

Software Testing

Hands on...

Evgenii Vinarskii <vinarskii.evgenii@telecom-sudparis.eu>

Jorge López <jorge.lopez-c@airbus.com>

Natalia Kushik <natalia.kushik@telecom-sudparis.eu>

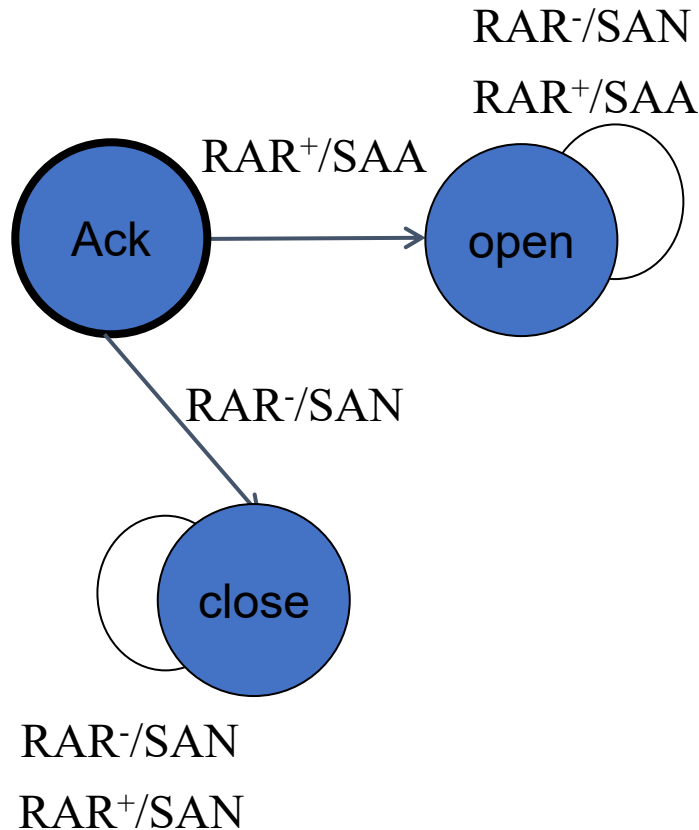
Model (Finite State Machine) Based Test Generation

- Tools are available!!!
 - You need to extract the reduced complete deterministic FSM describing the behavior of a program
 - E.g., <https://bitbucket.org/JanPeleska/libfsmtest>

In order to install Libfsmtest you need to :

- Follow the instructions of <https://bitbucket.org/JanPeleska/libfsmtest/src/master/README.md>
- Add the directory *pap-demo/* available on <https://bitbucket.org/JanPeleska/libfsmtest/src/master/> to the directory *src/* of Libfsmtest

