

<https://www.klayout.de/forum/discussion/2043/build-klayout-inside-conda-environment>

Initially posted by Grandement (2022-03-04)



Build KLayout Inside Conda Environment

Aim:

To organize my brain, which is
starting to get cluttered



By Kazzz-S (2023-01-30)



1. Different Build Scenarios Tested with **KLayout 0.28.3**

Scenario	Mac-B	Mac-H	Mac-P	Mac-A	Mint19-A	Mint19-B	Mint19-C
Anaconda3 installer	n/a			Anaconda3- 2022.10-MacOSX-x86_64.pkg	Anaconda3- 2021.11-Linux-x86_64.sh	Anaconda3- 2022.10-Linux-x86_64.sh	
Qt5	Homebrew 5.15.8		MacPorts 5.15.8	Anaconda3 5.15.2	Anaconda3 5.9.7	Anaconda3 5.15.2	
Python3	Homebrew 3.9.16		MacPorts 3.9.16	Anaconda3 3.9.16	Anaconda3 3.8.8	Anaconda3 3.9.16	
Ruby	Homebrew 3.1.3	OS-bundled 2.6.10	MacPorts 3.1.3	Anaconda3 3.1.2	Mint19 2.5.1	Anaconda3 3.1.2	
C++ compiler	Apple clang included in macOS-compliant Xcode				Mint19 g++ v7.5.0		g++ 11.2.0 (Anaconda gcc)
libstdc++	macOS-bundled v6.0.9				Mint19 v6.0.26	Mint19 v6.0.26 Anaconda3 v6.0.29	Anaconda3 v6.0.29
libGL et al	macOS-bundled OpenGL v1.0.0				Mint19 libgl1 v1.0.0		
details	https://github.com/KLayout/klayout/issues/1250				A	B	C
build status	success				success	success	success
remarks	published 16(=4x4) DMGs on 2023-01-16 https://www.klayout.de/build.html#downloads				refer to the details		

2. Details of Scenario=Mint19-A

Pros	Well fit to the base Linux system (Mint 19.3 Tricia) with minimal preparations
Cons	Anaconda3's Python and OS-bundled Ruby are not up to date Qt5 version is a little bit obsolete

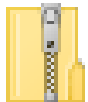
Key Parameters

```
41 bashKL="./build.sh"
42 pythonLib="$HOME/anaconda3/lib/libpython3.8.so"
43 buildDir="ana3A-build-release"
44 binDir="ana3A-bin-release"
45 buildOp="-j2"
46 buildLog="ana3A-build-release.log"
```

Command Line

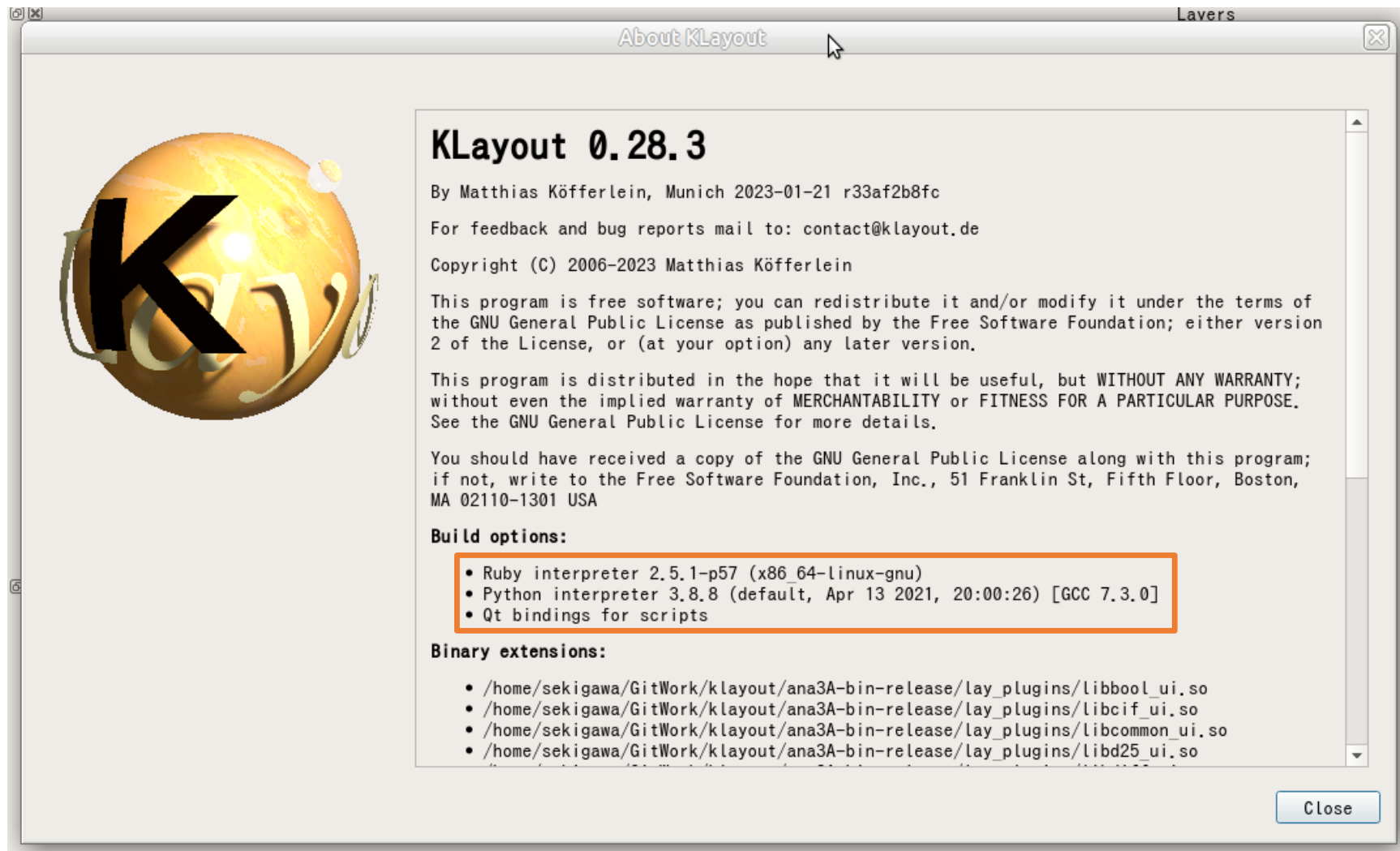
```
81 buildCmd="time $bashKL -build $buildDir -bin $binDir -pylib $pythonLib"
82 buildCmd="$buildCmd -option $buildOp $dryRun $help 2>&1 | tee $buildLog"
```

