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Re: Regarding your tool, JavaMOP

Anshita Sayal [asayal@ncsu.edu]

You replied on 11/5/2015 2:08 PM.

Sent: Thursday, November 05, 2015 12:37 PM
To: Xiao, He

Hi He,

Thank you so much for an excellent explanation. It was extremely helpful in my tool demo presentation.

I want to sincerely thank you for all your help. You have been an excellent support.

Regards,
Anshita

On Mon, Nov 2, 2015 at 10:04 PM, Xiao, He <hexiao2@illinois.edu> wrote:

> Hi Anshita,
>
> What is the paper that you read? If it is very old paper, then maybe it won't mention rv-monitor because in the past, rv-monitor is part of javamop.
>
> As far as I know, RV-Monitor was extracted from javamop and became an independent tool since 2014, and a paper about RV-Monitor can be found at
>
> http://fsl.cs.illinois.edu/FSL/papers/2014/luo-zhang-lee-jin-meredith-serbanuta-rosu-2014-rv/luo-zhang-lee-jin-meredith-serbanuta-rosu-2014-rv-public.pdf
>
> In the past, before rv-monitor became independent tool, javamop took care of everything, which is quite cumbersome and error-prone.
>
> In the new setting, we separate concerns and follows the minimum viable product design philosophy, so that javamop only generates instrumentation file (.aj) and rv-m
>
> rv-monitor is responsible for generating monitoring code, and the invocation of the monitoring code is defined in .aj file, where ajc weave those advice to the original m
>
> Let me give you a very simple example to illustrate how they work together. I'll highlight the overall steps but not care too much on the actual syntax.
>
> ==========
> Given a java program, which contains a segment like this:
>
> Iterator i = v.iterator();
> int sum = 0;
>
> sum += (Integer)i.next();
> sum += (Integer)i.next();
>
> ==========
>
> we have some observation: the iterator i calls next() before hasNext() !
>
> How the monitor finds this problem?
>
> 1. We formalize the property in some mop spec like ere spec or fsm spec
>
> HasNext(Iterator i) {
> event hasnext after(Iterator i) :
> call(* Iterator.hasNext())
> && target(i) {}
> event next before(Iterator i) :
> call(* Iterator.next())
> && target(i) {}
>
> ere : (hasnext hasnext* next)*
>
> @fail {
> System.err.println(
> "! hasNext() has not been called"
> + " before calling next() for an"
> + " iterator");
> __RESET;
> }
> }
>
> 2. javamop split the above mop spec to rvm spec and .aj file
>
> 3. ***RV-Monitor*** will parse the rvm spec and then generate the monitoring library like:
> ...
> public static final void hasnextEvent(Iterator i) {...}
> ...
> public static final void nextEvent(Iterator i) {...}
> ...
> The monitoring library has some internal logic to present the monitoring state, and invoking the hasnextEvent/nextEvent will change its internal monitoring state.
> If any error state is reached, the monitoring library will report it.
>
> So who will invoke these event methods? It is inside the aspectj code that these methods are invoked. If you look at the generated .aj file, you can find sth like this:
>
> pointcut HasNext_next(Iterator i) : (call(* Iterator.next()) && target(i)) && MOP_CommonPointCut();
> before (Iterator i) : HasNext_next(i) {
> HasNextRuntimeMonitor.nextEvent(i);
> }

pointcut HasNext_hasnext(Iterator i) : (call(* Iterator.hasNext()) && target(i)) && MOP_CommonPointCut();
after (Iterator i) : HasNext_hasnext(i) {
HasNextRuntimeMonitor.hasnextEvent(i);
}

These aspectj code defines the pointcuts in your program that are of our interest. So in the ajc's static weaving process, at each location after the hasNext() method of th
code HasNextRuntimeMonitor.hasnextEvent(i);
to your origin program (at the position after the Iterator.hasNext() invocation).

Similarly ajc will place HasNextRuntimeMonitor.nextEvent(i);
before Iterator.next() method invocation.

So the final weaved code will be sth look like this:

Iterator i = v.iterator();
int sum = 0;

HasNextRuntimeMonitor.nextEvent(i);
sum += (Integer)i.next();

HasNextRuntimeMonitor.nextEvent(i);
sum += (Integer)i.next();

//
As a result, when you run the weaved program, whenever some interesting event happens, the monitor will be notified and responds accordingly.

Notice that the monitor has been notified before the iterator actually calls the next() method.
So this enables you to do something proactively so that the bad outcome can be avoided.

For example, in the error handler code, you can report the problem and terminate the program to avoid the exception to be thrown.
Or even smarter, you can check the return value of the target iterator's hasNext() method inside the error handler code, if it returns true,
then you can choose to ignore the violation and proceed normally.

==========
Because the instrumentation and monitoring code generation part have been separated, the user will have more freedom to choose the alternative techniques.

For example, given the monitor library generated from .rvm spec, we can choose different instrumentation tool instead of ajc, as long as the monitoring library's method
are invoked appropriately;

Or, we can stick to the ajc for instrumentation, and develop the monitoring code ourselves (of course, we need to respect the monitoring method signature used in .aj co

==========
To sum up, rv-monitor is the tool that automates the generation of high-performance monitoring library from the rvm specification;

In fact, after the monitoring library has been generated,
you can manually insert the monitoring method invocation in your source program:

invoke these two methods
HasNextRuntimeMonitor.hasnextEvent(i);
HasNextRuntimeMonitor.nextEvent(i);
sum += (Integer)i.next();

will not result in a violation;

//////////////////////
HasNextRuntimeMonitor.nextEvent(i);
sum += (Integer)i.next();

will report violation.

The ajc use the info in the .aj file to automatically insert the advice into the desired locations (joinpoints).

