



GENEROVÁNÍ SEKVENČNÍCH DIAGRAMŮ Z MODELŮ PETRIHO SÍTÍ

Bakalářská práce

Autor: Erik Kelemen

Vedúci práce: Ing. Radek Kočí Ph.D.

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Ciel' práce

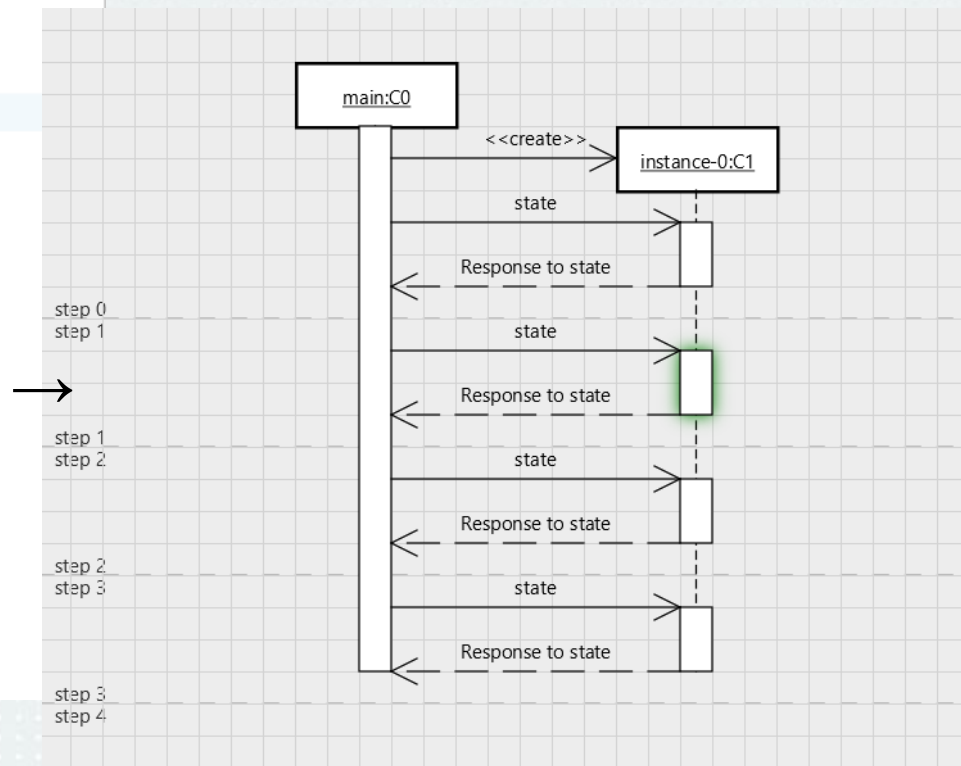
Generátor sekvenčných diagramov z modelov popísaných objektovo-orientovanými Petriho sieťami.

PNTalk → **Sekvenčný diagram**

Ciel' práce

Generátor sekvenčných diagramov z modelov popísaných objektovo-orientovanými Petriho sieťami.

```
1 class C0 is_a PN
2   object
3   trans t4
4     precondition p4((x, #fail))|
5     postcond p3(x)
6   trans t1
7     precondition p1(#e)
8     action {o := C1 new.}
9     postcond p2(o)
10  trans t3
11    cond p2(o)
12    guard {o state: x. x >= 3}
13    action {o reset: 1.}
14    postcond p2(1)
15  place p1(#e)
16  place p2()
17  place p4()
18  place p3(1, 2)
19
```



Implementace

Microservices

- Docker
- Kubernetes
- GRPC



Implementácia nástroja

- Kotlin
- C++
- Tornadofx



Docker. [Online; navštíveno 07.04.2021]. Dostupné z: <https://docker.com/>.