Detailed Steps and Wrapper Bash



Mint19-A.zip

2. Details of Scenario=Mint19-A



3. Details of Scenario=Mint19-B

Pros	Can use the latest Python and Ruby in Anaconda3
Cons	There are some library version mismatches/skews (mainly libstdc++ & libGL) to resolve somehow Need to run KLayout's "build.sh" in the expert mode after surveying

Key Parameters

```
41 bashKL="./build.sh"
42 pythonLib="$HOME/anaconda3/lib/libpython3.9.so"
43 buildDir="ana3B-2-build-release"
44 binDir="ana3B-2-bin-release"
45 buildOp="-j2"
46 buildLog="ana3B-2-build-release.log"
```

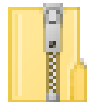
Expert Mode Parameters

```
76 expertMode=-expert
77 export AR=ar
78 export CC=gcc
79 export CXX=g++
80 export OBJCOPY=objcopy
81 export LDFLAGS="-L$HOME/anaconda3/lib -L/usr/lib/x86_64-linux-gnu"
```

Command Line

```
86 buildCmd="time $bashKL -build $buildDir -bin $binDir -pylib $pythonLib"
87 buildCmd="$buildCmd -option $buildOp $dryRun $help $expertMode 2>&1 | tee $buildLog"
```