Given mop spec, JavaMOP provides the .aj file and .rvm spec to users, and let users decide how to proceed.

Hope this improve your understanding on this topic.

Thanks,
He

From: Anshita Sayal [asayal@ncsu.edu]
Sent: Monday, November 02, 2015 4:34 PM
To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

Thank you for your suggestions. I wanted to know what is the role of RV-Monitor in the entire processing. After reading the paper I am unable to figure out where does

"JavaMOP [19] is an instance of the generic MOP framework specific to the Java programming language. It allows concise descriptions of parametric properties using a
an extension of AspectJ [20] as well as properties specified over these events. From these specifications, JavaMOP generates AspectJ code for monitoring, which is wea
compiler, such as the standard AspectJ compiler ajc. In this way, the generated monitoring code observes the program, catches the events defined by a specification, and
to the given specification. When a specification is validated or violated, user-defined actions, called handlers, are executed. User-defined actions can be any Java code f
to supply actual recovery code in the event of a violated specification allows JavaMOP-generated monitors to actually enforce a specification within a program.

"

Thanks !
Anshita

On Tue, Oct 27, 2015 at 6:10 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>> wrote:
Hi Anshita,

Now that you have spent quite some time on playing with the tool, you should be familiar with the overall mechanism of the tool.

You may come up with some program which will misbehave occasionally, and once it goes wrong, serious problem will occur
(it is not necessary to be some real problem though, you can mark certain program locations as bad points which should never be reached, put some print methods there those points).

And with a mop file which formulate the problem carefully, JavaMOP can generate a monitor which can not only observe the violation of the property, but also do som behaviors.
If it is not able to recover from the wrong state, then at least in the handler block, you can invoke a System.exit command to terminate the program so that bad things wi

To be short, you can focus on how the javamop can help your program stay in the safe state, which is one of the important purpose of runtime verification.

Thanks,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu>]
Sent: Tuesday, October 27, 2015 12:14 PM
To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I have managed to monitor java program files on Ubuntu machine with the help of an agent I created on my windows machine. Thanks for all your help! You have beer

I have to present the workings of the tool in November first week. It is 5 minute demo of the tool. Any tips from you on what aspects I should focus on during the prese

Thanks a lot!
Anshita

On Fri, Oct 16, 2015 at 11:30 AM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>> wro
Hi Anshita,

Don't feel sorry, I'm more than happy to do these debugging because it is helpful to improve the quality of javamop if any bug is found.

For your question about PATH: if you installed something via apt-get, then no need to worry about adding its path to PATH variable, it has been added during the instal
'which' command at the terminal, in your case:

which ajc

and the path of ajc which is being used will be printed out.

As shown in your output of javamop:

-Processing HasNext.rvm
Logic Engine Error: null
java.io.FileNotFoundException:

You can track the place where the problem happens: during the processing of HasNext.rvm
In fact, the .aj and .rvm file have been generated successfully, however, the rv-monitor does not process the rvm spec successfully due to the logic engine error.

I think the latest version of javamop from github (the master branch) may make your debugging easier: as I explained in some previous email, the latest version of javar simpler ones: JavaMOP transforms .mop spec to .rvm spec and .aj (.aj is the instrument file telling when to invoke monitoring library's methods);
RV-Monitor generates the monitoring library (say, M.java) from .rvm spec.
Finally the .aj (instrument file) and M.class (monitoring library compiled from M.java) are glued together by javamopagent so that we have a monitoring agent;
OR, in the static weaving use case, .aj, M.java and application code are glued together by ajc so that we have the weaved application code.

I think the latest version of JavaMOP which does not invoke rv-monitor behind the scene is more robust, and
the rv-monitor part can be debugged separately.

If you really want to stick to the current stable javamop v4.2, then you can look into the rv-monitor script which is in Your-RV-Monitor-Home/bin

look at the lines:
PLUGINS_CLASSPATH="$RELEASE/plugins/*"

LOGICPLUGINPATH="$RELEASE/plugins/"

Those are environment variables that the script modifies temporarily before running rv-monitor from terminal.

You can try to add those variables to your profile and check whether it solves your problem.

You should find the actual values represented by $RELEASE/plugins in your system to finish this task.

Have a try and let me know whether it works.

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>]
Sent: Thursday, October 15, 2015 11:05 AM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

Sorry to bother you again but now I am determined to get javaMOP working on Ubuntu 15.04 as well.

Here is my setup information so far:

I have installed aspectj 1.8 using sudo apt-get install aspectj command
I have installed RV-monitor 1.3
I have installed oracle jdk 8

Right now when I am running javamop HasNext.mop command I get the following error:

osboxes@osboxes:~/javamop/examples/FSM/HasNext$ javamop HasNext.mop
Picked up JAVA_TOOL_OPTIONS: -javaagent:/usr/share/java/jayatanaag.jar
-Processing HasNext.mop
HasNext.rvm is generated
HasNextMonitorAspect.aj is generated
-Processing HasNext.rvm
Logic Engine Error: null
java.io.FileNotFoundException: /home/osboxes/javamop/examples/FSM/HasNext/HasNextRuntimeMonitor.java (No such file or directory)
at java.io.FileInputStream.open0(Native Method)
at java.io.FileInputStream.open(FileInputStream.java:195)
at java.io.FileInputStream.<init>(FileInputStream.java:138)
at java.util.Scanner.<init>(Scanner.java:611)
at javamop.util.FileCombiner.combineAJFiles(FileCombiner.java:64)
at javamop.JavaMOPMain.main(JavaMOPMain.java:440)
Failed to delete java file: /home/osboxes/javamop/examples/FSM/HasNext/HasNextRuntimeMonitor.java

Here are my Path and Classpath variables:

osboxes@osboxes:~/javamop/examples/FSM/HasNext$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/home/osboxes/RV-Monitor/bin:/home/osboxes/javamop/bin/
osboxes@osboxes:~/javamop/examples/FSM/HasNext$ echo $CLASSPATH
:/home/osboxes/RV-Monitor/lib/rv-monitor.jar:/home/osboxes/RV-Monitor/lib/rv-monitor-rt.jar:/usr/lib/jvm/java-8-oracle/bin/:.

