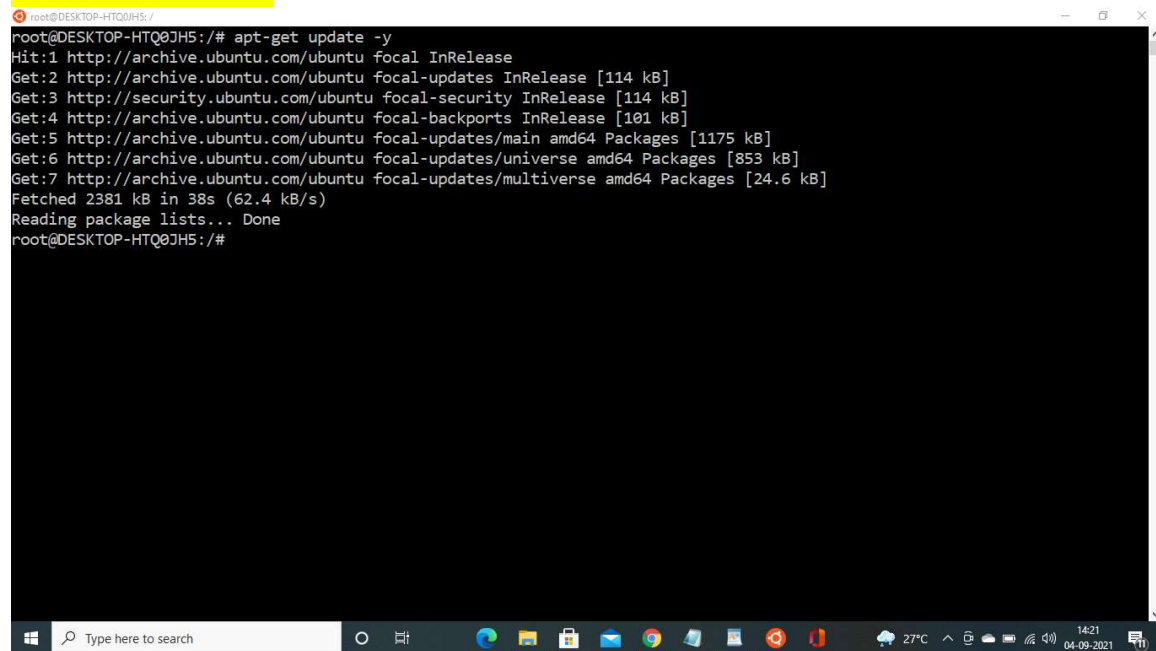


EXPERIMENT NO: 7

AIM:-INSTALLATION OF SOFTWARE FROM THE SOURCE CODE

Step 1: Get The Server Ready

apt-get update -y

A screenshot of a terminal window on a Windows desktop. The terminal shows the command 'apt-get update -y' being executed. The output lists several updates from Ubuntu repositories, including focal InRelease, focal-updates InRelease, focal-security InRelease, focal-backports InRelease, and various amd64 Packages from focal-updates/main, universe, and multiverse. It indicates that 2381 kB were fetched in 38 seconds at a rate of 62.4 kB/s. The terminal window has a title bar that reads 'root@DESKTOP-HTQ0JH5:/' and standard Windows window controls. The Windows taskbar is visible at the bottom with the search bar and several application icons.

```
root@DESKTOP-HTQ0JH5:/# apt-get update -y
Hit:1 http://archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1175 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [853 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [24.6 kB]
Fetched 2381 kB in 38s (62.4 kB/s)
Reading package lists... Done
root@DESKTOP-HTQ0JH5:/#
```

