

# Getting LWDAQ to Run as a Linux Application on Windows 10

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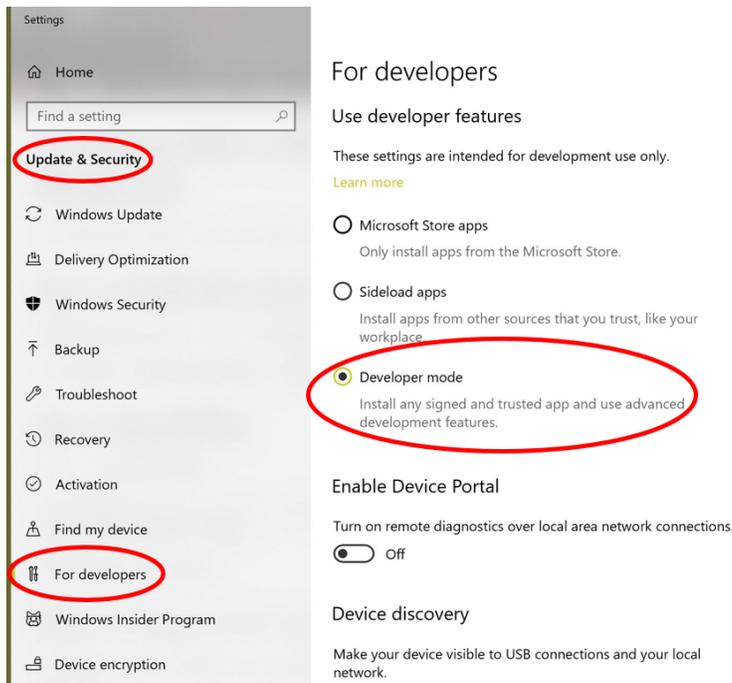
### 1. Installing and Running Xming

- a. Install Xming at <https://sourceforge.net/projects/xming/>. Use the wizard to do a full install of Xming.
- b. Launch Xming. This will be done automatically after installation. This can also be done by running the applications Xlaunch or Xming from the executable files in the Xming folder or through the application list in the start menu.<sup>1</sup>
- c. Xming will run in the background; a small icon may appear on the taskbar.