I wanted to know whether I need to add aspectj jar paths because I have installed it using apt-get install command?

Thanks!
Anshita

On Thu, Oct 15, 2015 at 4:40 PM, Anshita Sayal <asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>> wrote:
Hi He,

It worked!!! Thanks a lot for your help in resolving the issue. You have been very patient with the debugging process and I am very grateful for that!

Here's the output:

C:\javamop-4.2\javamop-4.2\examples\agent\many>java -javaagent:JavaMOPAgent.jar
SafeFile_1
begin
open
close
end
begin
open
end
improper use of files
improper use of files
begin
close
improper use of files
end
improper use of files
improper use of files

Thanks again!

Regards,
Anshita

On Thu, Oct 15, 2015 at 1:21 AM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>> wro
Hi Anshita,

I've successfully reproduced your problem if the aspectjweaver.jar is not on classpath.

If the CLASSPATH environment variable is set correctly, then I can use the JavaMOPAgent.jar as java agent successfully
without specifying -cp option.

Initially, you do not use -cp option, and you got some other class not found error, right?

Your classpath variable looks good to me except missing the dot symbol which represents the current directory.

My suggestion is to add the dot "." to your classpath variable permanently (remember to separate it with other entries by ;)

Then re-run the command without -cp option to see whether it works.

A tip:
if you generate the agent via javamopagent tool, then by default (if you do not use the -excludeJars option), it will incorporate all the aspectj jars inside the agent,
in which case you will not need to add them to classpath in order to use the agent (of course, when you generate the agent jar, the aspectj jars have to be on classpath; bu
the agent with aspectj jars is generated, you can send it to any computer to do the monitoring without the need to install aspectj first).

Thanks,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>]
Sent: Wednesday, October 14, 2015 12:35 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Here are my Path and Classpath variables:

C:\javamop-4.2\javamop-4.2\examples\agent\many>echo %CLASSPATH%
C:\aspectj1.8\lib\aspectjrt.jar;C:\aspectj1.8\lib\aspectjweaver.jar;C:\aspectj1.
8\lib\aspectjtools.jar;C:\RV-Monitor\lib\rv-monitor-rt.jar;C:\RV-Monitor\lib\rv-
monitor.jar

C:\javamop-4.2\javamop-4.2\examples\agent\many>ECHO %PATH%
C:\ProgramData\Oracle\Java\javapath;C:\Program Files (x86)\Intel\iCLS Client\;C:
\Program Files\Intel\iCLS Client\;C:\WINDOWS\system32;C:\WINDOWS;C:\WINDOWS\Syst
em32\Wbem;C:\WINDOWS\System32\WindowsPowerShell\v1.0\;C:\Program Files\Intel\Int
el(R) Management Engine Components\DAL;C:\Program Files\Intel\Intel(R) Managemen
t Engine Components\IPT;C:\Program Files (x86)\Intel\Intel(R) Management Engine
Components\DAL;C:\Program Files (x86)\Intel\Intel(R) Management Engine Component
s\IPT;C:\Program Files\Intel\WiFi\bin\;C:\Program Files\Common Files\Intel\Wirel
essCommon\;C:\Program Files\Git\cmd;C:\aspectj1.8\bin;C:\Program Files (x86)\Sky
pe\Phone\;C:\apache-maven-3.3.3-bin\apache-maven-3.3.3\bin;C:\Program Files\Java
\jdk1.8.0_60\bin;C:\RV-Monitor\bin;C:\javamop-4.2\javamop-4.2\bin;C:\Ruby22-x64\
bin;C:\sqlite;C:\Program Files (x86)\Windows Live\Shared

Thanks a lot!

On Wed, Oct 14, 2015 at 1:28 PM, Anshita Sayal <asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>> wrote:
Hi He,

Now what I did is I have included the path of the .class file using the -cp option in the java command. I was able to run the java file as seen in the output.

Here is my output:

C:\javamop-4.2\javamop-4.2\examples\agent\many>java -cp C:\javamop-4.2\javamop-4
.2\examples\agent\many SafeFile_1
begin
open
close
end
begin
open
end
begin
close
end

However if I use -cp option in the following manner:

C:\javamop-4.2\javamop-4.2\examples\agent\many>java -cp ".;C:\RV-Monitor\lib\rv-
monitor-rt.jar;C:\aspectj1.8\lib\aspectjrt.jar;JavaMOPAgent.jar;C:\javamop-4.2\j
avamop-4.2\examples\agent\many" -javaagent:JavaMOPAgent.jar SafeFile_1
Exception in thread "main" java.lang.ClassNotFoundException: org.aspectj.weaver.
loadtime.Agent
at java.net.URLClassLoader.findClass(Unknown Source)
at java.lang.ClassLoader.loadClass(Unknown Source)
at sun.misc.Launcher$AppClassLoader.loadClass(Unknown Source)
at java.lang.ClassLoader.loadClass(Unknown Source)
at sun.instrument.InstrumentationImpl.loadClassAndStartAgent(Unknown Sou
rce)
at sun.instrument.InstrumentationImpl.loadClassAndCallPremain(Unknown So
urce)
FATAL ERROR in native method: processing of -javaagent failed

On Tue, Oct 13, 2015 at 10:11 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>> wrc
Hi Anshita,

I used your javamop agent to monitor some program, and it worked correctly.

The agent that you created can monitor some SafeFile related property, which I assume come from the examples\agent\many folder.

