Espresso: Running a Model

Project Link: https://www.pyswmm.org

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Files: `Espresso.py`, `Example1.inp`

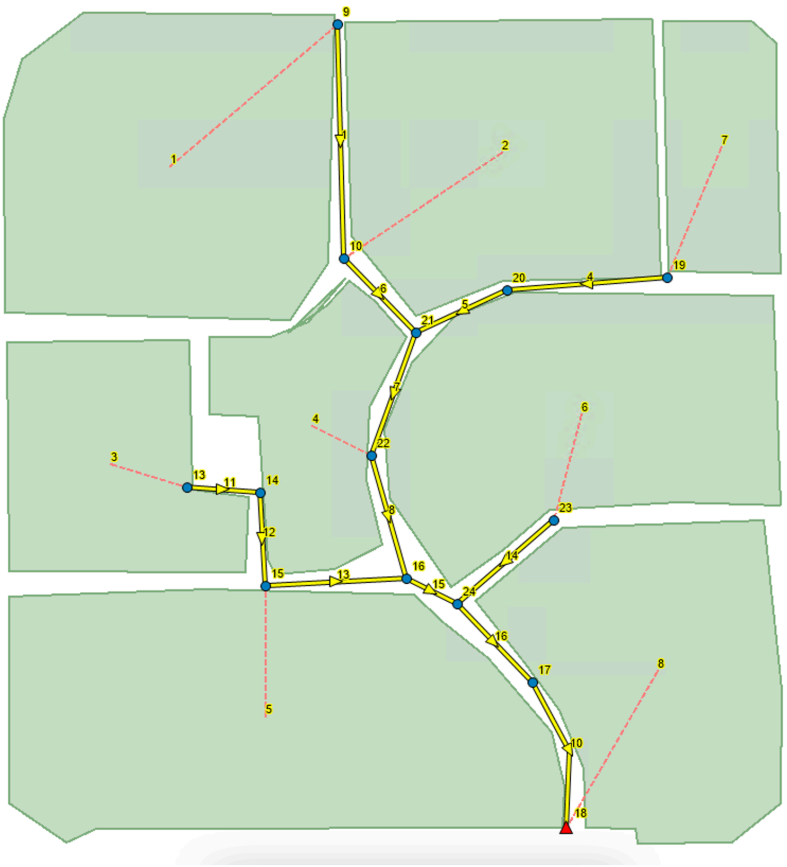
Requirements

For install requirements see: https://www.pyswmm.org/docs

- Need to have Python 3.9 or higher installed (64-bit aka x86-64)
- Need to have >=PySWMM-1.2 installed
- *(Optional) activate the Python environment. If this is a foreign concept, worry not. This subject will be addressed later on.*

Background

This example walks the user through writing the code and running a simulation using `Example 1` data set. The PNG file is simply to provide visual context of where we are reading information out of the model.



Code Example

For starters, on a Windows machine you are usually able to right click on the `Example1.py` file and select "Edit with IDLE." For more advanced Python users, other integrated development environments are usable too. The Python code provided in this bundle provides a very basic example of how to run a model. In the directory containing the code, model, and PNG file, the user should not see a SWMM RPT or OUT file. The user can execute this basic script by pressing `F5`.

Another way to run this (especially if using an environment) is to execute `python ./Example1.py` on the command line.

The code looks like this:

```
from pyswmm import Simulation

with Simulation(r'Example1.inp') as sim:
    # Launch a simulation!
    for ind, step in enumerate(sim):
        if ind % 100 == 0:
            print(round(sim.percent_complete*100))
```

Breaking this down a bit, the `Simulation` object is what is used to **open** the SWMM INP file. Using the `with` context manager, we create an instance of `Simulation` as `sim` while opening the model. A new variable called `sim` acts as a handle to the simulation allowing the user to communicate with the opened model.

The `for` loop is where the `sim` is iterated on. When we begin iterating over the running simulation, the simulation is **start**ed, **step**ed forward until complete, then **end**ed. These cover all the various phases of a simulation. Within the `for` loop we have an `if` statement that is simply there to `print` simulation progress. In the example, for every 100th step, the simulation will reports the percent complete.

```
CAUTION: Printing really taxes the simulation speed! If the user decides to do a lot of
progress printing, the simulation will proceed slower!
```

One the code exits the `with` tabbed in region, the simulation is then **close**d.

Output

The output of the simulation should look like the following:

```
=== RESTART: /Example1.py ===
0
5
9
14
19
23
28
32
37
42
46
51
56
60
65
69
74
79
83
88
93
97
>>>
```

And there should be 2 new files inside your model directory including the SWMM RPT and OUT files.

Congrats! You've just run your first PySWMM Model!

Follow up

If you have run into problems, try posting your questions on Stack Overflow and tag it with `pyswmm`. The development team is very active on there and will for sure follow up!