make sure a compiler available

apt-get install build-essential -y

```
root@DESKTOP-HTQ0JH5:/# apt-get install build essential -y
```

```
Setting up libisl12:amd64 (0.22.1-1) ...
Setting up libbinutils:amd64 (2.34-6ubuntu1.1) ...
Setting up libc-dev-bin (2.31-0ubuntu9.2) ...
Setting up libalgorithm-diff-xs-perl (0.04-6) ...
Setting up libcc1-0:amd64 (10.3.0-1ubuntu1~20.04) ...
Setting up liblsan0:amd64 (10.3.0-1ubuntu1~20.04) ...
Setting up libitm1:amd64 (10.3.0-1ubuntu1~20.04) ...
Setting up gcc-9-base:amd64 (9.3.0-17ubuntu1~20.04) ...
Setting up libalgorithm-merge-perl (0.08-3) ...
Setting up libtsan0:amd64 (10.3.0-1ubuntu1~20.04) ...
Setting up libctf0:amd64 (2.34-6ubuntu1.1) ...
Setting up libasan5:amd64 (9.3.0-17ubuntu1~20.04) ...
Setting up cpp-9 (9.3.0-17ubuntu1~20.04) ...
Setting up libc6-dev:amd64 (2.31-0ubuntu9.2) ...
Setting up binutils-x86-64-linux-gnu (2.34-6ubuntu1.1) ...
Setting up binutils (2.34-6ubuntu1.1) ...
Setting up dpkg-dev (1.19.7ubuntu3) ...
Setting up libgcc-9-dev:amd64 (9.3.0-17ubuntu1~20.04) ...
Setting up cpp (4:9.3.0-1ubuntu2) ...
Setting up gcc-9 (9.3.0-17ubuntu1~20.04) ...
Setting up libstdc++-9-dev:amd64 (9.3.0-17ubuntu1~20.04) ...
Setting up gcc (4:9.3.0-1ubuntu2) ...
Setting up g++-9 (9.3.0-17ubuntu1~20.04) ...
Setting up g++ (4:9.3.0-1ubuntu2) ...
update-alternatives: using /usr/bin/g++ to provide /usr/bin/c++ (c++) in auto mode
Setting up build-essential (12.8ubuntu1.1) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
root@DESKTOP-HTQ0JH5:/#
```

Step 2: Download Dependencies

```
apt install build-essential dh-autoreconf libcurl4-gnutls-dev libexpat1-dev  
gettext libz-dev libssl-dev -y
```

```
root@DESKTOP-HTQ0JH5:/# apt install build-essential dh-autoreconf libcurl4-gnutls-dev libexpat1-dev gettext libz-dev libssl-dev -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'zlib1g-dev' instead of 'libz-dev'
build-essential is already the newest version (12.8ubuntu1.1).
The following additional packages will be installed:
  autoconf automake autopoint autotools-dev debhelper dh-strip-nondeterminism dwz intltool-debian libarchive-cpio-perl
  libarchive-zip-perl libcroco3 libdebhelper-perl libfile-stripnondeterminism-perl libltdl-dev libmail-sendmail-perl
  libsub-override-perl libsys-hostname-long-perl libtool m4 po-debconf
Suggested packages:
  autoconf-archive gnu-standards autoconf-doc dh-make gettext-doc libasprintf-dev libgettextpo-dev libcurl4-doc
  libgnutls28-dev libidn11-dev libkrb5-dev libldap2-dev librtmp-dev libssh2-1-dev pkg-config libtool-doc libssl-doc
  gfortran | fortran95-compiler gcj-jdk m4-doc libmail-box-perl