So when it monitors HasNext program, the output should be the same as executing it without agent.

I suspect that the problem is in your classpath. To debug this problem and find the root cause, can you do the following:

1) forget the javamop agent for now, simply run the java program to see whether java works well.

2) if the above step is successful, then can you run ajc to compile some code successfully?

Also, it would be helpful if you can post your CLASSPATH and Path contents.

You can get them by running

echo %CLASSPATH%

echo %Path%

on cmd respectively.

P.S. Below is what I tested using your JavaMOPAgent.jar:

A:\UIUC-SW\javamop\target\release\javamop\javamop\examples\agent\many>java -java
agent:JavaMOPAgent.jar SafeFile_1
begin
open
close
end
begin
open
end
improper use of files
improper use of files
begin
close
improper use of files
end
improper use of files
improper use of files

Thank you,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>]
Sent: Tuesday, October 13, 2015 7:13 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I still get the same error even with the revised command.
I have shared the jar on your xiaoguoyi27@gmail.com<mailto:xiaoguoyi27@gmail.com><mailto:xiaoguoyi27@gmail.com<mailto:xiaoguoyi27@gmail.com>> email I
you need anything else.

Thanks a lot, He!

On Tue, Oct 13, 2015 at 7:10 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>> wrot
Hi Anshita,

I tried the javamop agent on the example you used and it worked on my Ubuntu machine.

Though I haven't tried your command on windows, but my observation is that some mistakes exist in the -cp field:

The segment of your command:

-cp ".C:\RV-Monitor\lib\rv-monitor-rt.jar;C:\aspectj1.8\lib\aspectjrt.jar" .;JavaMOPAgent.jar

The first dot and the subsequent entry C:\RV-Monitor\lib\rv-monitor-rt.jar;C:\aspectj1.8\lib\aspectjrt.jar

should be separated by semi-colon as well.

Also, the last JavaMOPAgent.jar should be included inside the double quote.

So you can revise it to

java -javaagent:JavaMOPAgent.jar -cp ".;C:\RV-Monitor\lib\rv-monitor-rt.jar;C:\aspectj1.8\lib\aspectjrt.jar;JavaMOPAgent.jar" HasNext_1

If you still cannot run it successfully, then please send your .jar file to me.

In case the university mail server may block the email with .jar file, you can send it to my gmail:

xiaoguoyi27@gmail.com<mailto:xiaoguoyi27@gmail.com><mailto:xiaoguoyi27@gmail.com<mailto:xiaoguoyi27@gmail.com>>

I might not check the gmail as frequent as the university mailbox, so if needed,

you can ping me via this e-mail address to inform me to check gmail.

Thanks,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>]
Sent: Tuesday, October 13, 2015 5:20 PM
To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

Funny thing happened, I thought I had mailed you an update on your suggestion but apparently that mail never got to you and I was waiting for you reply since then. I a

UPDATE : I have tried your suggestion and used the following command : java -javaagent:JavaMOPAgent.jar -cp ".C:\RV-Monitor\lib\rv-monitor-rt.jar;C:\aspectj1.8\l
HasNext_1
I am still getting the same error in windows. I am trying to run javaMOP on Ubuntu 15.04 and I will try the above scenario there once I get the tool running.
Will it be possible for you to try if the command runs in windows at your end?

Thanks a lot!

On Wed, Oct 7, 2015 at 2:51 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>> wrote:
Hi Anshita,

You can modify the previous command by adding all the additional libraries needed to the classpath and see whether it works.

Given the error you encountered, we also need to provide the classpath of aspectj's libraries.

Be aware that by providing the -cp option in java command, you are actually overriding the environment variable "CLASSPATH".

Thanks,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>]
Sent: Wednesday, October 07, 2015 11:14 AM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

On running the command you provided as it is I am getting the following error:

[cid:ii_ifgzw5wd1_1504314989fae5a4]

Thanks!
Anshita

On Wed, Oct 7, 2015 at 12:56 AM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>> wrote:
Have you tried to run the java agent on Ubuntu? Does it work?

Given the screenshot, I doubted that the issue was related to classpath, try to add the classpath field of the java command

something like java -javaagent:JavaMOPAgent.jar -cp .;JavaMOPAgent.jar HasNext_1

I can confirm the example works on Ubuntu; if the above tip does not solve your problem, I will try to run the example on my windows machine to check whether it wo

Thanks,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>]
Sent: Tuesday, October 06, 2015 6:06 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

A clarification to my previous question through a screenshot. When I am inside the examples/FSM/HasNext/HasNext_1 folder I get an error of missing jar. I pasted the
find main class hasNext_1. Please find the screenshots attached of the error and the files in my HasNext_1 folder.

[cid:ii_iffz65gx0_1503f67783294cc3]
[cid:ii_iffz65he1_1503f67783294cc3]

On Tue, Oct 6, 2015 at 6:48 PM, Anshita Sayal <asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@nc
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>> wrote:
Hi He,

I agree trying on simpler programs would be the way to start. Does the JavaMOP Agent need to be in the same folder as the HasNext_1.java file?

Thanks!

On Mon, Oct 5, 2015 at 9:52 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>> wrote:
Hi Anshita,

Although the operations performed might be slightly different, both the latest version and the stable version allow you to generate javamop agent.

After you have the javamop agent generated, you can test it as follows:

Suppose your java program is A.java and the javamop agent is called "JavaMOPAgent.jar"
1. javac A.java

2. java -javaagent:JavaMOPAgent.jar A

The result should be the same as that of static weaving.

A simple example program for the HasNext property is contained in the JavaMOP project, in the directory "<Your-JavaMOP-HOME>/examples/FSM/HasNext/HasNe

Although it is not a project, the program is equipped with expected output: "HasNext_1.expected.out", which is expected to be seen if you executed the statically weave
(compiled by javac) with javamop agent.

