

Practical: Installation of Java on Unix/Linux Machine (Without VirtualBox)

This guide uses WSL (Windows Subsystem for Linux) to simulate a Linux environment directly on Windows.

Step 1: Enable WSL

1. Open PowerShell as Administrator

2. Run the following command:

```
wsl --install
```

3. Restart your computer when prompted.

4. After restart, choose Ubuntu or install it from the Microsoft Store.

Step 2: Open Ubuntu (WSL)- Search for 'Ubuntu' in Start Menu and open it.- It will initialize and ask for a username and password.

Step 3: Update the Package

List Run the following

command:

```
sudo apt update
```

Step 4: Install Java (OpenJDK 8 or 11)- For

Java 8: `sudo apt install openjdk-8-jdk -y`- For

Java 11: `sudo apt install openjdk-11-jdk -y`

Step 5: Verify Java

Installation Run:

```
java -version
```

Expected output:

```
openjdk version "1.8.0_xxx" ...
```

Step 6: Set JAVA_HOME Environment Variable (Optional)

1. Open .bashrc

file: nano

```
~/.bashrc
```

2. Add the following lines at the end:

```
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-
amd64 export PATH=$JAVA_HOME/bin:$PATH
```

3. Save and exit (Ctrl+X, then Y, then Enter)

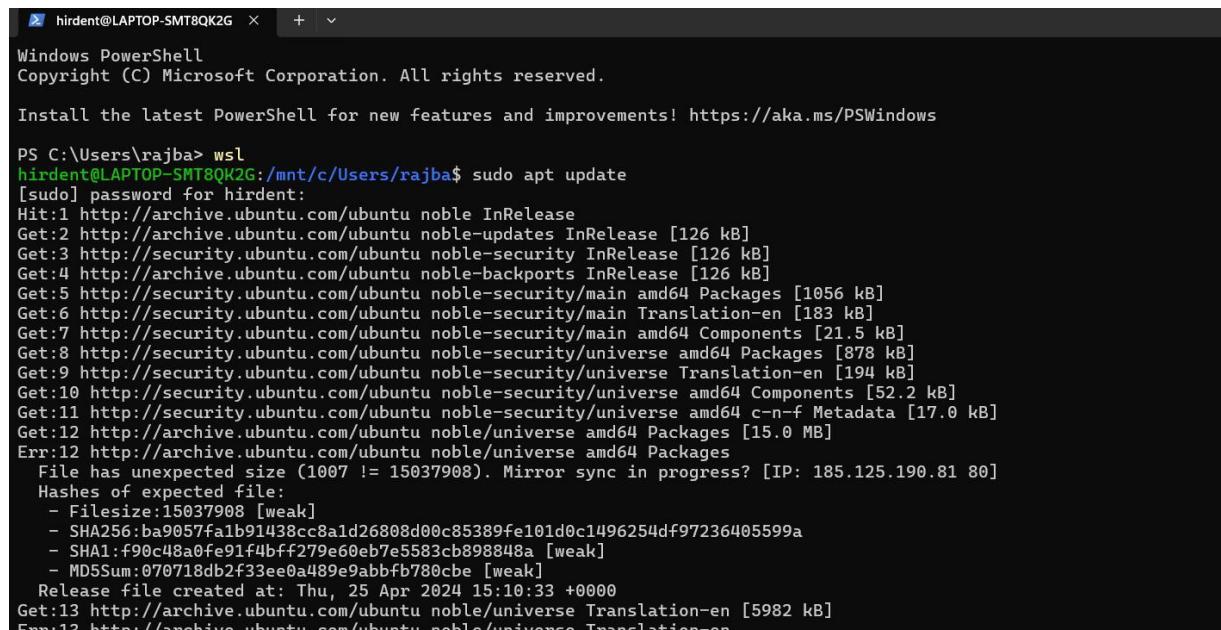
4. Reload bashrc:

```
source ~/.bashrc
```

5. Verify JAVA_HOME is set:

```
echo $JAVA_HOME
```

You now have Java installed on a Linux system simulated within Windows without using VirtualBox