The following NEW packages will be installed:
  autoconf automake autopoint autotools-dev debhelper dh-autoreconf dh-strip-nondeterminism dwz gettext intltool-debian
  libarchive-cpio-perl libarchive-zip-perl libcroco3 libcurl4-gnutls-dev libdebhelper-perl libexpat1-dev
  libfile-stripnondeterminism-perl libltdl-dev libmail-sendmail-perl libssl-dev libsub-override-perl
  libsys-hostname-long-perl libtool m4 po-debconf zlib1g-dev
0 upgraded, 26 newly installed, 0 to remove and 0 not upgraded.
Need to get 6497 kB of archives.
After this operation, 25.4 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/main amd64 m4 amd64 1.4.18-4 [199 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/main amd64 autoconf all 2.69-11.1 [321 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 autotools-dev all 20180224.1 [39.6 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal/main amd64 automake all 1:1.16.1-4ubuntu6 [522 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/main amd64 autopoint all 0.19.8.1-10build1 [412 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/main amd64 libtool all 2.4.6-14 [161 kB]
```

```
Setting up libcurl4-gnutls-dev:amd64 (7.68.0-1ubuntu2.6) ...#####
Setting up autotools-dev (20180224.1) ...#####
Setting up libexpat1-dev:amd64 (2.2.9-1build1) ...#####
Setting up libssl-dev:amd64 (1.1.1f-1ubuntu2.8) ...#####
Setting up autopoint (0.19.8.1-10build1) ...#####
Setting up libcroco3:amd64 (0.6.13-1) ...#####
Setting up autoconf (2.69-11.1) ...#####
Setting up zlib1g-dev:amd64 (1:1.2.11.dfsg-2ubuntu1.2) ...#####
Setting up dwz (0.13-5) ...#####
Setting up libarchive-cpio-perl (0.10-1) ...#####
Setting up libsub-override-perl (0.09-2) ...#####
Setting up libsys-hostname-long-perl (1.5-1) ...#####
Setting up automake (1:1.16.1-4ubuntu6) ...#####
update-alternatives: using /usr/bin/automake-1.16 to provide /usr/bin/automake (automake) in auto mode.....
Setting up libfile-stripnondeterminism-perl (1.7.0-1) ...#####
Setting up gettext (0.19.8.1-10build1) ...#####
Setting up libtool (2.4.6-14) ...#####
Setting up intltool-debian (0.35.0+20060710.5) ...#####
Setting up libmail-sendmail-perl (0.80-1) ...#####
Setting up libltdl-dev:amd64 (2.4.6-14) ...#####
Setting up dh-strip-nondeterminism (1.7.0-1) ...#####
Setting up po-debconf (1.0.21) ...#####
Setting up dh-autoreconf (19) ...#####
Setting up debhelper (12.10ubuntu1) ...#####
Processing triggers for man-db (2.9.1-1) ...#####
Processing triggers for install-info (6.7.0.dfsg.2-5) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
root@DESKTOP-HTQ0JH5:/#
```

