Overview of On-Line Course

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First of All …

- **Please make sure that:**
  - **the OS of your PC is the most updated version**
  - **proper anti-virus software with the most updated version is installed to your PC**
  - **the most recent version of Zoom is installed**
- **You need to know Unix/Linux and Editors (e.g. vi, emacs), if you want to use "Supercomputers"**
  - **List of Unix/Linux Commands (Wikipedia)**
    - **https://en.wikipedia.org/wiki/List_of_Unix_commands**
  - **Onlie Manual for Emacs (Screen Editor for Linux/Unix)**
    - **https://www.gnu.org/software/emacs/manual/**
- **My e-mail: nakajima@cc.u-tokyo.ac.jp**

Information

- Access UTAS (UTokyo Academic Affairs System) and ITC-LMS (ITC Learning Management System)
  - https://utas.adm.u-tokyo.ac.jp/ https://itc-lms.ecc.u-tokyo.ac.jp/
- Class Materials
  - http://nkl.cc.u-tokyo.ac.jp/21s/
- Most of the important information (including Zoom URL for Classes) will be given through ITC-LMS
  - Please check ITC-LMS AT LEAST ONCE a WEEK
  - You can receive e-mail from ITC-LMS, if you have new “notification”
- **Please register your info. at URL in UTAS/ITC-LMS.**
  - **You receive detailed info. of lectures.**
  - **You need to register the info. just once.**
  - **Because I e-mail you the UID/PWD of the Supercomputer based on the registered info., EACH of you must register !**
    - **Your e-mail address is not used for other purposes**

Zoom “Manners”

- **Please install the most recent version of Zoom**
  - **Please login via official account**
- **Basically, please keep muted, and keep camera off.**
- **Please do not video the lectures**
  - **I will record the class, and tell you the address of the recorded file (on cloud) via ITC-LMS**
- **Please do not forward URL’s of the classes to anybody, even if he/she is a U.Tokyo student**
- I often use “Raising Hand” (e.g. How many of you learned OpenMP before ?). Please respond.
- Q/A will be through combination of “Chat”/”Microphone”
  - I will make a break every 10-minutes
    - If you keep “space” pushing, “mute” is released temporarily.
  - You can also send me e-mail’s after the class

Questions

- Q1: OS of Your PC
  - Widows: Many Win Users
  - MAC
  - Linux
- Q2: Your “Mother Tongue”
  - Fortran
  - C/C++
  - Java
  - Python
    - **Anyway, you must be familiar with Fortran or C/C++**
    - Materials for both of C and Fortran are provided, although I will show you those in C on the screen
- Q3: Do you like to use “Slack” ?
  - I will send invitation to each of you, while you can decline to join

Software to be installed

	C	Fortran
Windows	Cygwin Paraview FVM-in-C	Cygwin Paraview FVM-in-F
Mac	Paraview FVM-in-C	Paraview FVM-in-F
Linux		

- Cygwin https://www.cygwin.com/
- Paraview http://www.paraview.org
- Target Application by Finite Volume Method (FVM)
  - FVM-in-F (Fortran) http://nkl.cc.u-tokyo.ac.jp/files/multicore-f.tar
  - FVM-in-C (C) http://nkl.cc.u-tokyo.ac.jp/files/multicore-c.tar
  - **Default compilers in Makefile's are "cc (FVM-in-C, C)" and "gfortran (FVM-in-F, Fortran)". Please modify Makefile's according to compilers on your PC**

- **In the following several pages, installation procedures of Cygwin are described**
- **Mac and Unix/Linux users do not need Cygwin**

