entries about

3.5. Tool Bar

In the toolbar you can directly select functions of OSMembrane.
From left to right:

- create new pipeline, open a saved one, save the current pipeline (see 4.2 Load & Save)
- import an exported or export the current pipeline (see 4.3 Import & Export)

- undo or redo actions
- show the preview of the current pipeline, generate the command line out of it, call Osmosis and execute the current pipeline
- rearrange the current pipeline
- access the help function

Abbildung 3.9.: first part of the toolbar

From left to right:

- tools for editing the pipeline: magic tool with all functionality, selection tool, move tool and connection tool
- reset the view to the initial position, show all of the pipeline
- zoom in and zoom out

Abbildung 3.10.: second part of the toolbar

3.6. Function Library

The library contains categories of functions like *Input & Output*. You can click on one of the categories to expand it and select one of the functions in it (picture 3.11). If you know which

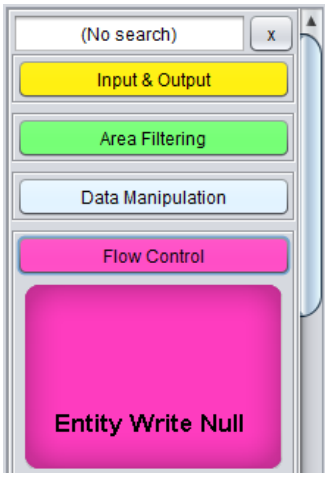


Abbildung 3.11.: one opened category in the library

function you want to select, you can type the name in the textbox in the top of the library. All functions containing the text in their names and descriptions are displayed (picture 3.12).

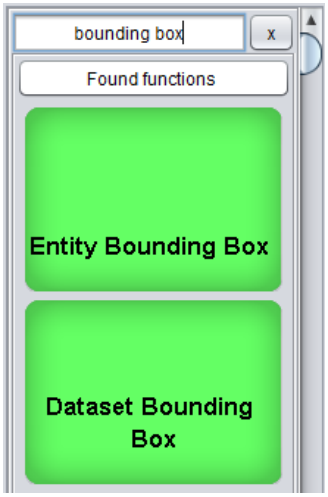


Abbildung 3.12.: search the library

3.7. Pipeline View

The pipeline view shows you the pipeline you are editing. A function of a pipeline is a coloured square. The colour of the rectangle is the same as the category you can find the function in. Each function has a semi circle as symbol of a connector. And each connector is coloured to signal the type. An arrow is an indicator for a connection between two connectors and the corresponding functions.

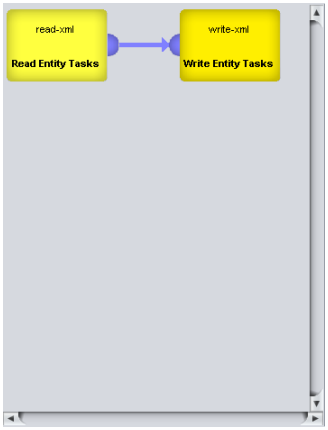


Abbildung 3.13.: pipeline view

3.8. Function Inspector

The function inspector shows you the parameters of a selected function and a description of an element if you are pointing at it with your mouse. In the right upper corner are two buttons for loading and saving this function. If you have a specific function you want to reuse, you can save it for the future.

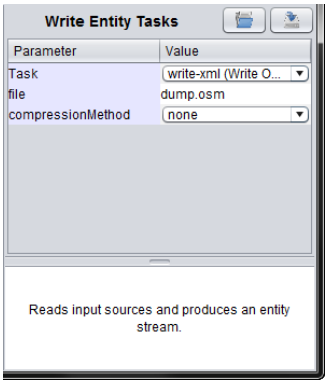


Abbildung 3.14.: pipeline view

Kapitel 4

Functions of OSMembrane

4.1. Change Settings

First of all you can fit OSMembrane to your personal pleasure with editing the settings. To do this click in the menu bar on *File* in the menu bar and then on *Change Settings*. Here you

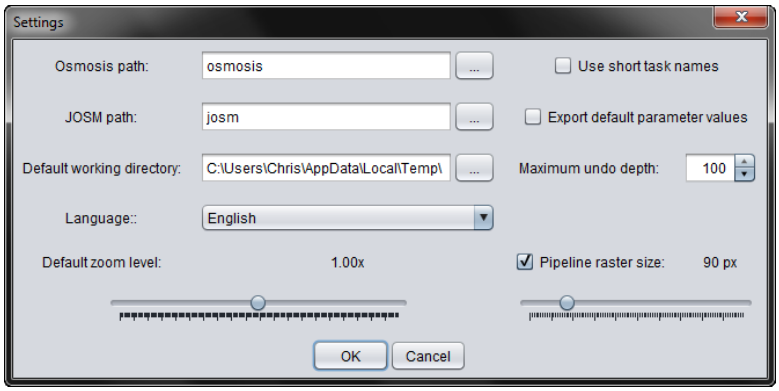


Abbildung 4.1.: settings dialog

can change the paths to Osmosis, JOSM and your default working directory.