Step 3: Download The Source Package

wget <https://github.com/git/git/archive/v2.23.0.tar.gz>

```
root@DESKTOP-HTQ0JH5:/# wget https://github.com/git/git/archive/v2.23.0.tar.gz
--2021-09-04 15:00:02-- https://github.com/git/git/archive/v2.23.0.tar.gz
Resolving github.com (github.com)... 13.234.176.102
Connecting to github.com (github.com)|13.234.176.102|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://codeload.github.com/git/git/tar.gz/v2.23.0 [following]
--2021-09-04 15:00:04-- https://codeload.github.com/git/git/tar.gz/v2.23.0
Resolving codeload.github.com (codeload.github.com)... 13.127.152.42
Connecting to codeload.github.com (codeload.github.com)|13.127.152.42|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [application/x-gzip]
Saving to: 'v2.23.0.tar.gz'

v2.23.0.tar.gz           [          ] 8.25M  757KB/s  in 17s

2021-09-04 15:00:21 (504 KB/s) - 'v2.23.0.tar.gz' saved [8647535]

root@DESKTOP-HTQ0JH5:/#
```

extract the archive using

tar -xvzf v2.23.0.tar.gz

```
root@DESKTOP-HTQ0JH5:/# tar -xvzf v2.23.0.tar.gz
git-2.23.0/
git-2.23.0/.clang-format
git-2.23.0/.editorconfig
git-2.23.0/.gitattributes
git-2.23.0/.github/
git-2.23.0/.github/CONTRIBUTING.md
git-2.23.0/.github/PULL_REQUEST_TEMPLATE.md
git-2.23.0/.gitignore
git-2.23.0/.gitmodules
git-2.23.0/.mailmap
git-2.23.0/.travis.yml
git-2.23.0/.tsan-suppressions
git-2.23.0/COPYING
git-2.23.0/Documentation/
git-2.23.0/Documentation/.gitattributes
git-2.23.0/Documentation/.gitignore
git-2.23.0/Documentation/CodingGuidelines
git-2.23.0/Documentation/Makefile
git-2.23.0/Documentation/MyFirstContribution.txt
git-2.23.0/Documentation/RelNotes/
git-2.23.0/Documentation/RelNotes/1.5.0.1.txt
git-2.23.0/Documentation/RelNotes/1.5.0.2.txt
git-2.23.0/Documentation/RelNotes/1.5.0.3.txt
git-2.23.0/Documentation/RelNotes/1.5.0.4.txt
git-2.23.0/Documentation/RelNotes/1.5.0.5.txt
git-2.23.0/Documentation/RelNotes/1.5.0.6.txt
git-2.23.0/Documentation/RelNotes/1.5.0.7.txt
git-2.23.0/Documentation/RelNotes/1.5.0.txt
```

```
root@DESKTOP-HTQ0JH5: /  
git-2.23.0/xdiff/xemit.c  
git-2.23.0/xdiff/xemit.h  
git-2.23.0/xdiff/xhistogram.c  
git-2.23.0/xdiff/xinclude.h  
git-2.23.0/xdiff/xmacros.h  
git-2.23.0/xdiff/xmerge.c  
git-2.23.0/xdiff/xpatience.c  
git-2.23.0/xdiff/xprepare.c  
git-2.23.0/xdiff/xprepare.h  
git-2.23.0/xdiff/xtypes.h  
git-2.23.0/xdiff/xutils.c  
git-2.23.0/xdiff/xutils.h  
git-2.23.0/zlib.c  
root@DESKTOP-HTQ0JH5: /#
```

change the current working directory to the folder "git"

cd git-2.23.0/

```
root@DESKTOP-HTQ0JH5: /git-2.23.0  
root@DESKTOP-HTQ0JH5: /# cd git-2.23.0/  
root@DESKTOP-HTQ0JH5: /git-2.23.0#
```

Step 4: Install Git

configure the extracted package

make configure

```
root@DESKTOP-HTQ0JH5:/git-2.23.0
root@DESKTOP-HTQ0JH5:/# cd git-2.23.0/
root@DESKTOP-HTQ0JH5:/git-2.23.0# make configure
GIT_VERSION = 2.23.0
GEN configure
root@DESKTOP-HTQ0JH5:/git-2.23.0#
```

verify that all of the dependencies necessary to build the package are available by running this command:

```
./configure --prefix=/usr
```

```
root@DESKTOP-HTQ0JH5:/git-2.23.0
root@DESKTOP-HTQ0JH5:/git-2.23.0# ./configure --prefix=/usr
configure: Setting lib to 'lib' (the default)
configure: Will try -pthread then -lpthread to enable POSIX Threads.
configure: CHECKS for site configuration
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking how to run the C preprocessor... gcc -E
checking for grep that handles long lines and -e... /usr/bin/grep
checking for egrep... /usr/bin/grep -E
checking for ANSI C header files... yes
checking for sys/types.h... yes
checking for sys/stat.h... yes
checking for stdlib.h... yes
checking for string.h... yes
checking for memory.h... yes
checking for strings.h... yes
checking for inttypes.h... yes
checking for stdint.h... yes
checking for unistd.h... yes
checking for size_t... yes
checking for working alloca.h... yes
checking for alloca... yes
```

```
root@DESKTOP-HTQ0JH5:/git-2.23.0
checking for CLOCK_MONOTONIC... yes
checking for setitimer... yes
checking for library containing setitimer... none required
checking for strcasestr... yes
checking for library containing strcasestr... none required
checking for memmem... yes
checking for library containing memmem... none required
checking for strlcpy... no
checking for uintmax_t... yes
checking for strtoumax... yes
checking for library containing strtoumax... none required
checking for setenv... yes
checking for library containing setenv... none required
checking for unsetenv... yes
checking for library containing unsetenv... none required
checking for mkdtemp... yes
checking for library containing mkdtemp... none required
checking for initgroups... yes
checking for library containing initgroups... none required
checking for getdelim... yes
checking for library containing getdelim... none required
checking for BSD sysctl... no
checking for POSIX Threads with ''... no
checking for POSIX Threads with '-mt'... no
checking for POSIX Threads with '-pthread'... yes
configure: creating ./config.status
config.status: creating config.mak.autogen
config.status: executing config.mak.autogen commands
root@DESKTOP-HTQ0JH5:/git-2.23.0#
```