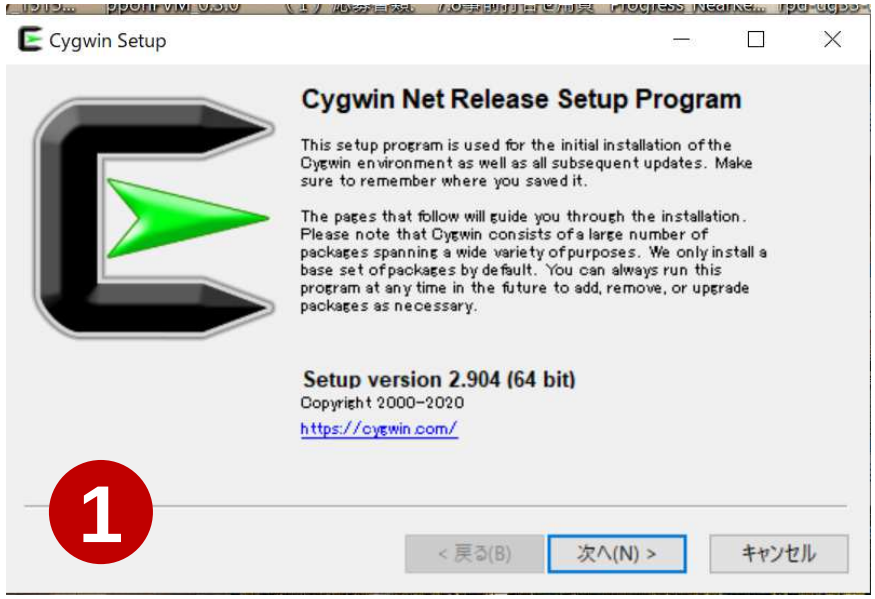
Cygwin: Unix-like Environment on Windows