- Osmosis you have to link to the *osmosis.sh* or *osmosis.bat* in the bin folder of the installation folder of Osmosis
- JOSM you have to link to the *josm-tested.jar*

Then you can change the language for OSMembrane. You can also define if you want to support short task names and export default values of parameters. The maximum undo depth determines how many actions you can undo and of course redo. Changes which date back farther than this amount are deleted. The default zoom level determines the size of the symbols in the pipeline view. The greater the number the bigger the symbols. If you activate the option *Pipeline raster size* then the functions in the pipeline view will be arranged on a raster with the cell size you specify.

4.2. Load & Save

To load or save a pipeline you can either click on the buttons in the toolbar or click in the menu bar firstly on *file* and then on the entry you need. If there is an unsaved pipeline the program asks you if you want to save before loading or discard the changes. Then a dialog asks you where the location is and how the name of the file is.
The suffix of a file containing a saved pipeline is *.osmembrane*.

4.3. Import & Export

Importing and exporting pipelines is very similar to loading and saving. The only difference is the amount of supported types of the file and due to this the suffix: *.osmembrane* as usual, *.bat* and *.cmd* for bash and *.sh* for shell.
The bash and shell files can be executed.

4.4. Editing the Pipeline

4.4.1. Using the tools

As described in 3.5 Tool Bar you can use the magic tool for everything. If you want to do only one special action you can use those tools:

- the magic tool - on functions and connections like the selection tool, on empty space like the view tool and on connectors like the connection tool
- the selection tool - lets you select functions and connections between functions
- the view tool - lets you move the view by clicking and dragging as well as zooming by dragging while the Control key is pressed
- the connection tool - lets you add connections by clicking on a source function and then on a target function

4.4.2. Dealing with Functions

To place a function in the pipeline view you can drag and drop it into the pipeline view. You have to be careful to put it not into another view because this results in a warning.
If you select a function you can edit the parameters in the function inspector.

4.4.3. Connecting Functions

You can connect functions by clicking onto the semi circles of a function and then draw an arrow to the one you want to connect to. For more details read A.1.3 In- & Outpipe. If you want to connect to a connector with more than one type of connectors OSMembrane chooses the right one.

4.4.4. Selecting areas

There is a feature for the bounding boxes to select a specific area. If you click on *Entity Bounding Box* for example you can choose the area by drawing a bounding box on the map (see picture 4.2). To select an area by polygons you can choose the *Entity Bounding Polygon* and select a text file containing the polygon (see picture 4.3).

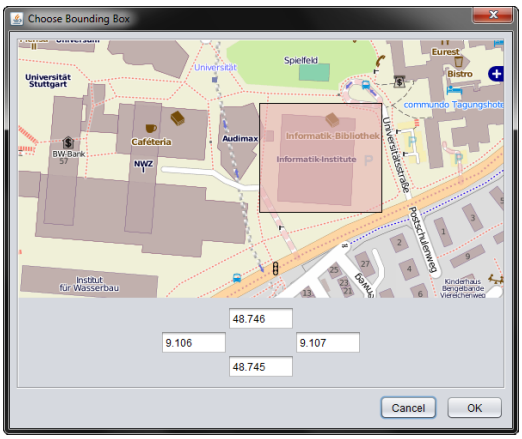


Abbildung 4.2.: Selecting the area of the computer science building of the University of Stuttgart by bounding box

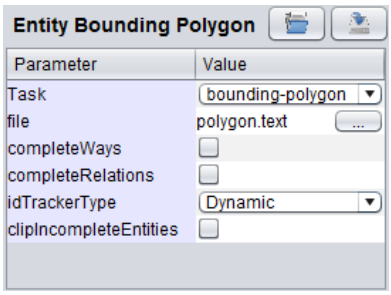


Abbildung 4.3.: Parameter for a file with polygon coordinates

4.4.5. List of Keys

Some tasks can accept certain lists of keys to define a special behavior. One of these tasks is *Node Filters*. As you can see in picture 4.4 you can click on the button to the right of the text *keyList* to call a assistent for the entries in the list of this specific function. To add a certain

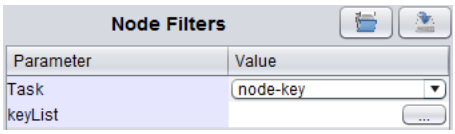


Abbildung 4.4.: Function Node Filtesr

key to the list you can type the name of the key into the text field. If the name is known there is an auto complete to help you. You can also add unknown keys or simply select by dropping down the box and click on one. To add a key you have to click on the *add* button. If you have created a extensive list you can save it for the future aswell.