Of course, in order to see the expected output of HasNext_1, your javamop agent should be generated from HasNext.mop property.

A big project may have too many violations, which may make it harder to tell whether all the expected violations are captured.

After running javamop over some small programs and you become more comfortable with the tool, you can definitely use it to monitor big project (typically using the a
you to incorporate a javamop agent into different kind of project.

Anyway, I think starting from the simple one is a good strategy.

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncs
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>]
Sent: Monday, October 05, 2015 7:19 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I successfully generated a javaMOP agent and now I want to use it to monitor java code. I used the javamop code I checked out from git through the link I stated in my
necessary to use the most latest release to generate javamop agent? or should I use the most stable release instead?
Also if I may ask will it be possible for you to share a Java project with me and the expected result when I use javaMOP agent to analyze the project? I want to be sure t
agent is the same as expected.

Thanks a lot!
Anshita

On Mon, Oct 5, 2015 at 1:01 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>> wrote:
Hi Anshita,

The stable release of JavaMOP v4.2 which you are familiar with can be found at either

https://github.com/runtimeverification/javamop/releases<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop_releases&d=
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=gsxxuXze2p284sPTYpFdIxa3N9AdE7y6avy7bLqOto8&s=G8vTS6Ib8N1UPfhiyoybj
<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop_releases&d=BQMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=C2dfdb54Q1UY6wljDyiTaOx2d1q-CwtBjHbM6BReyzw&s=Fn7tpDlJ_iBqnzJoFr-zp
<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop_releases&d=AwMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=7zCnjh9alaiJOUvOTHTQL8nJvEYRDNysH6gEXocgsxY&s=MUIcJZu2wZR5iqbi5I

or http://fsl.cs.illinois.edu/index.php/JavaMOP4

The one you cloned from github is the latest release, which has dramatic change in terms of the output.

The document for using the latest JavaMOP is also updated, which can be found at either
https://github.com/runtimeverification/javamop/blob/master/docs/Usage.md<https://urldefense.proofpoint.com/v2/url?u=https-
3A__github.com_runtimeverification_javamop_blob_master_docs_Usage.md&d=BQMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=gsxxuXze2p284sPTYpFdIxa3N9AdE7y6avy7bLqOto8&s=3Bu9m1FqRGh3iTt6im-P
<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop_blob_master_docs_Usage.md&d=BQMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=C2dfdb54Q1UY6wljDyiTaOx2d1q-CwtBjHbM6BReyzw&s=ZhjoXItNSR3ZBc9jKa
<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop_blob_master_docs_Usage.md&d=AwMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=7zCnjh9alaiJOUvOTHTQL8nJvEYRDNysH6gEXocgsxY&s=ZofWUL82ekRCNO3

or in your clone repository's docs directory.

I mentioned this possible change briefly in the email on Mon, Sep 7, 2015.

Basically, in the latest JavaMOP, the instrumentation part (.aj) and monitor specification (.rvm) are separated, and the users have to manually invoke rv-monitor to gene
monitoring library from .rvm specification.

In the past, the rv-monitor was invoked by javamop internally, and the generated monitoring library code is incorporated into the .aj file.

In the latest version, javamop becomes a source code transformer which takes the .mop file as input and generates .aj and .rvm file as output.

To make the test past in the new javamop system, you can do the following:

1. run javamop on the .mop file as usual, observe that there are two files being generated: X1.aj and X2.rvm
2. run rv-monitor X2.rvm
then the monitoring library (some .java file) will be generated.

3. run ajc, with all the previous arguments, but also add an additional argument which is the path of the monitoring library generated in the second step.

something like this:

ajc -1.6 -d <some dir> <path to your .aj file> <path to the monitor library file> <path to your java code being monitored>

Hope this refactoring does not cause too much inconvenience for your use of javamop.

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncs
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>]
Sent: Monday, October 05, 2015 10:29 AM
To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I am using JavaMOP version 4.2. I cloned it using the command :
git clone https://github.com/runtimeverification/javamop.git<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop.git&d=B
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=gsxxuXze2p284sPTYpFdIxa3N9AdE7y6avy7bLqOto8&s=gcN3zvO1MvD2I5KiIHw
<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop.git&d=BQMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=C2dfdb54Q1UY6wljDyiTaOx2d1q-CwtBjHbM6BReyzw&s=9rq1Z5_bHTscnVTdzM
<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop.git&d=AwMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=7zCnjh9alaiJOUvOTHTQL8nJvEYRDNysH6gEXocgsxY&s=UufSRAF7j9TIw8Igzl
<https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_runtimeverification_javamop.git&d=AwMFaQ&c=8hUWFZcy2Z-
Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=GPYXCry0SDTHakaSPkqVTfWGCIgWbIHQAsa258F4xV4&s=Vx-
fP4bSXT9Sbd_XzCHCKvnLTZknpnZGiKwO0gbR15g&e=>

I got no errors after running javamop. I am attaching the generated .aj file with the mail.

On Sun, Oct 4, 2015 at 7:37 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
Hi Anshita,

It's my pleasure to help you debug. I'm happy to see people using the tool, and the feedback from end users can help me improve the tool in the future :).

I'm using windows 8.1 on my laptop and no problem found.

Which version of JavaMOP are you using? What is the generated output after you run javamop?

You can send the generated .aj file to me and I can inspect it.

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncs
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>]
Sent: Sunday, October 04, 2015 8:12 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

Thanks again for the clarification. You've been helping me a lot! Thank you so much for that.
I have installed Windows 8 on my VM now. On running the ajc command on HasNext property. I am getting 2 error as shown below in the screenshot. Its strange beca
when I tested the tool in Windows. Are these errors expected?

