Qt and Android Setup for Linux

1. Make sure you have gcc and make programs installed on your linux system.
    a. GCC 4.9 or later
    b. binutils
    c. make (GNUmake)
    d. Python 3.5.2 or later
2. It is recommended to create a folder and put the android SDK, android NDK, and qt5 folders all in this folder. In this tutorial, path-to-qt-folder , path-to-sdk-folder, and path-to-ndk-folder are all the same path. Do not confuse these with path-to-android-sdk, path-to-android-ndk . These are different.
3. Setup the Android SDK
    a. Download latest android sdk from here: https://dl.google.com/android/android-sdk_r24.4.1-linux.tgz
    b. Install swt from package manager or build from source.
    c. Download SDK packages. In a terminal window, run:
        i. cd path-to-sdk-folder
        ii. tar -xzf android-sdk_r24.4.1-linux.tgz
        iii. cd android-sdk-linux
        iv. ./tools/android
        v. Download and install these packages. It is highly recommended to download all the packages.
            1. Download latest Android SDK build tools
            2. Download API 9.
            3. Download API 10,11,16 for building QtBase
            4. Download API 11 for building QtMultimedia
            5. Download API 18 for building QtBluetooth
4. Setup the android ndk.
    a. Download Android NDK r10e from here: https://dl.google.com/android/repository/android-ndk-r10e-linux-x86_64.zip
    b. Android NDK r11 and r12 are known to have problems
    c. Releases after NDK r13 use Clang instead of the GCC compiler qt uses which means android qt project can't use those.
    d. Extract android ndk.
        i. In terminal window run:
            1. cd path-to-ndk-folder
            2. 7z x android-ndk-r10e-linux-x86.zip
5. Download and install OpenJDK6 or later (OpenJDK 8 recommended) from your package manager or build from source.
6. Download and install qt-creator 2.6.2 or later from package manager or build from source.

7. Download qt from github.
    a. Install git from package manager.
    b. Download from qt 5.6.2 branch
        i. In terminal window run: git clone -b 5.6.2 --single-branch git://github.com/qt/qt5.git
        ii. Note: qt 5.7 only compiles programs for android api 18 and up. qt 5.6 is best for compatibility.
    c. In terminal window run:
        i. cd path-to-qt-folder
        ii. cd qt5
        iii. perl init-repository
8. Configure environmental variables
    a. In a terminal window run:
        i. cd path-to-qt-folder
        ii. cd qt5
        iii. export JAVA_HOME='path-to-jdk'
            1. If JDK is installed from package manager, path-to-jdk is something like this /usr/lib/jvm/java-8-openjdk
            2. Include single quote marks! No space before or after equal sign! No space at end of path.
        iv. PATH=$PATH:$JAVA_HOME/bin
            1. Allows us to use javac in terminal from any directory. Needed to build qt for android! Include the $ sign correctly!
        v. export ANDROID_NDK_PATH='path-to-android-ndk'
        vi. export ANDROID_SDK_PATH='path-to-android-sdk'
        vii. Check that variables contain correct path.
            1. In same terminal window run: env | grep android
            2. In same terminal window run: env | grep java
        viii. Helpful hint: Can get full path to folder by going into folder with cd in terminal and running pwd.

9. Build qt for android.
    a. Build the qmake file and then run make
        i. In same terminal window from step 8 run:
            1. ./configure -xplatform android-g++ -nomake tests -nomake examples -android-ndk $ANDROID_NDK_PATH -android-sdk $ANDROID_SDK_PATH -android-ndk-host linux-x86_64 -android-toolchain-version 4.9 -skip qttranslations -skip qtwebkit -skip qtserialport -skip qtwebkit-examples -no-warnings-are-errors
            2. make
                a. If you get the error ‘Unsupported major minor version 52:’
                    i. Change path to put $JAVA_HOME/bin as first entry
                        1. PATH=$JAVA_HOME/bin:$PATH
            3. sudo make install
                a. This copies the files built from source into /usr/local/Qt-5.6.2
10. Setup QtCreator.
    a. Start qtcreator
    b. Go into Tools-> Options -> Android
        i. Set the right paths to the Android SDK and NDK, etc. For example:
            1. Android SDK Location: /home/johnsmith/dev/android-sdk-linux
            2. Android NDK Location: /home/johnsmith/dev/android-ndk-r8e
            3. JDK Location: /usr/lib/jvm/java-8-openjdk
        ii. Check the box ‘Automatically create kits for Android’
        iii. Check the box ‘Use Gradle instead of Ant’
    c. Go to Tools->Options -> Build & Run -> Qt Versions.
        i. Click Add and point path to /usr/local/Qt-5.6.2/bin/qmake
11. Make a test application to upload to phone
    a. Go to File->New File or Project -> Application -> Qt Quick Controls
    b. Name your project file. (e.g Test)
    c. For Minimal Required Qt Version, choose Qt 5.5
    d. Uncheck the native styling box
    e. Check the Andriod Kit with GCC 4.9 Qt 5.6.2
    f. Click on Build->Build Project
    g. Connect Android phone to computer with USB cable
    h. After building is done, Click on Build->Run
    i. Choose your phone and click OK.
    j. After the test application apk is loaded in the Android phone, it should run. Enjoy!