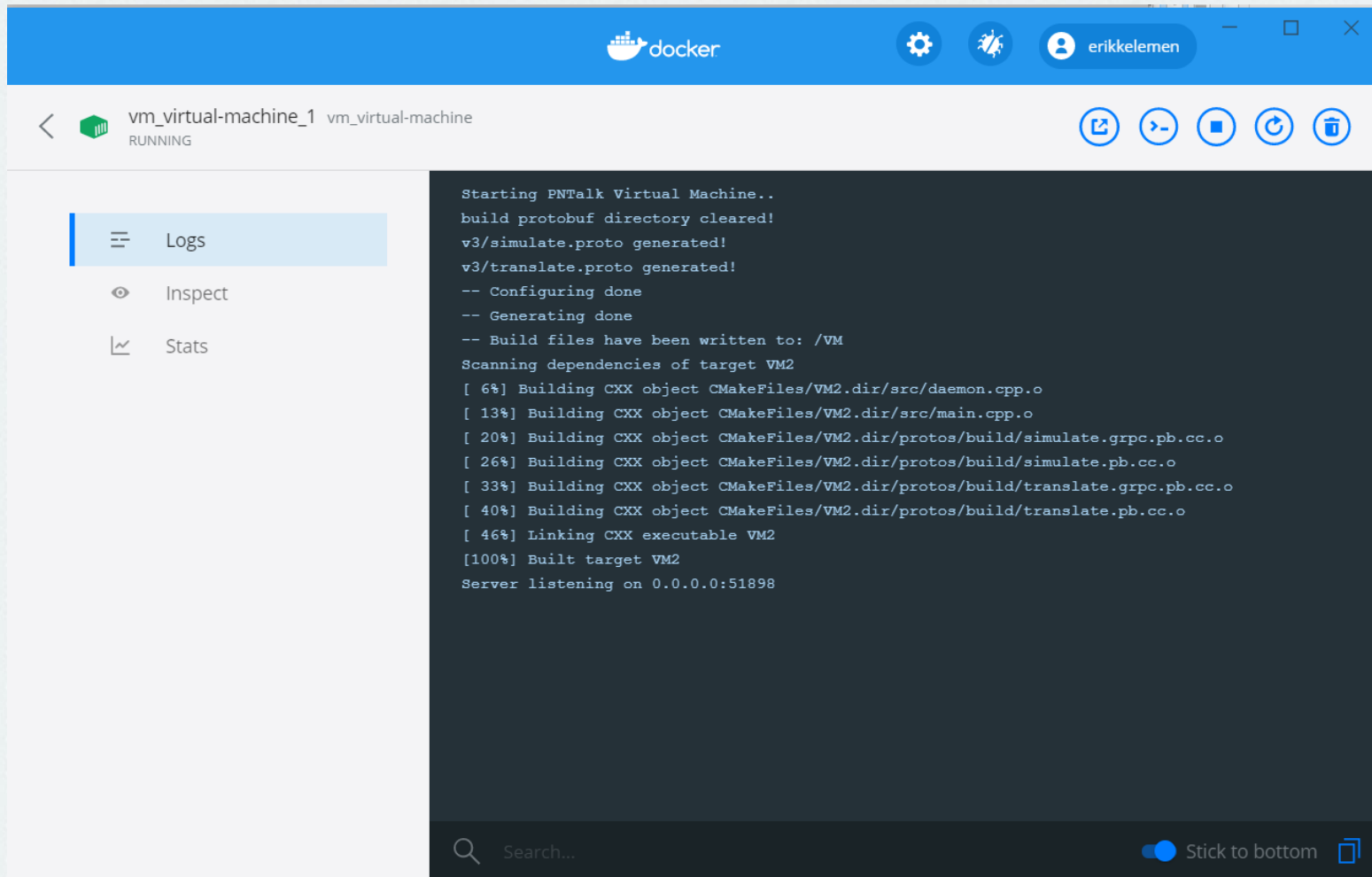
Tornadofx. [Online; navštíveno 08.04.2021]. Dostupné z: <https://tornadofx.io/>.