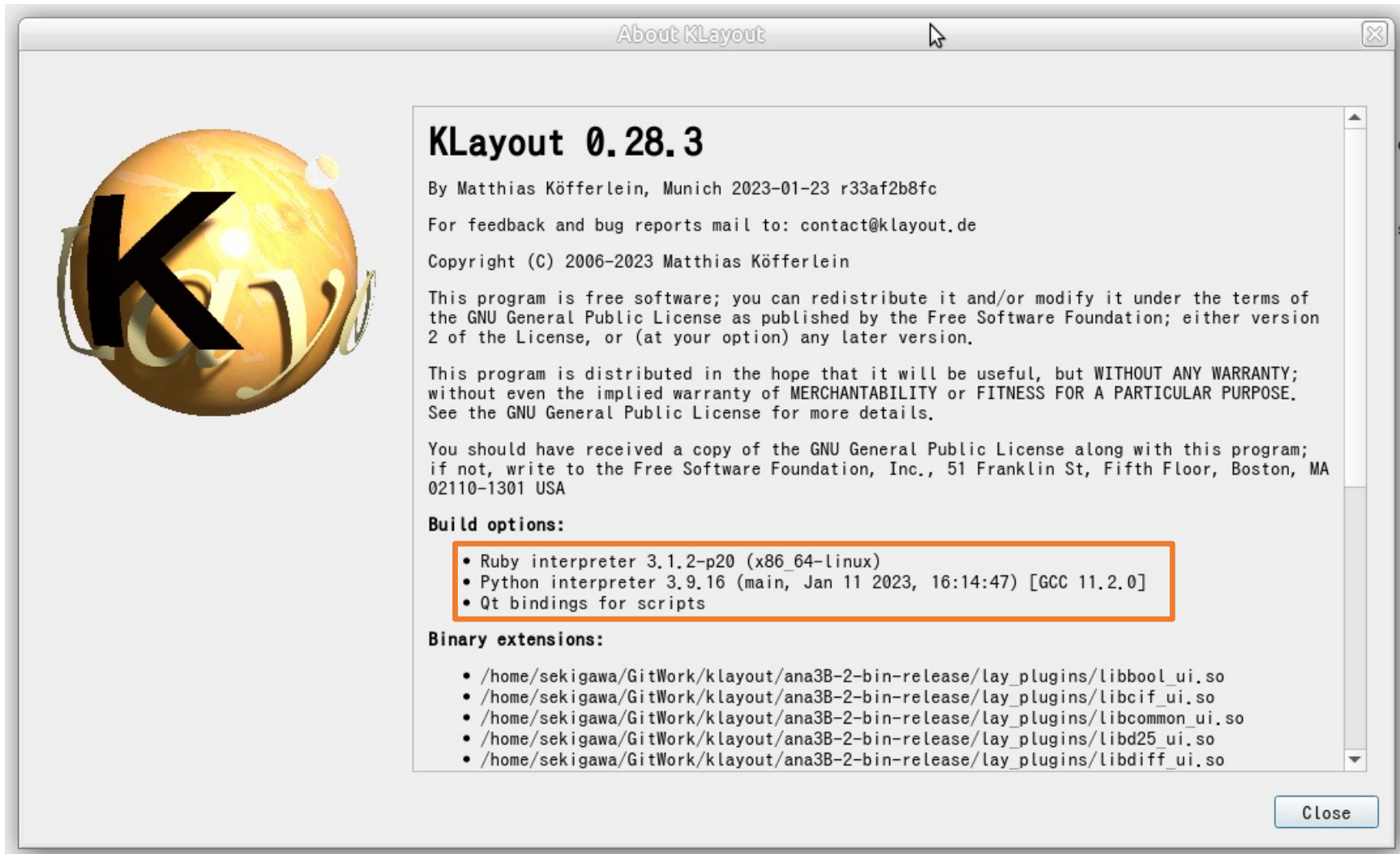
Detailed Steps and Wrapper Bash



Mint19-B.zip

- I. ana3B-1-steps.txt (go through this file first)
- II. ana3B-2-steps.txt (this file next)

3. Details of Scenario=Mint19-B



4. Details of Scenario=Mint19-C

dishearteningly
troublesome!

Pros	Can use the latest Python and Ruby in Anaconda3
Cons	There are many library version mismatches/skews (libstdc++, libGL, and more) to resolve somehow Need to run KLayout's "build.sh" in the expert mode after several stages of surveying

Key Parameters

```
41 bashKL="./build.sh"
42 pythonLib="$HOME/anaconda3/lib/libpython3.9.so"
43 buildDir="ana3C-2-build-release"
44 binDir="ana3C-2-bin-release"
45 buildOp="-j2"
46 buildLog="ana3C-2-build-release.log"
```

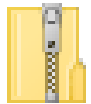
Expert Mode Parameters

```
90 expertMode=-expert
91 # export AR=ar
92 # export CC=gcc
93 # export CXX=g++
94 # export OBJCOPY=objcopy
95 export LDFLAGS="-L$HOME/anaconda3/lib -L/usr/lib/x86_64-linux-gnu"
96 export LIBS="-lGLX -lGLdispatch -lX11 -lxcb -lXau"
97 export CFLAGS="-I/usr/include -DHAVE_EXPLICIT_BZERO"
98 export CXXFLAGS="-I/usr/include -DHAVE_EXPLICIT_BZERO"
```

Command Line

```
103 buildCmd="time $bashKL -build $buildDir -bin $binDir -pylib $pythonLib"
104 buildCmd="$buildCmd -option $buildOp $dryRun $help $expertMode 2>&1 | tee $buildLog"
```