[cid:ii_ifd8smhg1_150358e2e4006881]

On Sun, Oct 4, 2015 at 4:29 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
Hi Anshita,

I'm sure that if you installed ajc by sudo apt-get command, then you do not need to modify PATH variable;

However, the CLASSPATH still need to be modified manually.

There are two approaches to use JavaMOP, either through static weaving using ajc or dynamic weaving (via agent).

So it is possible for you to have two versions of ajc, one for each circumstance respectively:

you can use the ajc 1.6 version which you can easily invoke from terminal to perform the static weaving task.

and for the latest AspectJ, you can add its jar libraries to CLASSPATH so that they can be used in javamopagent creation.

If you only need static weaving, then you do not need to take care of the CLASSPATH of AspectJ library;

If you only need the JavaMOP agent, then you only need to add the AspectJ libraries into CLASSPATH and no need to bother whether ajc can be invoked from termina

Hope this help,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncs
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>]
Sent: Sunday, October 04, 2015 3:13 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

Thank you so much that error went away :)

I wanted to know if I have installed aspectj through sudo apt-get install aspectj command do I need to update the CLASSPATH and PATH variables for aspectj? or is it

On Sun, Oct 4, 2015 at 3:58 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi

<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
Hi Anshita,

The problem is still in the classpath :), you added one dot symbol "." at the end of the location for rv-monitor-rt.jar

Remove that dot can fix the problem.

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>]
Sent: Sunday, October 04, 2015 2:42 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I have now rectified the error. However, I am still not able to execute the javamop HasNext.mop command. I have also echoed classpath in the terminal for you to chec

[cid:ii_ifcwyqf31_150345efb8086dd6]

Thanks a lot!

On Sun, Oct 4, 2015 at 3:26 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
Hi Anshita,

You can check rv-monitor's version by running the rv-monitor -version command because you set the PATH variable correctly.

However, I doubted that you did not set the CLASSPATH correctly.

In your previous email's snapshot about CLASSPATH, the rv-monitor-rt.jar and rv-monitor.jar are placed under RV-Monitor/bin, however, those two jars are supposed

Can you check that whether you correctly specify the locations of those two jars?

Thank you,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>]
Sent: Sunday, October 04, 2015 12:34 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I am going with the 1.6 version of Aspectj as I am unable to install the 1.8 version on Ubuntu 14.04. On running the javamop HasNext.mop command I am getting the f

[cid:ii_ifcsf1hf0_15033ea5b868b78e]

I have installed version 1.3 for RV-Monitor and no error is displayed on running the rv-monitor -version command.
Your help would be greatly appreciated!
Thanks a lot!

On Sun, Oct 4, 2015 at 12:03 AM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
Hi Anshita,

Unlike Windows, in Ubuntu system, after modifying the environment variable in .profile (or .bashrc may also work), you have to log out and then re-login to make the

You can try to log out and login again, and then check whether "ajc -version" works.

BTW, although I haven't tried, I think ajc v1.6 should also work:

As shown in the javamop docs, when we use ajc to instrument code for monitoring purpose, we add "-1.6" option. So I think version 1.6 should be ok to use.

If you would like to use latest ajc, then remember to remove the old one first.

You may use this command to remove the old version:

sudo apt-get purge aspectj

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>]
Sent: Saturday, October 03, 2015 9:51 PM

To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

A clarification to my previous questions: I am installing JavaMOP on Ubuntu 14.04. I am facing issues with Aspectj compiler installation. When I install version 1.8.6 u
not been installed even though I have run the .jar file and updated the CLASSPATH and PATH environment variables. Then I used the command sudo apt-get install as
aspectj version needs to be 1.8 or higher, I wanted to check what version of Ubuntu should be used for running the tool.

Please find screenshot attached below of the error, CLASSPATH and PATH variables.

[cid:ii_ifbwwivi0_15030c2b0d471fd8]

Your help would be greatly appreciated!

Thanks!
Anshita

On Sat, Oct 3, 2015 at 5:26 PM, Anshita Sayal <asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncs
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>> wrote:
Hi He,

Are there any specific ubuntu versions on which the tools works?

Thanks!

On Fri, Oct 2, 2015 at 6:57 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
It is perfectly executable on Linux like machines.

As you can see in the bin directory, the executables with .bat extension are for windows while the ones with no extension are for linux-like systems.

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncs
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>]
Sent: Friday, October 02, 2015 5:02 PM
To: Xiao, He
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I am working to run JavaMOP tool on a VM through Vagrant. I wanted to check if its possible to run JavaMOP on a Linux machine or is it only possible to run it on W

Thanks!
Anshita

On Mon, Sep 14, 2015 at 4:25 PM, Anshita Sayal <asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu>>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>>> wrote:
Thanks a lot, He. The properties work as expected now.

Thanks for all your help!

On Mon, Sep 14, 2015 at 2:58 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexia
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>>>> wrote:
Hi Anshita,
The syntax for specifying the classpath is wrong :)
On windows OS, different items in the classpath should be separated by semi-colon (i.e. ';'), not white space.

Best,
He

_____
From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncs
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<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>>]
Sent: Monday, September 14, 2015 1:50 PM

To: Xiao, He
Cc: ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>
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510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>>>; Anees
Rajadhyaksha
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I used the following command now :

java -cp ".C:\RV-Monitor\lib\rv-monitor-rt.jar C:\aspectj1.8\lib\aspectjrt.jar" HasNext_1

and got the same error :

[cid:ii_iekabw5h0_14fcd30e2252accb]

Please let me know if the command I used has the intended syntax or not.

Thanks!

On Mon, Sep 14, 2015 at 2:36 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
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<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>>>> wrote:
Hi Anshita,

The error is expected.

This time please try to add more to the -cp option: also include the path to your rv-monitor-rt.jar and aspectjrt.jar.