The screenshot shows a Windows PowerShell window titled "hirdent@LAPTOP-SMT8QK2G". The command "wsl" is run, which then runs "sudo apt update". The output shows the download of various Ubuntu packages from archive.ubuntu.com, including noble, noble-updates, noble-security, and universe components for amd64 architecture. A warning message about file size mismatch is shown, followed by a list of SHA hashes for the expected files.

```
PS C:\Users\rajba> wsl
hirdent@LAPTOP-SMT8QK2G:/mnt/c/Users/rajba$ sudo apt update
[sudo] password for hirdent:
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1056 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [183 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [878 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [194 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [17.0 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Err:12 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages
  File has unexpected size (1007 != 15037908). Mirror sync in progress? [IP: 185.125.190.81 80]
Hashes of expected file:
 - Filesize:15037908 [weak]
 - SHA256:ba9057fa1b91438cc8a1d26808d00c85389fe101d0c1496254df97236405599a
 - SHA1:f90c48a0fe91f4bff279e60eb7e5583cb898848a [weak]
 - MD5Sum:070718db2f33ee0a489e9abbfb780cbe [weak]
Release file created at: Thu, 25 Apr 2024 15:10:33 +0000
Get:13 http://archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble/universe Translation-en
```

```
hirdent@LAPTOP-SMT8QK2G:~$ sudo apt update
Get:1 http://archive.ubuntu.com/ubuntu noble InRelease [823 B]
Err:1 http://archive.ubuntu.com/ubuntu noble InRelease
      Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
Get:2 http://archive.ubuntu.com/ubuntu noble-security InRelease [843 B]
Err:2 http://archive.ubuntu.com/ubuntu noble-security InRelease
      Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
Get:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease [839 B]
Err:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease
      Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
Get:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease [843 B]
Err:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
      Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
Reading package lists... Done
N: See apt-secure(8) manpage for repository creation and user configuration details.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
E: The repository 'http://archive.ubuntu.com/ubuntu noble InRelease' is no longer signed.
E: Failed to fetch http://archive.ubuntu.com/ubuntu/dists/noble/InRelease  Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
N: See apt-secure(8) manpage for repository creation and user configuration details.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
E: The repository 'http://security.ubuntu.com/ubuntu noble-security InRelease' is no longer signed.
E: Failed to fetch http://security.ubuntu.com/ubuntu/dists/noble-security/InRelease  Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
E: Failed to fetch http://archive.ubuntu.com/ubuntu/dists/noble-updates/InRelease  Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
E: The repository 'http://archive.ubuntu.com/ubuntu noble-updates InRelease' is no longer signed.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
E: Failed to fetch http://archive.ubuntu.com/ubuntu/dists/noble-backports/InRelease  Clebsigned file isn't valid, got 'NOSPLIT' (does the network require authentication?)
E: The repository 'http://archive.ubuntu.com/ubuntu noble-backports InRelease' is not signed.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
hirdent@LAPTOP-SMT8QK2G:~$ sudo apt update
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1056 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [183 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [878 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [194 kB]
```

```
N: See apt-secure(8) manpage for repository creation and user configuration details.
hirdent@LAPTOP-SMT8QK2G:~$ sudo apt update
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://archive.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1056 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [183 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [878 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [194 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [17.0 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:12 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [1566 kB]
Get:13 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [343 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [288 B]
Get:15 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [18.5 kB]
Get:16 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [4288 B]
Get:17 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [298 B]
Get:18 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [380 B]
Get:19 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 kB]
Get:20 http://archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:21 http://archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:22 http://archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:23 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:24 http://archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:25 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:26 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:27 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1315 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-updates/main Translation-en [264 kB]
Get:29 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [164 kB]
Get:30 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1120 kB]
Get:31 http://archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [287 kB]
Get:32 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [377 kB]
Get:33 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [26.0 kB]
Get:34 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [1650 kB]
Get:35 http://archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [361 kB]
Get:36 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:37 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [33.2 kB]
Get:38 http://archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [6772 B]
Get:39 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:40 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [592 B]
Get:41 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [39.9 kB]
Get:42 http://archive.ubuntu.com/ubuntu noble-backports/main Translation-en [9152 B]
```

```
hirdent@LAPTOP-SMT8QK2G: ~ + 