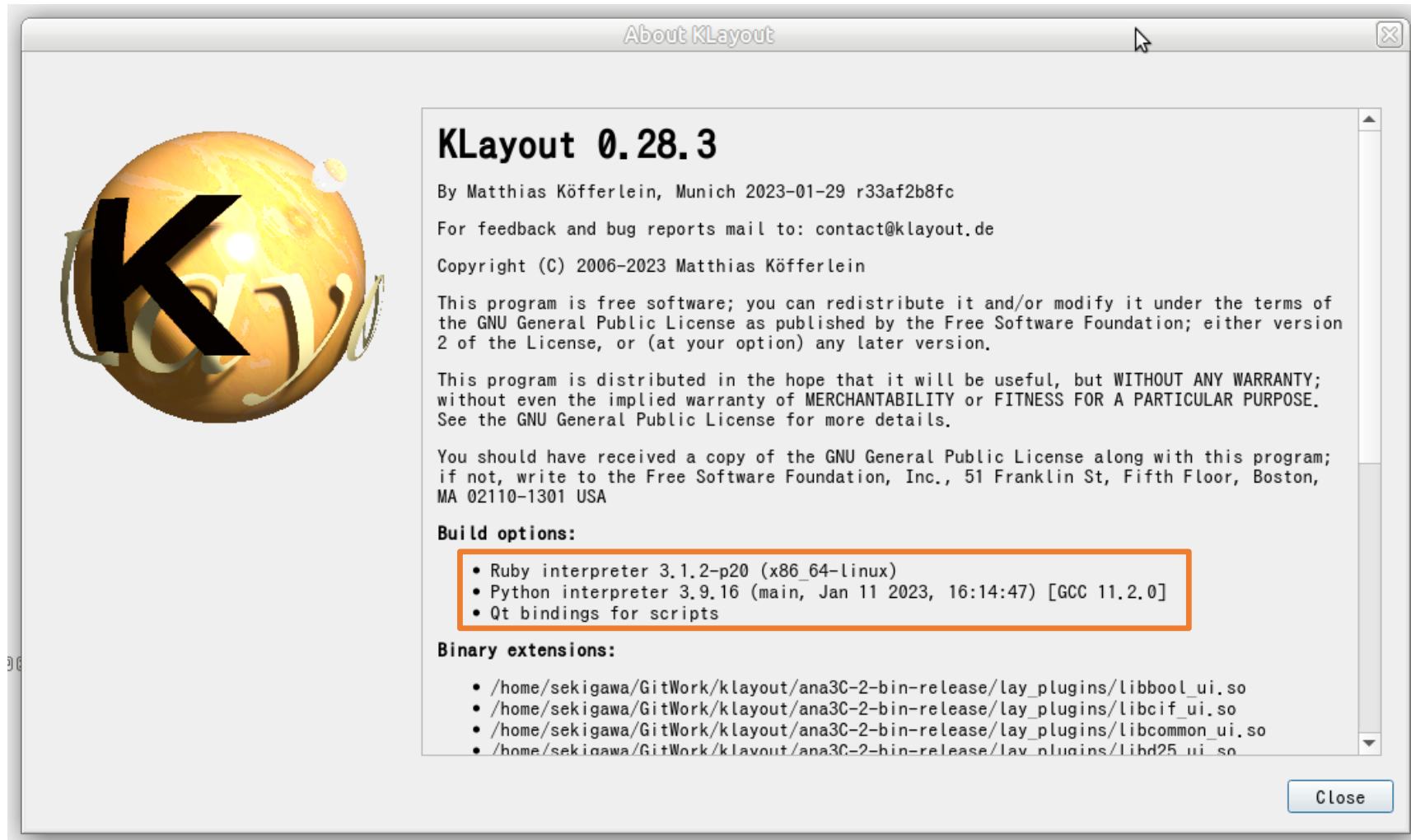
Detailed Steps and Wrapper Bash



Mint19-C.zip

- I. ana3C-1-steps.txt (go through this file first)
- II. ana3C-2-steps.txt (this file next)

4. Details of Scenario=Mint19-C



5. Suggestions



Grandement

January 4

Hi Kazzz,

I am not a mac user but I could go a few step further with my initial issue by your posts.

I used following conda environment:

```
name: klayoutenv
channels:
  - conda-forge
dependencies:
  - python==3.9.15
  - qt==5.15.9
  - ruby==3.1.2
  - cxx-compiler==1.5.2
```

It looks like better to avoid using Anaconda's gcc if not a MUST

And following build command:

```
build.sh -j16 -python ~/.conda/envs/klayoutenv/bin/python3.9 -pyinc
~/.conda/envs/klayoutenv/include/python3.9 -pylib
~/.conda/envs/klayoutenv/lib/libpython3.9.so
```

The dry-run is successful but I cannot finish the compiling.

“-dry-run” only generates Makefiles

It crash with following errors:

```
g++ -W1,-O1 -W1,-rpath,<MY_PATH>/.conda/envs/klayoutenv/lib -W1,-rpath-link,<
<MY_PATH>/.conda/envs/klayoutenv/bin/./lib/gcc/x86_64-conda-linux-gnu/11.3.0
collect2: error: ld returned 1 exit status
gmake[2]: *** [../../../../build-release/libklayout_t1.so.0.28.0] Error 1
```

Do you have a clue why this happens? Or anybody else?

Thanks and regards

Grandement

After generating Makefiles, we can manually edit them. Then, `make` experiments to determine what parameters are to be added/modified.