So the command should be something like this:

java -cp ".;PATH_TO_rv-monitor-rt.jar;PATH_TO_aspectjrt.jar" HasNext_1

N.B. The path to the jar also include the name of the .jar

Thanks,
He

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From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
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<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>>]
Sent: Monday, September 14, 2015 1:22 PM
To: Xiao, He

Cc: ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>
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510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>>>; Anees
Rajadhyaksha
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I tried what you suggested. On running the java -cp "." HasNext_1 command I get the following error:
[cid:ii_iek9cdft5_14fcd1798ca303eb]

Thanks!

On Fri, Sep 11, 2015 at 4:06 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
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<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexia
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>>>> wrote:
Hi Anshita,

I ran the program provided by you on the Google drive, and no error was encountered.

The problem might be caused by your classpath, can you add "." to your classpath and try again?

If it still does not work, please show your classpath to me, you can run "echo %CLASSPATH%" in the cmd and then copy the contents.

Thank you,
He

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From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
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<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>>]

Sent: Friday, September 11, 2015 10:20 AM
To: Xiao, He
Cc: ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>
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510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>>>; Anees
Rajadhyaksha
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I have shared the HasNext folder on Google Drive. You should have received the link by now. I was having issues with Git which is why I chose google drive for file sl
issues in accessing those files.

Thanks!
Anshita

On Fri, Sep 11, 2015 at 1:10 AM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
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Hi Anshita,

I have the same list of files.

In order to efficiently debugging on this issue, is it convenient for you to make a git repository, pushing all the relevant files (The whole 'HasNext' folder for this time) i

Then I can easily checkout your files and debug on them, and share my solution with you quickly.

And next time when you need help, you can update that repository and remind me by email.

If you have other preferred way of solving the problem, let me know.

But it will be much easier for me to debug if I can have a copy of your program files.

Thanks,
He

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From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
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<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>>>]
Sent: Thursday, September 10, 2015 9:58 PM

To: Xiao, He
Cc: ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>
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510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>>>>; Ane
Rajadhyaksha
Subject: Re: Regarding your tool, JavaMOP

Hi He,

I can see the following files in the HasNext_1 folder. Please find screenshot attached below:

[cid:ii_ief1zecf0_14fba55cb7e28b0a]

Thanks,
Anshita

On Tue, Sep 8, 2015 at 1:55 AM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
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<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:he
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexia
Hi Anshita,

I'm a second year PhD student, so you can simply call me He.

I can run JavaMOP on that HasNext property, no error was encountered on my machine.

The warning is expected because there is no hasNext method invoked in the monitored program.

The error shown on your screenshot seems to be complained by java instead of JavaMOP.

Is the 'HasNext_1.class' generated successfully in HasNext_1 folder?

Can you list all the file names (a screenshot is OK) that are inside HasNext_1 folder?

Thanks,
He

_____

From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu>>
<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>
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Sent: Monday, September 07, 2015 11:44 PM
To: Xiao, He
Cc: ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>
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Rajadhyaksha
Subject: Re: Regarding your tool, JavaMOP