- MD5Sum:2384cf0867de374af34c8b64ec48bda3 [weak]
- Filesize:1341350 [weak]
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-missing?
hirdent@LAPTOP-SMT8QK2G: /mnt/c/Users/rajba$ sudo apt install openjdk-11-jdk -
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
alsa-topology-conf alsuaucm-conf ca-certificates-java fonts-dejavu-extra java-common libasound2-data libasound2t64 libatk-wrapper-java
libatk-wrapper-java-jni libgif7 libice-dev libice6 libnspr4 libnss3 libpcsc-lite1 libpthread-stubs0-dev libsm-dev libsm6 libx11-dev libxau-dev libxaw7
libxcb-shape0 libxcb1-dev libxdmcp-dev libxft2 libxbfbfile1 libxmu6 libxpm4 libxt-dev libxt6t64 libxv1 libxf86dg1 openjdk-11-jdk-headless
openjdk-11-jre openjdk-11-jre-headless x11-utils x11proto-dev xorg-sgml-doctools xtrans-dev
Suggested packages:
default-jre alsu-utilities libasound2-plugins libice-doc pccsd libsm-doc libx11-doc libxcb-doc libxt-doc openjdk-11-demo openjdk-11-source visualvm
libnss-mdns fonts-ipafont-gothic fonts-ipafont-mincho fonts-wqy-microhei | fonts-wqy-zenhei fonts-indic mesa-utils
Recommended packages:
luit
The following NEW packages will be installed:
alsa-topology-conf alsuaucm-conf ca-certificates-java fonts-dejavu-extra java-common libasound2-data libasound2t64 libatk-wrapper-java
libatk-wrapper-java-jni libgif7 libice-dev libice6 libnspr4 libnss3 libpcsc-lite1 libpthread-stubs0-dev libsm-dev libsm6 libx11-dev libxau-dev libxaw7
libxcb-shape0 libxcb1-dev libxdmcp-dev libxft2 libxbfbfile1 libxmu6 libxpm4 libxt-dev libxt6t64 libxv1 libxf86dg1 openjdk-11-jdk-headless
openjdk-11-jre openjdk-11-jre-headless x11-utils x11proto-dev xorg-sgml-doctools xtrans-dev
0 upgraded, 40 newly installed, 0 to remove and 0 not upgraded.
Need to get 121 MB/125 MB of archives.
After this operation, 284 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble/main amd64 fonts-dejavu-extra all 2.37-8 [1947 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble/main amd64 libnss3 amd64 2:3.98-1build1 [1445 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 openjdk-11-jre-headless amd64 11.0.28+6~lubuntu1~24.04.1 [42.3 MB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 openjdk-11-jre amd64 11.0.28+6~lubuntu1~24.04.1 [210 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 openjdk-11-jdk-headless amd64 11.0.28+6~lubuntu1~24.04.1 [73.7 MB]
Get:6 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 openjdk-11-jdk amd64 11.0.28+6~lubuntu1~24.04.1 [1341 kB]
Fetched 121 MB in 33s (3680 kB/s)
Extracting templates from packages: 100%
Selecting previously unselected package alsatopology-conf.
(Reading database ... 40754 files and directories currently installed.)
Preparing to unpack .../00-alsa-topology-conf_1.2.5.1-2_all.deb ...
Unpacking alsatopology-conf (1.2.5.1-2) ...
Selecting previously unselected package libasound2-data.
Preparing to unpack .../01-libasound2-data_1.2.11-lubuntu0.1_all.deb ...
Unpacking libasound2-data (1.2.11-lubuntu0.1) ...
Selecting previously unselected package libasound2t64:amd64.
Preparing to unpack .../02-libasound2t64_1.2.11-lubuntu0.1_amd64.deb ...
Unpacking libasound2t64:amd64 (1.2.11-lubuntu0.1) ...
Selecting previously unselected package alsaucm-conf.
```

```
Adding debian:vTrus_Root_CA.pem
done
Setting up openjdk-11-jre:amd64 (11.0.28+6~lubuntu1~24.04.1) ...
Setting up openjdk-11-jdk-headless:amd64 (11.0.28+6~lubuntu1~24.04.1) ...
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jar to provide /usr/bin/jar (jar) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jarsigner to provide /usr/bin/jarsigner (jarsigner) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/javac to provide /usr/bin/javac (javac) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/javadoc to provide /usr/bin/javadoc (javadoc) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/javap to provide /usr/bin/javap (javap) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jcmd to provide /usr/bin/jcmd (jcmd) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jdb to provide /usr/bin/jdb (jdb) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jdepscan to provide /usr/bin/jdepscan (jdepscan) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jdeps to provide /usr/bin/jdeps (jdeps) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jfr to provide /usr/bin/jfr (jfr) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jimage to provide /usr/bin/jimage (jimage) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jinfo to provide /usr/bin/jinfo (jinfo) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jlink to provide /usr/bin/jlink (jlink) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jmap to provide /usr/bin/jmap (jmap) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jmod to provide /usr/bin/jmod (jmod) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jps to provide /usr/bin/jps (jps) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jrunscript to provide /usr/bin/jrunscript (jrunscript) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jshell to provide /usr/bin/jshell (jshell) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jstack to provide /usr/bin/jstack (jstack) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jstat to provide /usr/bin/jstat (jstat) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jstati to provide /usr/bin/jstati (jstati) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/rmic to provide /usr/bin/rmic (rmic) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/serialver to provide /usr/bin/serialver (serialver) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jaotc to provide /usr/bin/jaotc (jaotc) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jhsdb to provide /usr/bin/jhsdb (jhsdb) in auto mode
Setting up openjdk-11-jdk:amd64 (11.0.28+6~lubuntu1~24.04.1) ...
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jconsole to provide /usr/bin/jconsole (jconsole) in auto mode
hirdent@LAPTOP-SMT8QK2G: /mnt/c/Users/rajba$ java -version
openjdk version "11.0.28" 2025-07-15
OpenJDK Runtime Environment (build 11.0.28+6~post-Ubuntu-lubuntu124.04.1)
OpenJDK 64-Bit Server VM (build 11.0.28+6~post-Ubuntu-lubuntu124.04.1, mixed mode, sharing)
hirdent@LAPTOP-SMT8QK2G: /mnt/c/Users/rajba$ nano ~/.bashrc
hirdent@LAPTOP-SMT8QK2G: /mnt/c/Users/rajba$ source ~/.bashrc
hirdent@LAPTOP-SMT8QK2G: /mnt/c/Users/rajba$ echo $JAVA_HOME
Command 'echo' not found, did you mean:
  command 'echo' from deb coreutils (9.4-2ubuntu2)
Try: sudo apt install <deb name>
hirdent@LAPTOP-SMT8QK2G: /mnt/c/Users/rajba$ echo $JAVA_HOME
/usr/lib/jvm/java-11-openjdk-amd64
hirdent@LAPTOP-SMT8QK2G: /mnt/c/Users/rajba$ |
```