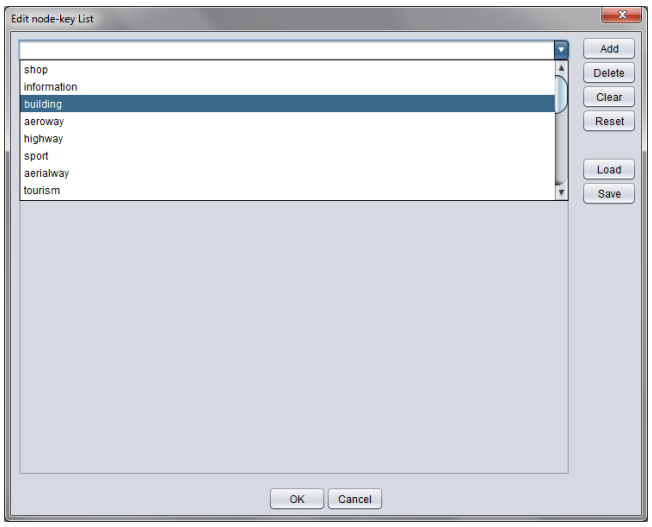


Abbildung 4.5.: Assisstent to edit a list of keys

4.4.6. Undo & Redo

If you edit a pipeline and you want to return to a state some time before you can undo the state some time before by clicking in the menu bar on *Edit* and then on *Undo* or by clicking on the yellow arrow in the toolbar. If you undid something and did not change the pipeline since then you can redo it by clicking on *Edit* in the menubar and then on *Redo* or on the green arrow in the toolbar.
How many undo and steps are possible can be set in the settings (see 4.1 Change Settings).

4.4.7. Duplicate Function

To duplicate a selected function you can click on *Edit* and *Duplicate a Function* in the menu bar.
By duplicating a function you duplicate all changed parameters done for the function as well.

4.5. Using the created pipeline

4.5.1. Access a preview

If you want to see what the created pipeline looks like you can use the preview. It executes the pipeline with Osmosis and calls JOSM with the created *.osm file*. JOSM will show you what you just created (like in picture 4.6.

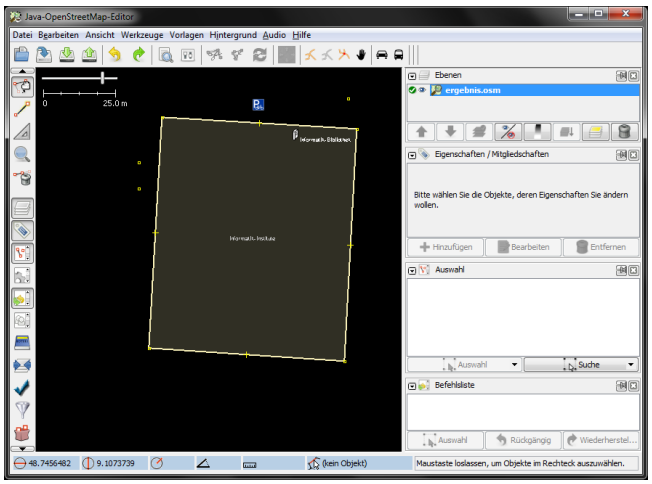


Abbildung 4.6.: JOSM shows the computer science building of the University of Stuttgart

4.5.2. Generate a command line

If you want to see the command line for your pipeline, you can let OSMembrane do it. The file JOSM shows in the picture 4.6 is the output of the commandline in picture 4.7.

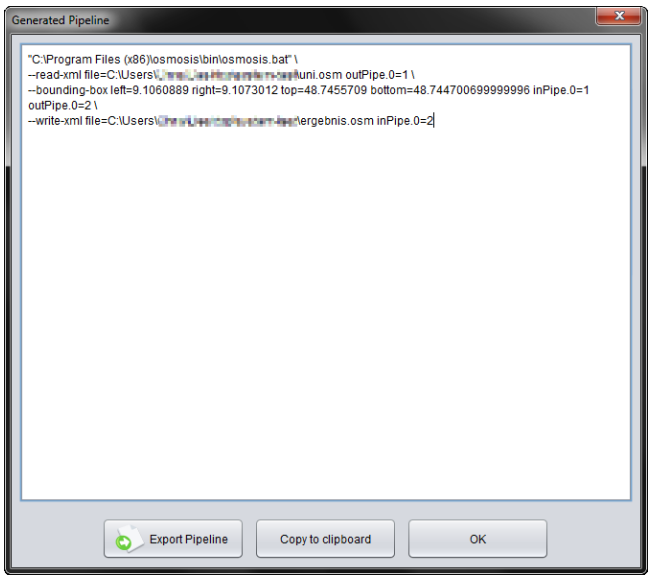


Abbildung 4.7.: Simple Pipeline as a command line

4.5.3. Run Osmosis with the generated command line

You can let Osmosis execute your pipeline without showing you the commandline and any preview. Then you get the ouput of Osmosis to the command line directly in OSMembrane. In picture 4.8 you see the output of Osmosis for the same example like in the two pictures before.