Backend

Distribuovaný systém

- Vzdialená simulácia
- Nezávislá implementácia simulátoru
- GRPC komunikácia

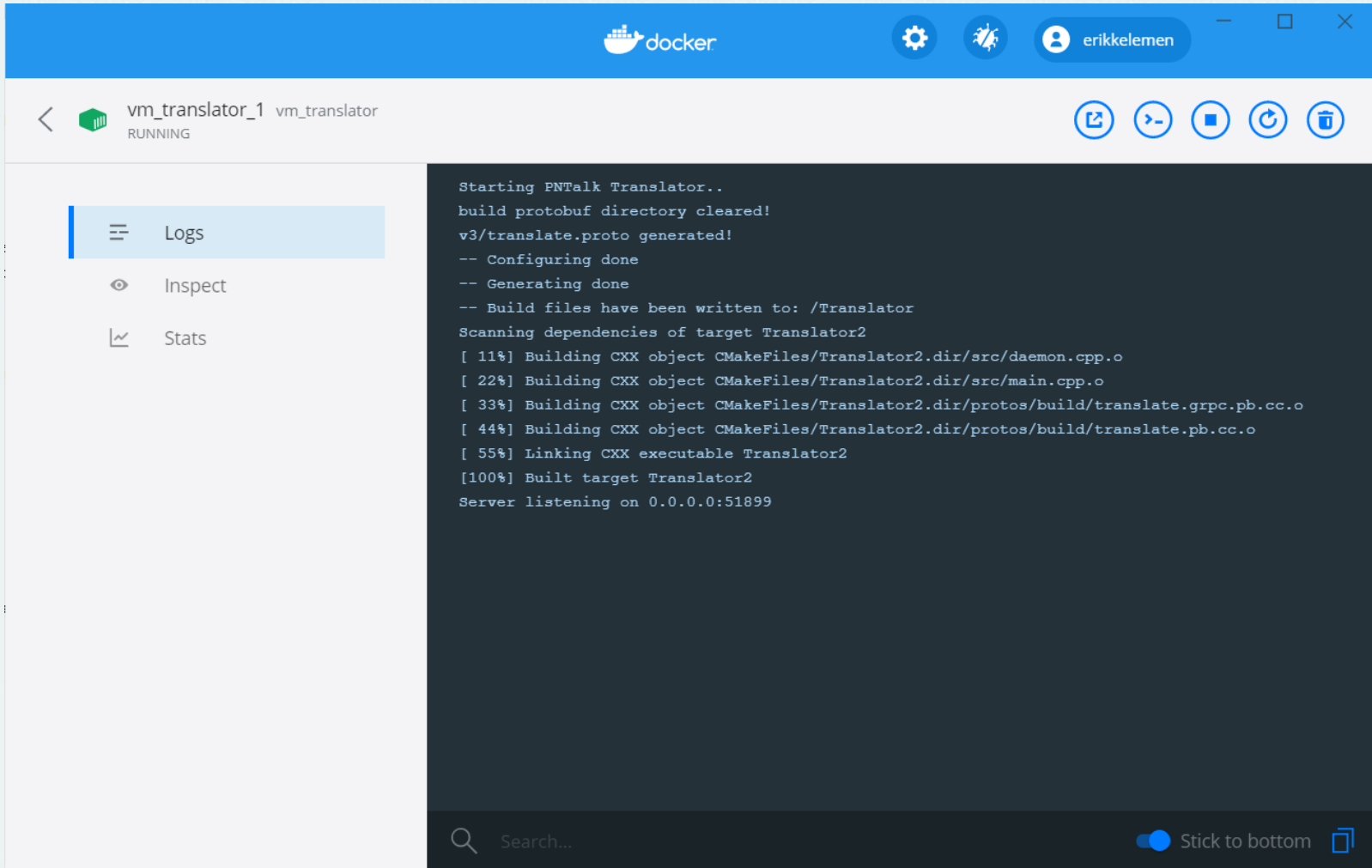
Distribuovaný systém



The screenshot shows the Docker Desktop application window. The top bar is blue with the Docker logo, a settings gear, a refresh icon, and a user profile 'erikkelemen'. Below the bar, the container 'vm_virtual-machine_1' is selected, showing it is 'RUNNING'. On the left, a sidebar contains 'Logs' (selected), 'Inspect', and 'Stats'. The main area displays the container's logs, which show the process of building and starting a PNTalk Virtual Machine. The logs include progress bars for building CXX objects and a final message that the server is listening on 0.0.0.0:51898.

```
Starting PNTalk Virtual Machine..  
build protobuf directory cleared!  
v3/simulate.proto generated!  
v3/translate.proto generated!  
-- Configuring done  
-- Generating done  
-- Build files have been written to: /VM  
Scanning dependencies of target VM2  
[ 6%] Building CXX object CMakeFiles/VM2.dir/src/daemon.cpp.o  
[ 13%] Building CXX object CMakeFiles/VM2.dir/src/main.cpp.o  
[ 20%] Building CXX object CMakeFiles/VM2.dir/protos/build/simulate.grpc.pb.cc.o  
[ 26%] Building CXX object CMakeFiles/VM2.dir/protos/build/simulate.pb.cc.o  
[ 33%] Building CXX object CMakeFiles/VM2.dir/protos/build/translate.grpc.pb.cc.o  
[ 40%] Building CXX object CMakeFiles/VM2.dir/protos/build/translate.pb.cc.o  
[ 46%] Linking CXX executable VM2  
[100%] Built target VM2  
Server listening on 0.0.0.0:51898
```