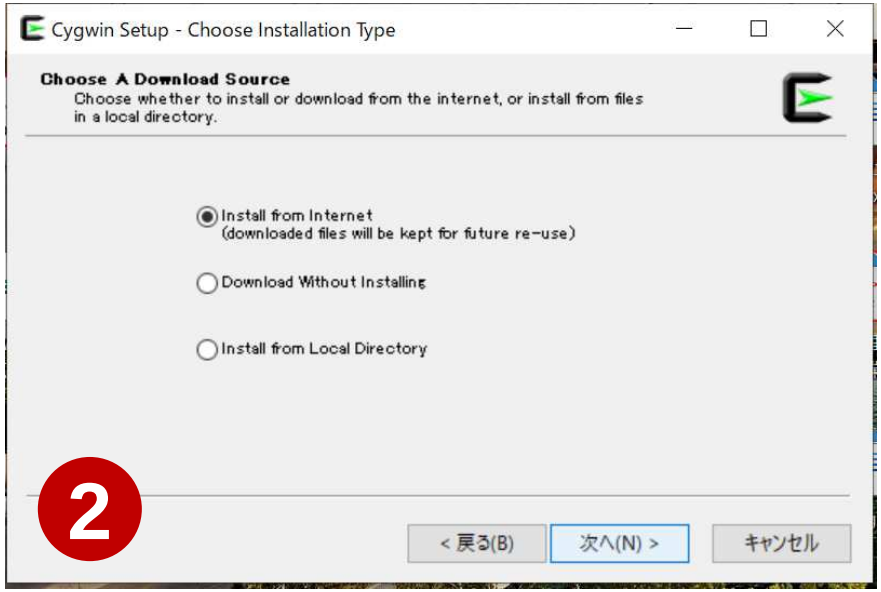
https://www.cygwin.com/

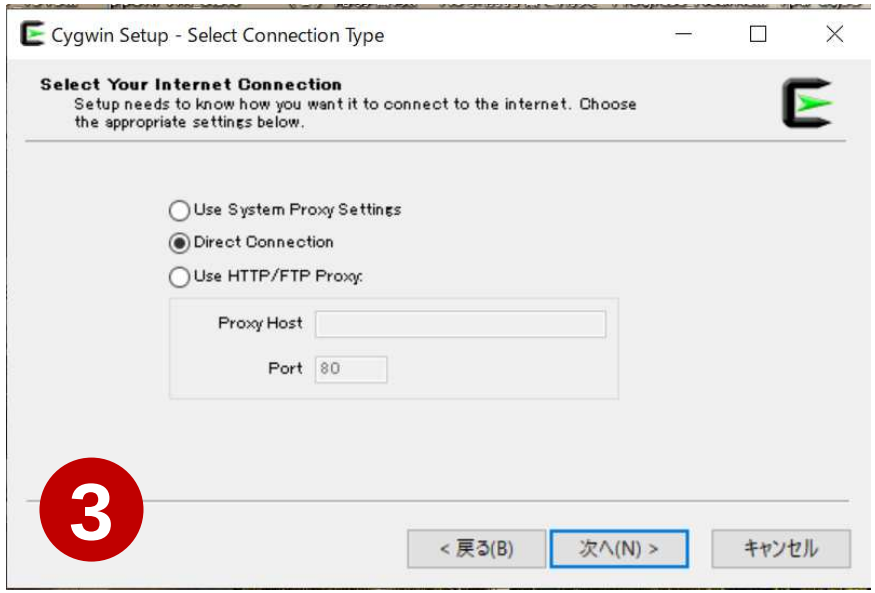
- Cygwin User's Guide
  - https://cygwin.com/cygwin-ug-net.html
- The first things what you have to do
  - Get "setup-x86_64/32.exe (installer)" from Cygwin site
  - Connect to the Internet and Double-Click the Installer
  - Just follow the instructions