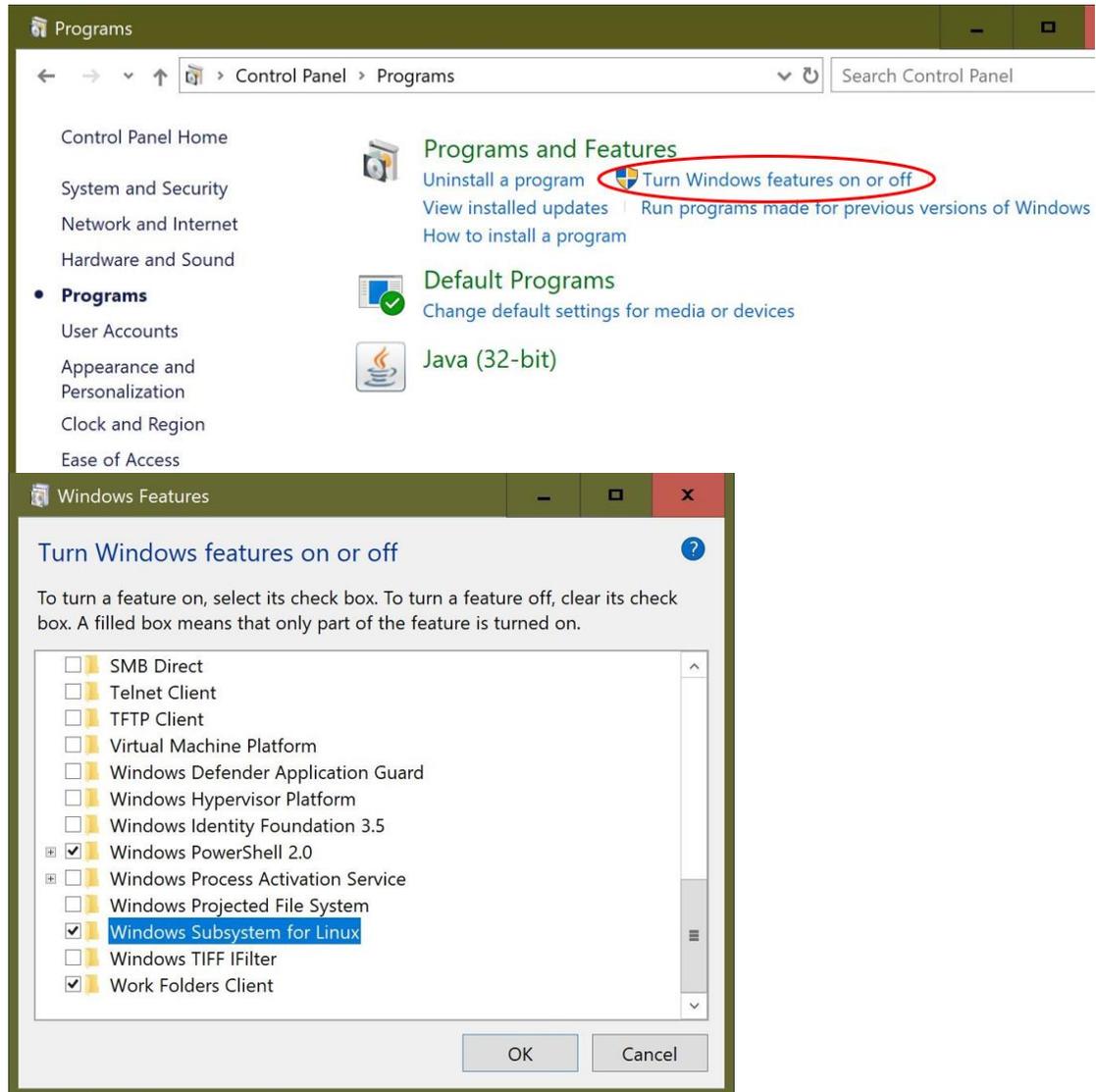
### 2. Setting Up a Bash Shell

- a. Go to Settings > Update & Security > For Developers. Enable developer mode by selecting “Developer mode.”

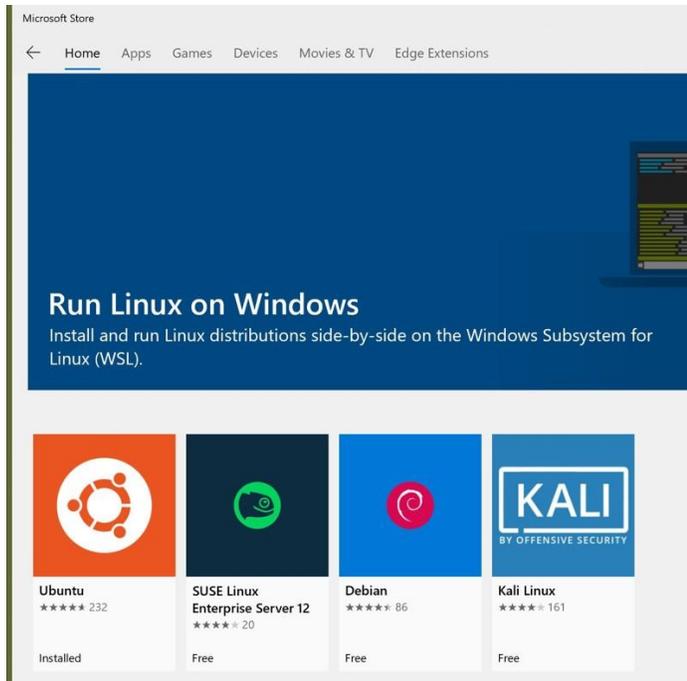


<sup>1</sup> Xlaunch provides configuration options for launching Xming. Both executable files (.exe) are likely in: C:\Program Files (x86)

- b. This next step requires administrative access. Go to control panel > programs > programs and features > turn Windows features on or off. Scroll through the list until “Windows Subsystem for Linux” is reached. Check the box to the left and click “OK.” Restart the computer before continuing to step c.