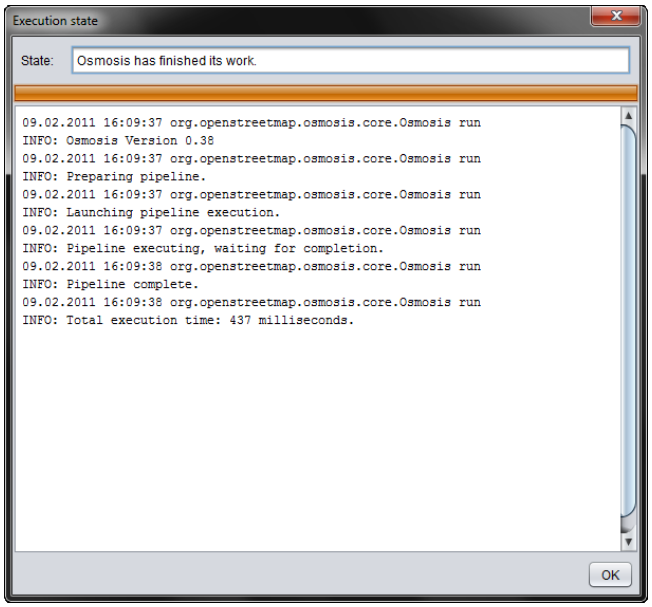


Abbildung 4.8.: Output of Osmosis for the computer science building

Anhang A

Appendix

A.1. Definitions

In this section we want to define the differences between Osmosis and OSMembrane. Both use the symbol of a pipeline for the information flow during the processing of the data. Here are some of the abstracts of Osmosis and how they are implemented in OSMembrane.

A.1.1. Task

A task of Osmosis is called a function in OSMembrane. This function is like a container and in it lies the task. The advantage of this are the following points:

- you can always change the task to another similiar task without loosing common parameters and without deleting the function and her connections
- you do not have to set tee tasks (see A.1.2 Tee Task)
- you do not have to handle all the in- and outpipes (see A.1.3 In- & Outpipe)

A.1.2. Tee Task

OSMembrane takes care about tee tasks. If you need one, you get one - but without asking for it. You always can connect an outgoing connector to several ingoing connectors of the same type (for connector see A.1.3 In- & Outpipe). OSMembrane inserts in the function a tee tasks and connects it with the outgoing connector. You will not see it, but it works (see picture A.1).

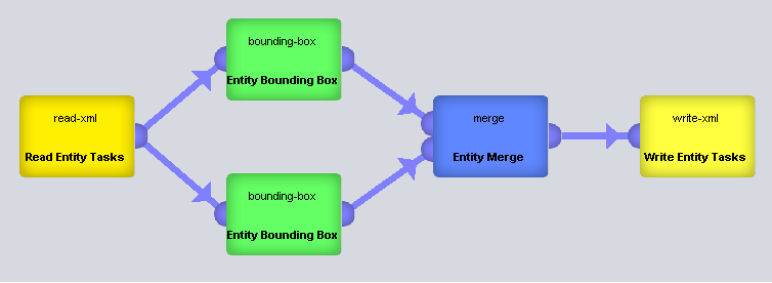


Abbildung A.1.: a tee task for the two Entity Bounding Boxes

A.1.3. In- & Outpipe

In Osmosis the information flow is symbolized as pipelines. If an information leaves a task, it does through an outpipe. Otherwise it enters through an inpipe. In OSMembrane there are connectors with different colours - depending on which type the connector is. You can connect only connectors of the same colour. Connectors for inpipes are on the left, connectors for the outpipes are on the right side of a function. If you want to connect an outgoing connector to several ingoing connectors, just do it (see A.1.2 Tee Task).

Anhang B

Version History

- **Version 0.5** 10.02.2011: edited version
- **Version 0.4** 09.02.2011: first complete manual without appendix
- **Version 0.3** 03.02.2011: GUI + part of the section Functions
- **Version 0.2** 03.02.2011: GUI
- **Version 0.1** 02.02.2011: initial version