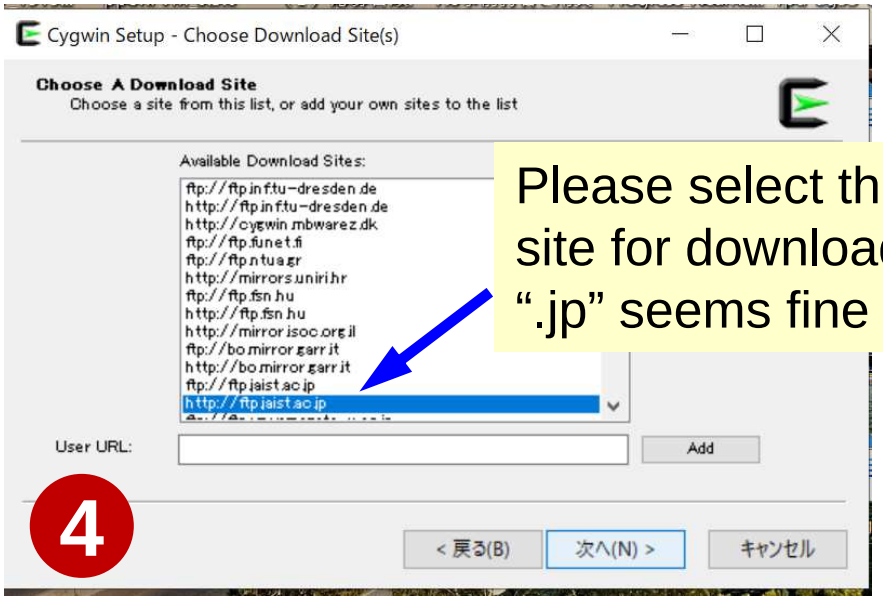
Just Follow as they guide …

https://www.cygwin.com/









Please select the site for downloading “.jp” seems fine …

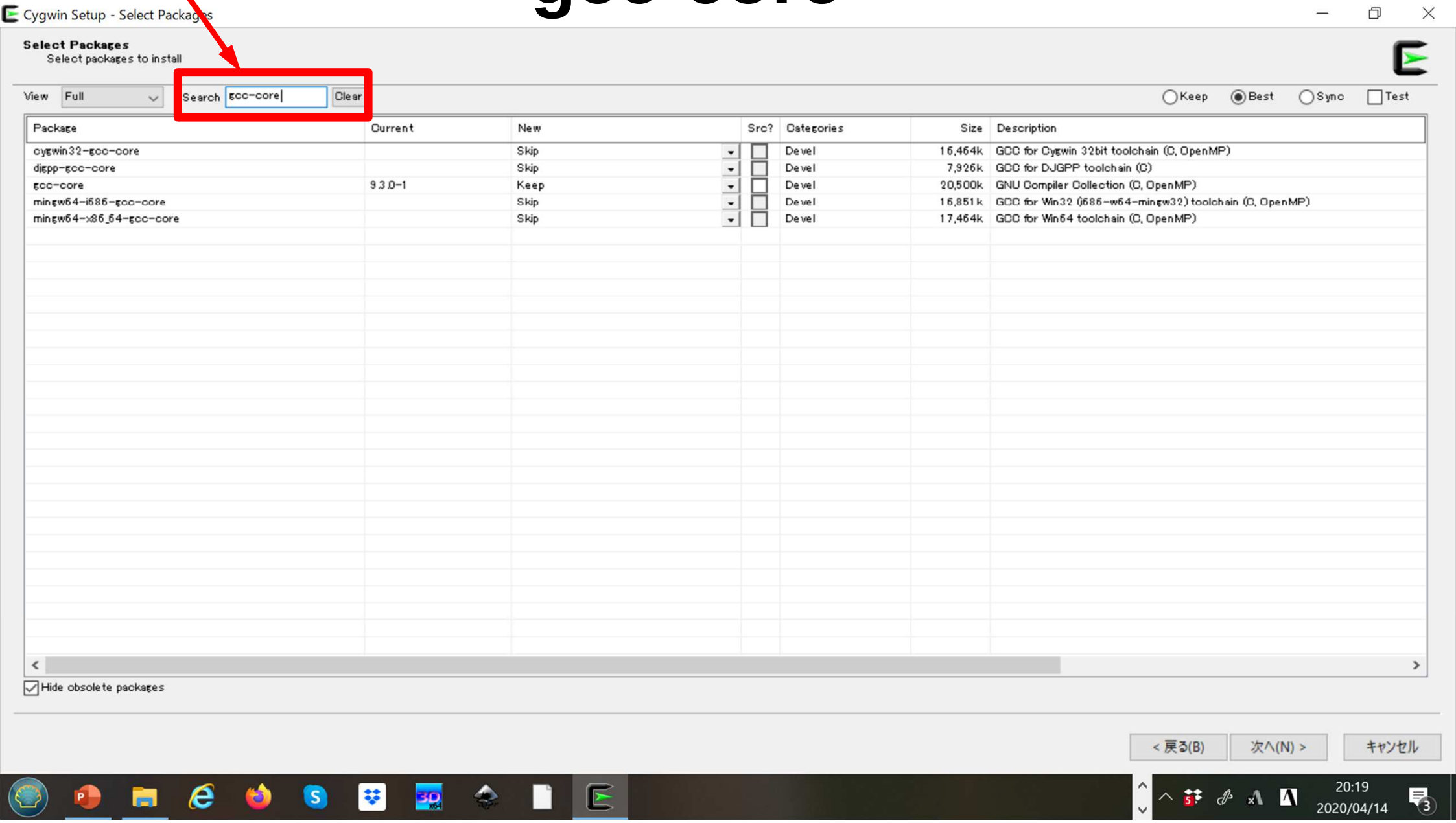
Staring from the Default Installation

https://www.cygwin.com/

- Most of the fundamental tools/functions are installed, but some essential ones for this class are NOT …
  - Therefore, you need to add them manually
  - You can install them later if you double-click the installer
- **The following functions must be installed, because they are not necessarily installed as default**
  - **gcc-core (for C/C++ users)**
  - **gcc-fortran (for Fortran users)**
  - **openssh (for all users)**
  - **openssl (for all users)**
  - **make (for all users)**
  - **emacs, vim etc.**
- **You can also check whether these are installed, or not**