Distribuovaný systém



The screenshot shows the Docker Desktop application window. The title bar is blue with the Docker logo, a settings gear, a shield icon, and a user profile 'erikkelemen'. Below the title bar, the container name 'vm_translator_1' and 'vm_translator' are displayed, along with the status 'RUNNING'. On the left, a sidebar contains three options: 'Logs' (selected), 'Inspect', and 'Stats'. The main area displays the container's logs, which show the process of building and running the 'Translator2' service. The logs include messages about clearing the protobuf directory, generating a proto file, configuring and generating files, building CXX objects, linking the executable, and finally listening on port 51899. At the bottom of the log area, there is a search bar and a 'Stick to bottom' toggle.

```
Starting PNTalk Translator..  
build protobuf directory cleared!  
v3/translate.proto generated!  
-- Configuring done  
-- Generating done  
-- Build files have been written to: /Translator  
Scanning dependencies of target Translator2  
[ 11%] Building CXX object CMakeFiles/Translator2.dir/src/daemon.cpp.o  
[ 22%] Building CXX object CMakeFiles/Translator2.dir/src/main.cpp.o  
[ 33%] Building CXX object CMakeFiles/Translator2.dir/protos/build/translate.grpc.pb.cc.o  
[ 44%] Building CXX object CMakeFiles/Translator2.dir/protos/build/translate.pb.cc.o  
[ 55%] Linking CXX executable Translator2  
[100%] Built target Translator2  
Server listening on 0.0.0.0:51899
```

Simulácia a prechod

Frontend

Intuitivny nástroj

- Zvýrazňovanie kľúčových slov
- Mapovanie medzi kódom a diagramom
- Jednoduchá orientácia v projekte
- Debug aktuálneho stavu

Intuitivny nástroj

Petri net Sequencer
- □ ×

File Edit Help

Code Scenario

▼ test_00
 C0.pntalk
 C1.pntalk
 ? README.md

```

1 class C0 is a PN
2   object
3     trans t4
4       precondition p4((x, #fail))
5       postcondition p3(x)
6     trans t1
7       precondition p1(#e)
8       action {o := C1 new;}
9       postcondition p2(o)
10    trans t3
11      condition p2(o)
12      guard {o state: x. x >= 3}
13      action {o reset: 1;}
14      postcondition p2(1)
15    place p1(#e)
16    place p2()
17    place p4()
18    place p3(1, 2)
19

```

DRAW

Pipeline not running.

☐ Using Scenario

Simulation Steps: 5

Main Class: C0

NAME	VALUE
p	1
pchild	
return	

Sequence Diagram

```

sequenceDiagram
    participant main as main:C0
    participant inst as instance-0:C1
    Note over main,inst: <<create>>
    main->>inst: state
    activate inst
    inst-->>main: Response to state
    deactivate inst
    main->>inst: state
    activate inst
    inst-->>main: Response to state
    deactivate inst
    main->>inst: state
    activate inst
    inst-->>main: Response to state
    deactivate inst
    main->>inst: state
    activate inst
    inst-->>main: Response to state
    deactivate inst
    main->>inst: reset
    activate inst
    inst-->>main: 
    deactivate inst
    
```

2021-05-05T10:17:54.223700Z New project template generated in temp dir: C:\Users\Erik\AppData\Local\Temp\tmp15456816256129593527.tmp
 2021-05-05T10:18:29.855973700Z Diagram completed.
 2021-05-05T10:18:36.601249600Z Visualise instance-0 in step 0 and time 52.79999694824218
 2021-05-05T10:18:40.021325900Z Visualise instance-0 in step 1 and time 139.20001220703125

Video práce s nástrojem