Dr. Xiao,

Thanks for the clarification on building JavaMOP agent. I was able to accomplish this task after uninstalling a conflicting javaMOP version. Thanks a lot for the tip. I a
from the following link https://runtimeverification.com/monitor/1.3/docs/runningexamples/#as-an-agent<https://urldefense.proofpoint.com/v2/url?u=https-
3A__runtimeverification.com_monitor_1.3_docs_runningexamples_-23as-2Dan-2Dagent&d=BQMFaQ&c=8hUWFZcy2Z-
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```
$ cd JavaMOP/examples/FSM/HasNext
$ javamop HasNext.mop
$ ajc HasNextMonitorAspect.aj HasNext_1/HasNext_1.java -1.6 -d HasNext_1/
$ cd HasNext_1
$ java HasNext_1
```

I am getting the following a warning realting to mop.HasNextMonitorAspect has not been applied and an error of not being able to find and load main class on executin
would greatly appreciate your help in resolving the issue.

[cid:ii_ieau54k70_14fab22450643d11]

Thanks a lot!

On Mon, Sep 7, 2015 at 10:23 PM, Xiao, He <hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>
<mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu><mailto:hexiao2@illinois.edu<mailto:hexiao2@illinois.edu>>><mailto:hexiao2@illinois.edu<mailto:hexi
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Hi Anshita,

I'm responsible for maintaining JavaMOP.

-keepRVFiles is a flag specific to JavaMOP, and when it is set, the intermediate .rvm file correspons to the .mop file will be preserved, which would otherwise be delete

Currently, JavaMOP will invoke RV-Monitor internally to parse the intermediate .rvm file and generate monitoring library (in the form of Java source code); then the m
file so that at the end, one big .aj file is generated.

However, the option '-keepRVFiles' is going to be removed soon in the upcoming release, where the output of JavaMOP will be reorganized.

P.S.

I have tested your command on my machines, and for both windows 8.1 and Ubuntu 14.04, JavaMOP generated the output as expected and no error was observed.

You are also using windows OS? Can you provide more information about your testing environment? Do you only have one JavaMOP version installed on your machir

Cheers,
He Xiao

_____

From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu
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<mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>>>>>>]
Sent: Monday, September 07, 2015 4:25 PM
To: Rosu, Grigore; Xiao, He; Meredith, Patrick O'Neil
Cc: djin2@illinois.edu<mailto:djin2@illinois.edu><mailto:djin2@illinois.edu<mailto:djin2@illinois.edu>><mailto:djin2@illinois.edu<mailto:djin2@illinois.edu>>
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510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>>>>; Aneesh Kher; Nikhil Chinthapallee; Gargi Rajadhyaksha
Subject: Re: Regarding your tool, JavaMOP

Dr. Rosu,

I was able to successfully install JavaMOP and I was going through the JavaMOPAgentUsage.md document, trying to build JavaMOP Agent. While trying to generate t
properties I get the error message attached below. My question is, is -keepRVFiles a flag specific to the javamop command or is it a file which is not existing? I would r

[cid:ii_iead1vc40_14fa96c4220d8e09]

Thanks,
Anshita Sayal

On Tue, Sep 1, 2015 at 11:38 AM, Philip Daian <philip.daian@runtimeverification.com<mailto:philip.daian@runtimeverification.com>>
<mailto:philip.daian@runtimeverification.com<mailto:philip.daian@runtimeverification.com>><mailto:philip.daian@runtimeverification.com<mailto:philip.daian@ru

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<mailto:philip.daian@runtimeverification.com<mailto:philip.daian@runtimeverification.com>>>>>>> wrote:
Hi Anshita,

My apologies again for the delayed response. You should have received an update to your support ticket with download instructions.

Please feel free to let me know if you have any further questions. Thanks!
Philip Daian
RV Inc

On 09/01/2015 09:21 AM, Anshita Sayal wrote:
Hi Phillip,

I was just checking in regarding the details of downloading the academic version of RV-Monitor.

Thanks,
Anshita Sayal

On Mon, Aug 31, 2015 at 2:50 PM, Rosu, Grigore <grosu@illinois.edu<mailto:grosu@illinois.edu><mailto:grosu@illinois.edu<mailto:grosu@illinois.edu>>
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Hi Anshita,

There should be absolutely no problem to get RV-Monitor for academic use. Philip will get back to you with details about this.

Best,
Grigore

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From: Anshita Sayal [asayal@ncsu.edu<mailto:asayal@ncsu.edu><mailto:asayal@ncsu.edu<mailto:asayal@ncsu.edu>><mailto:asayal@ncsu.edu<mailto:asayal@ncs
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Rajadhyaksha
Subject: Fwd: Regarding your tool, JavaMOP

Dear Dr. Jin, Dr. Meredith, Dr. Li and Dr. Rosu,

I enjoyed reading your paper 'JavaMOP : Efficient Parametric Runtime Monitoring Framework'. As part of a graduate software engineering class at NC State University 'JavaMOP' as part of our class project. In short, the class is using tools from the past few ICSEs and FSEs, then putting all those tools in an accessible form (e.g., virtual supervised by Dr. Emerson MurphyHill (CC'd via ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.c 510@googlegroups.com>><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncs <mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.c 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>><mailto: 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>><mailto:ncs 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>><mailto:n 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>><mailto:ncs 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>>><mailto 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>><mailto:ncs 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>><mailto:n 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>><mailto:ncs 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>><mailto: 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>><mailto:ncs 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>><mailto:n 510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com><mailto:ncsu-csc-510@googlegroups.com<mailto:ncsu-csc-510@googlegroups.com>>>>>). Wh aggregating our results (e.g., how many tools could we get working, how easy was it, etc) into a research paper.

Because my grade rests on your tool, I am motivated to get it working. I have a question for you before I get started.

The tool has three prerequisites namely : Java Runtime Environment, AspectJ Compiler and Runtime Verification Monitor(RV-Monitor). However, RV-Monitor is not I see the message "RV Monitor Coming Soon". (https://runtimeverification.com/monitor/<https://urldefense.proofpoint.com/v2/url?u=https-3A__runtimeverification.com_monitor_&d=BQMFaQ&c=8hUWFZcy2Z-Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=gsxxuXze2p284sPTYpFdIxa3N9AdE7y6avy7bLqOto8&s=lwn9lbiFf9jPl-oHTYQdZ <https://urldefense.proofpoint.com/v2/url?u=https-3A__runtimeverification.com_monitor_&d=BQMFaQ&c=8hUWFZcy2Z-Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=C2dfdb54Q1UY6wljDyiTaOx2d1q-CwtBjHbM6BReyzw&s=4tqz5aF5zXFZiV8OuC <https://urldefense.proofpoint.com/v2/url?u=https-3A__runtimeverification.com_monitor_&d=AwMFaQ&c=8hUWFZcy2Z-Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=7zCnjh9alaiJOUvOTHTQL8nJvEYRDNysH6gEXocgsxY&s=fQ9FNtS3nNhXSRqL <https://urldefense.proofpoint.com/v2/url?u=https-3A__runtimeverification.com_monitor_&d=AwMFaQ&c=8hUWFZcy2Z-Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=LJVSEDHwWquPJxzUXOIKR86rudwVr1sW5o5_pc8z7jk&s=WcG5quk9kI9iD5m-BU7WqMHuvVYqFtzC1QYi0VvYOos&e=><https://urldefense.proofpoint.com/v2/url?u=https-3A__runtimeverification.com_monitor_&d=AwMFaQ&c=8hUWFZcy Za5rBPlktOQ&r=-9W7dlZvWbwzqWxP4xu4G1GRd6PE3qczGfLoXirI11g&m=zamq2DCV0VObUvI4I224ykYrQpHNU0i9YoHZ0dnc7CI&s=OHr2DzoCAZ_gL1X <https://urldefense.proofpoint.com/v2/url?u=https-3A__runtimeverification.com_monitor_&d=AwMFaQ&c=8hUWFZcy2Z-Za5rBPlktOQ&r=gBub4ab7wvmjFVEDwsswdud0fptTHrGi3G4Zzc5Kwds&m=W3gD39AaB6kTlclFFOVDI2aW0cmXRPuEi25RqWAgkew&s=ENi2NTtqy0VlO4rF I have contacted support as stated on the website but they haven't got back to me yet. Will it be possible for you to share a download link with me for RV-Monitor?

Thank you very much,

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