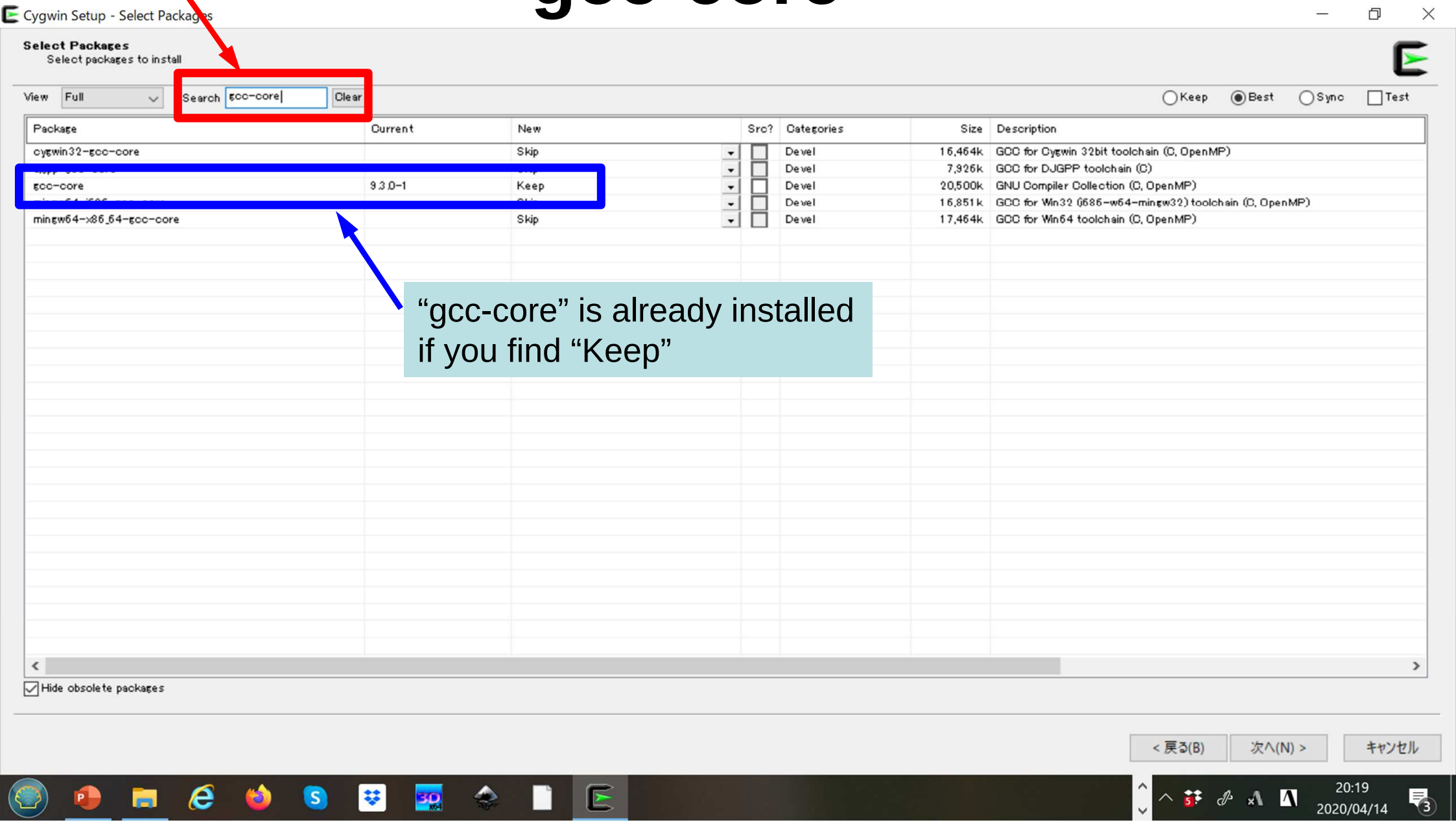
Checking installation of “gcc-core”

Type “gcc-core”



Checking installation of “gcc-core”