Build the source code:

make all

```
root@DESKTOP-HTQ0JH5:/git-2.23.0
root@DESKTOP-HTQ0JH5:/git-2.23.0# make all
* new build flags
CC fuzz-commit-graph.o
CC fuzz-pack-headers.o
CC fuzz-pack-idx.o
CC credential-store.o
* new link flags
CC common-main.o
CC abspath.o
CC advice.o
CC alias.o
CC alloc.o
CC apply.o
CC archive.o
CC archive-tar.o
CC archive-zip.o
CC argv-array.o
* new prefix flags
CC attr.o
CC base85.o
CC bisect.o
CC blame.o
CC blob.o
CC branch.o
CC bulk-checkin.o
CC bundle.o
CC cache-tree.o
CC chdir-notify.o
CC checkout.o
```

```
root@DESKTOP-HTQ0JH5:/git-2.23.0
CC t/helper/test-scrap-cache-tree.o
CC t/helper/test-serve-v2.o
CC t/helper/test-sha1.o
CC t/helper/test-sha1-array.o
CC t/helper/test-sha256.o
CC t/helper/test-sigchain.o
CC t/helper/test-strcmp-offset.o
CC t/helper/test-string-list.o
CC t/helper/test-submodule-config.o
CC t/helper/test-submodule-nested-repo-config.o
CC t/helper/test-subprocess.o
CC t/helper/test-trace2.o
CC t/helper/test-urlmatch-normalization.o
CC t/helper/test-xml-encode.o
CC t/helper/test-wildmatch.o
CC t/helper/test-windows-named-pipe.o
CC t/helper/test-write-cache.o
LINK t/helper/test-tool
GEN bin-wrappers/git
GEN bin-wrappers/git-upload-pack
GEN bin-wrappers/git-receive-pack
GEN bin-wrappers/git-upload-archive
GEN bin-wrappers/git-shell
GEN bin-wrappers/git-cvsserver
GEN bin-wrappers/test-fake-ssh
GEN bin-wrappers/test-line-buffer
GEN bin-wrappers/test-svn-fe
GEN bin-wrappers/test-tool
root@DESKTOP-HTQ0JH5:/git-2.23.0#
```

Now that the binaries are all built, its time to install git:

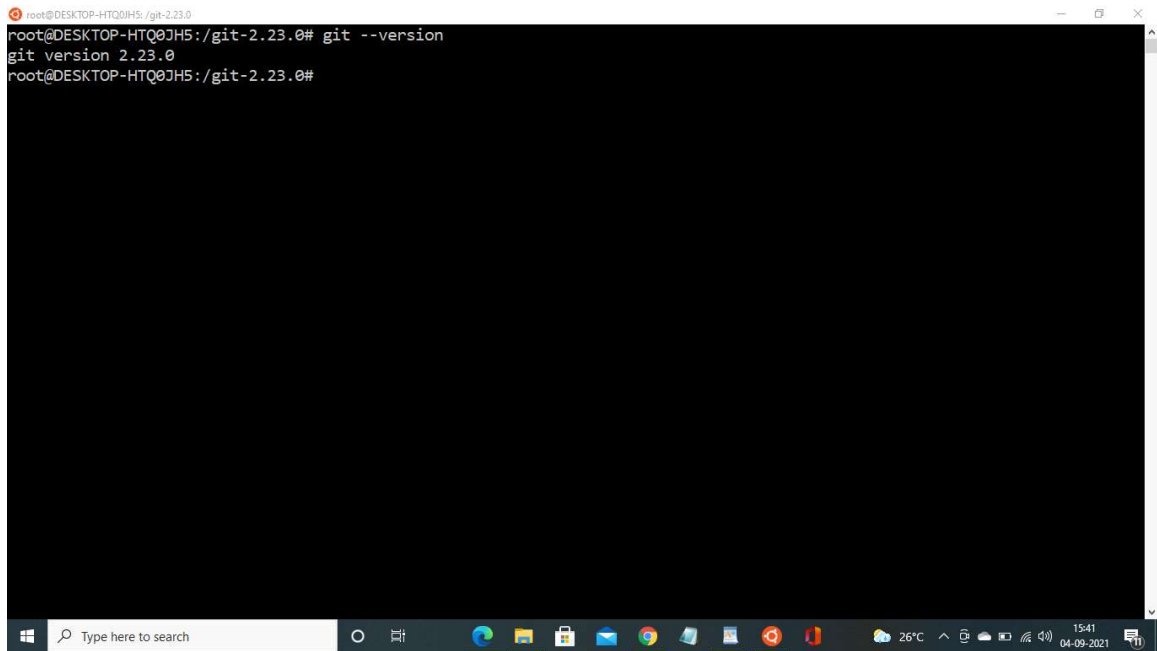
make install


```
root@DESKTOP-HTQ0JH5:/git-2.23.0
root@DESKTOP-HTQ0JH5:/git-2.23.0# make install
```

```
Select root@DESKTOP-HTQ0JH5:/git-2.23.0
-index git-mv git-name-rev git-notes git-pack-objects git-pack-redundant git-pack-refs git-patch-id git-prune-packed git-p
rune git-pull git-push git-range-diff git-read-tree git-rebase git-receive-pack git-reflog git-remote git-remote-ext git-r
emote-fd git-repack git-replace git-rerere git-reset git-rev-list git-rev-parse git-revert git-rm git-send-pack git-shortl
og git-show-branch git-show-index git-show-ref git-stash git-stripspace git-submodule-helper git-symbolic-ref git-tag git
-unpack-file git-unpack-objects git-update-index git-update-ref git-update-server-info git-upload-archive git-upload-pack
git-var git-verify-commit git-verify-pack git-verify-tag git-worktree git-write-tree git-cherry git-cherry-pick git-format
-patch git-fsck-objects git-init git-merge-subtree git-restore git-show git-stage git-status git-switch git-whatchanged; d
o \
    rm -f "$execdir/$p" && \
    test -n "" && \
    ln -s "$destdir_from_execdir_SQ/bin/git" "$execdir/$p" || \
    { test -z "" && \
        ln "$execdir/git" "$execdir/$p" 2>/dev/null || \
        ln -s "git" "$execdir/$p" 2>/dev/null || \
        cp "$execdir/git" "$execdir/$p" || exit; } \
done && \
remote_curl_aliases="git-remote-https git-remote-ftp git-remote-https" && \
for p in $remote_curl_aliases; do \
    rm -f "$execdir/$p" && \
    test -n "" && \
    ln -s "git-remote-http" "$execdir/$p" || \
    { test -z "" && \
        ln "$execdir/git-remote-http" "$execdir/$p" 2>/dev/null || \
        ln -s "git-remote-http" "$execdir/$p" 2>/dev/null || \
        cp "$execdir/git-remote-http" "$execdir/$p" || exit; } \
done && \
./check_bindir "z$bindir" "z$execdir" "$bindir/git-add"
root@DESKTOP-HTQ0JH5:/git-2.23.0#
root@DESKTOP-HTQ0JH5:/git-2.23.0#
```

Verify that git is working

git --version

A screenshot of a Windows terminal window. The title bar at the top reads 'root@DESKTOP-HTQ0JH5: /git-2.23.0'. The terminal text shows the command 'git --version' being executed, resulting in the output 'git version 2.23.0'. The prompt 'root@DESKTOP-HTQ0JH5: /git-2.23.0#' is visible at the bottom of the terminal area. The Windows taskbar is visible at the bottom of the screen, showing the search bar and several application icons. The system tray on the right indicates a temperature of 26°C, the time 15:41, and the date 04-09-2021.

```
root@DESKTOP-HTQ0JH5: /git-2.23.0# git --version
git version 2.23.0
root@DESKTOP-HTQ0JH5: /git-2.23.0#
```

Successfully installed the git software from its source code!!!