Libfsmtest: PAP with one attempt to authenticate



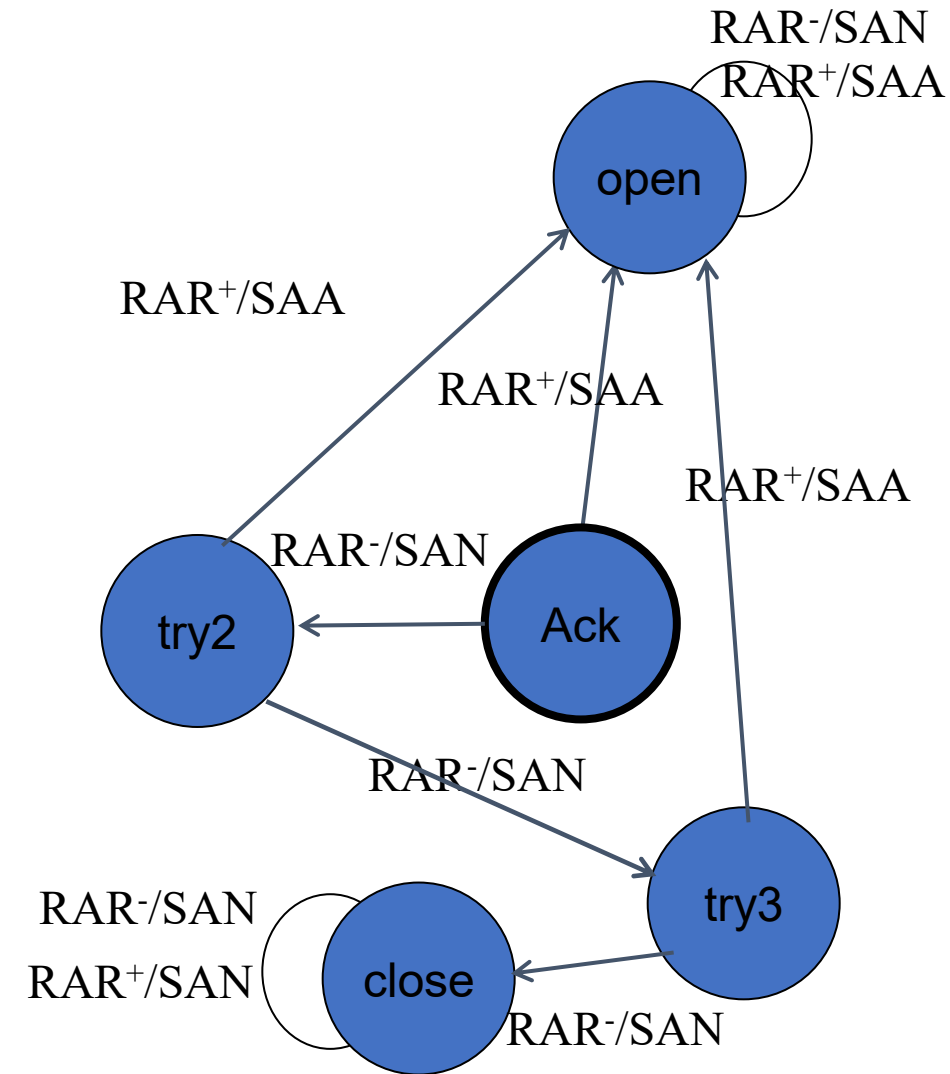
- Describe the SPEC FSM in an available format (.csv, .fsm, ...)

	A	B	C
1		RAR_plus	RAR_minus
2	Ack	open/SAA	close/SAN
3	open	open/SAA	open/SAA
4	close	close/SAN	close/SAN

- If the FSM is given in .csv format then you need to additionally apply the script *csv_parser.py* available on <https://github.com/vinevg1996/SoftwareTestingLab>