- c. Next we must install a Linux distribution in order to run Linux commands. A search in the Microsoft store for “Linux on Windows” provides 4 options at the time of writing. I choose Ubuntu.



- d. Install Ubuntu (this takes a minute or two) and create a Unix account. Remember the password!

```
csarmstrong123@DESKTOP-7KK4C0K: ~
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: csarmstrong123
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

csarmstrong123@DESKTOP-7KK4C0K:~$
```

- e. With a Linux distribution installed, open command prompt (native Windows app), and type the `bash` command to create a bash shell.

```
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah
Microsoft Windows [Version 10.0.17763.557]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Sarah>bash
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah$
```

### 3. Using the export display command

- a. Within the bash shell, type `export DISPLAY=0.0:0` This defines the DISPLAY variable,<sup>2</sup> and makes Xming responsible for displaying anything generated from the bash shell.<sup>3</sup>

```
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah/desktop/lwdaq_8.7.17/lwdaq
C:\Users\Sarah>bash
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah$ export DISPLAY=0.0:0
```

### 4. Navigate to the correct directory

- a. Determine the file path to the LWDAQ directory.<sup>4</sup>
- b. Within the bash shell, navigate to the LWDAQ directory using the `cd` command.

### 5. Launch LWDAQ

- a. Type `./lwdaq` to run the lwdaq bash shell script and launch LWDAQ.

```
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah/desktop/lwdaq_8.7.17/lwdaq
C:\Users\Sarah>bash
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah$ export DISPLAY=0.0:0
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah$ cd desktop
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah/desktop$ cd lwdaq_8.7.17
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah/desktop/lwdaq_8.7.17$ cd lwdaq
csarmstrong123@DESKTOP-7KK4C0K: /mnt/c/Users/Sarah/desktop/lwdaq_8.7.17/lwdaq$ ./lwdaq
OS: Linux
ARCH: x86_64
OPTION: --gui
GUI_ENABLED: 1
CONSOLE_ENABLED: 1
RUN_IN_BACKGROUND: 0
CONFIG_FILE: None specified
SHELL: ./LWDAQ.app/Contents/Linux/x86_64/bin/wish8.5
LWDAQ%
```



### 6. Useful links

- a. Installing and running Xming: <http://www.straightrunning.com/XmingNotes/>

<sup>2</sup> `Export` defines a variable and tells all subsequent commands and shells to use that value of the variable. `DISPLAY` is a Linux variable which needs to be defined to launch LWDAQ with a graphical user interface (GUI). The hostname `0.0` refers to the local computer. `:0` is called a sequence number. It says which monitor in the display should be used; use `:0` for single monitor displays.

<sup>3</sup> Linux uses what's called an "X window system server" to displays GUIs. An "X window system" is a set of rules defining how to present objects on a display and how to receive keyboard/mouse input. An "X server" handles communication between the graphics card, the display, and keyboard/mouse input; it uses the rules to perform whatever display operation necessary. Xming is popular, well-documented, and free "X window system server."

<sup>4</sup> For example, my LWDAQ directory is: C:\Users\Sarah\Desktop\lwdaq\_8.7.17\lwdaq.

- b. Setting up a bash shell: <http://wsl-guide.org/en/latest/installation.html>
- c. The `export` command: <https://linuxconfig.org/learning-linux-commands-export>
- d. The `DISPLAY` variable:  
[https://support.objectplanet.com/esupport/index.php?\\_m=knowledgebase&\\_a=viewarticle&kbarticleid=17](https://support.objectplanet.com/esupport/index.php?_m=knowledgebase&_a=viewarticle&kbarticleid=17)
- e. X Window Systems and Servers: <http://www.linfo.org/x.html>
- f. The `cd` command: [http://www.linfo.org/command\\_line\\_lesson\\_1.html](http://www.linfo.org/command_line_lesson_1.html)
- g. Running LWDAQ from a bash shell/terminal:  
<http://alignment.hep.brandeis.edu/Electronics/LWDAQ/Manual.html#Run From Terminal>