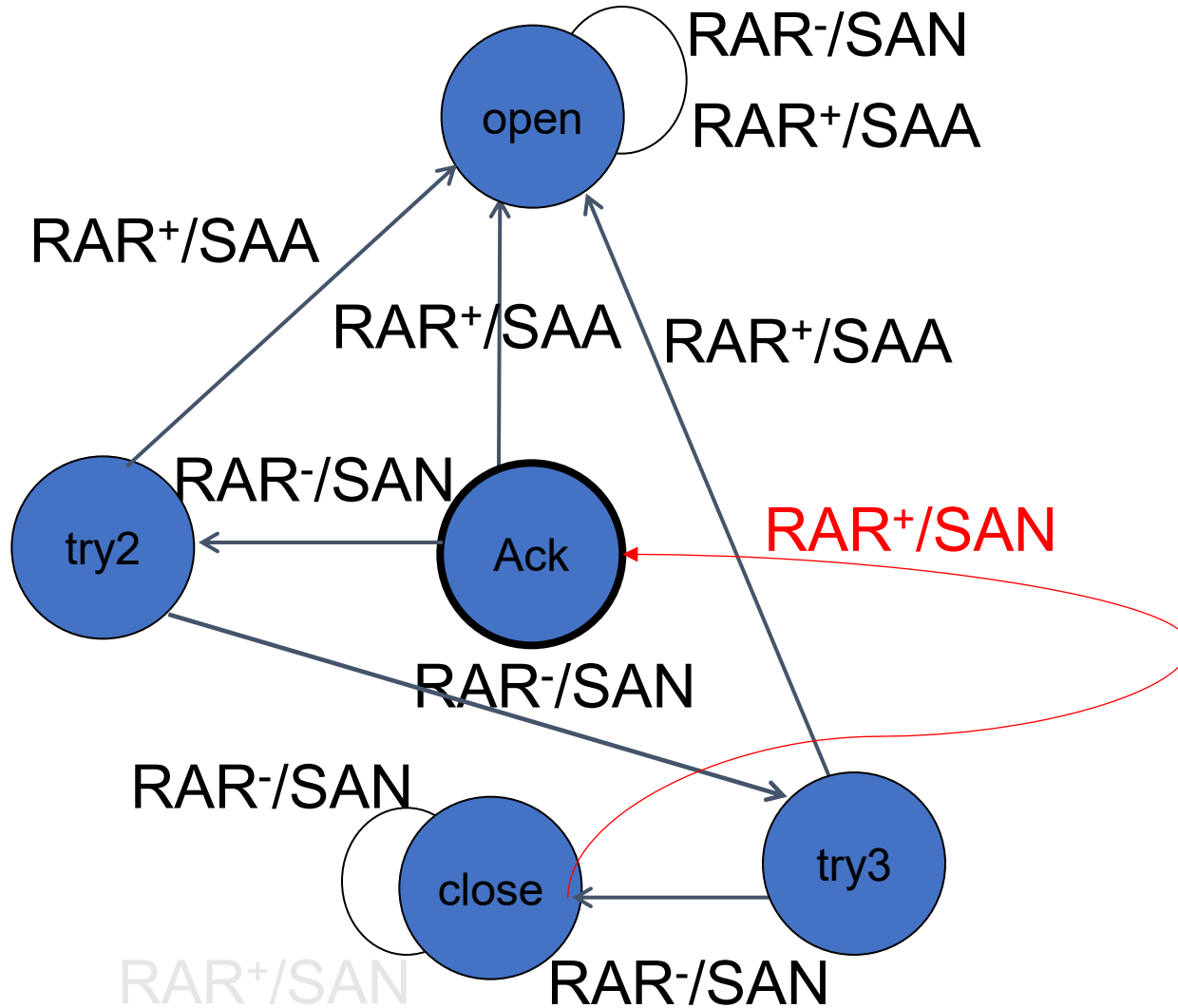
```
static void demo_csvInput_pap() {  
  
    FsmPtr fsm = createFsm<FsmFromFileCreator>(RESOURCEPATH_PAP+"pap2.csv",  
                                                "pap2",  
                                                make_unique<ToAutoCompleteWithSelfLoopTransformer>(nullptr, "null"));  
  
    ToDotFileVisitor dot("pap2.dot");  
    fsm->accept(dot);  
    dot.writeToFile();  
  
    // Create the test generation framework with the W-Method  
    size_t numAddStates = 0;  
    TestGenerationFrame<WMethod> genFrame("SUITE-W-3", move(fsm), numAddStates);  
  
    // Generate the test suite and write it to file  
    genFrame.generateTestSuite();  
    genFrame.writeToFile();  
}
```

PAP with three attempts to authenticate



- A naive/simulation of an implementation can be found on: <https://github.com/jorgelopezcoronado/PAPLab>
- The Code can be compiled in a *-nix system with *make* utility and then executed with *./pap* (Mac OS X executable included)
- Valid user/password combinations may be found in the file *users.db*, a single user/password entry per line: user and password separated by a single space

Testing the PAP implementation



- How can we test it using Libfsmtest?
- The implementation provided has the fault!!!
 - What is the test suite derived using the transition tour method? Does it detect the fault?
 - What is the test suite derived using the W-method? Does it detect the fault?

Your tasks

1. Study the Libfsmtest and derive a test suite using the W-method for the FSM of PAP
2. Develop the program to execute the test suites against the PAP implementation
3. Apply the test suites derived at step 1 :
 - Does the test suite derived using the W-method detect the fault in the PAP code ?

Thank you for your attention
Questions ?