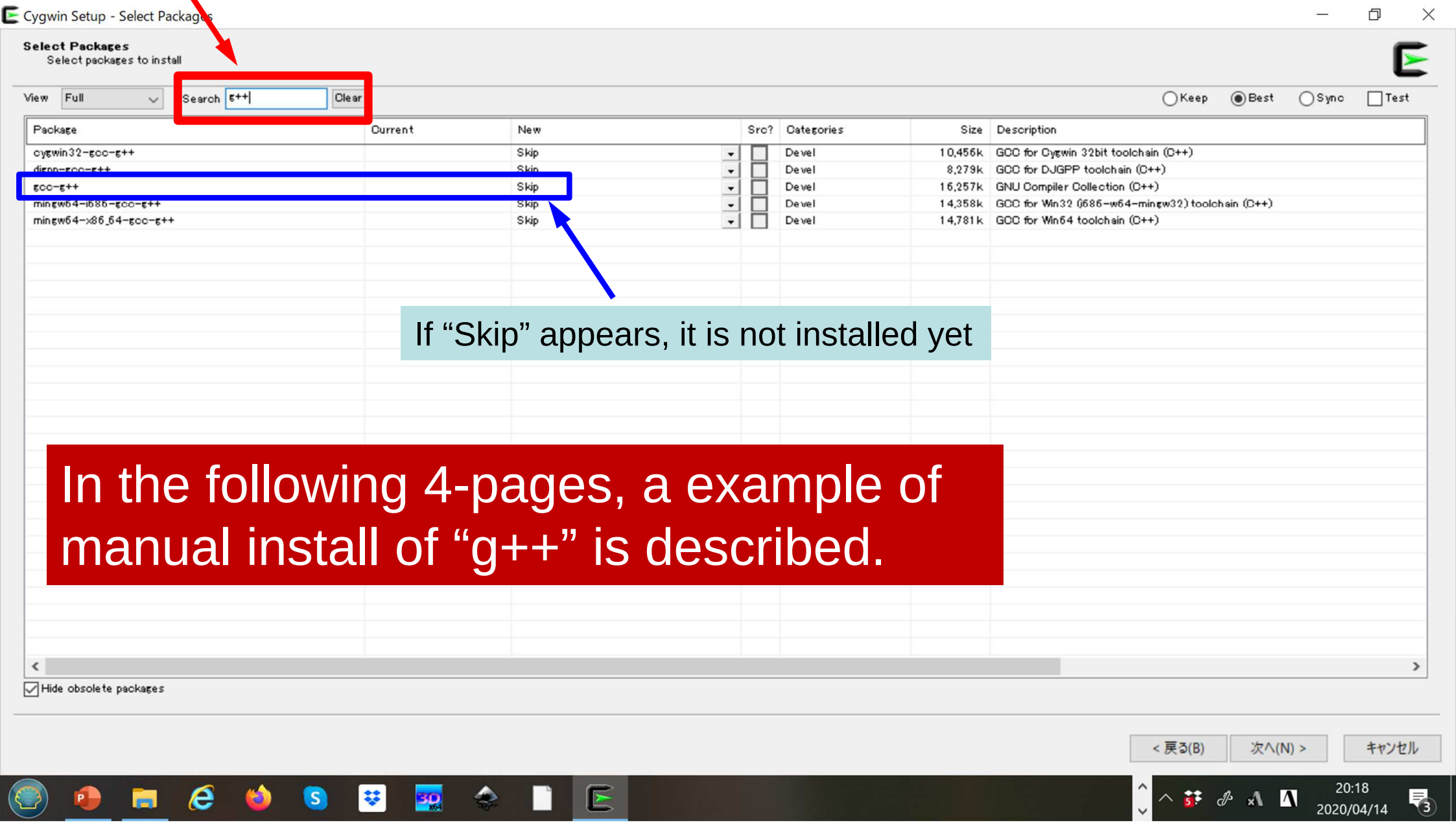
Type “gcc-core”



“gcc-core” is already installed if you find “Keep”

Installing “g++” (1/4)

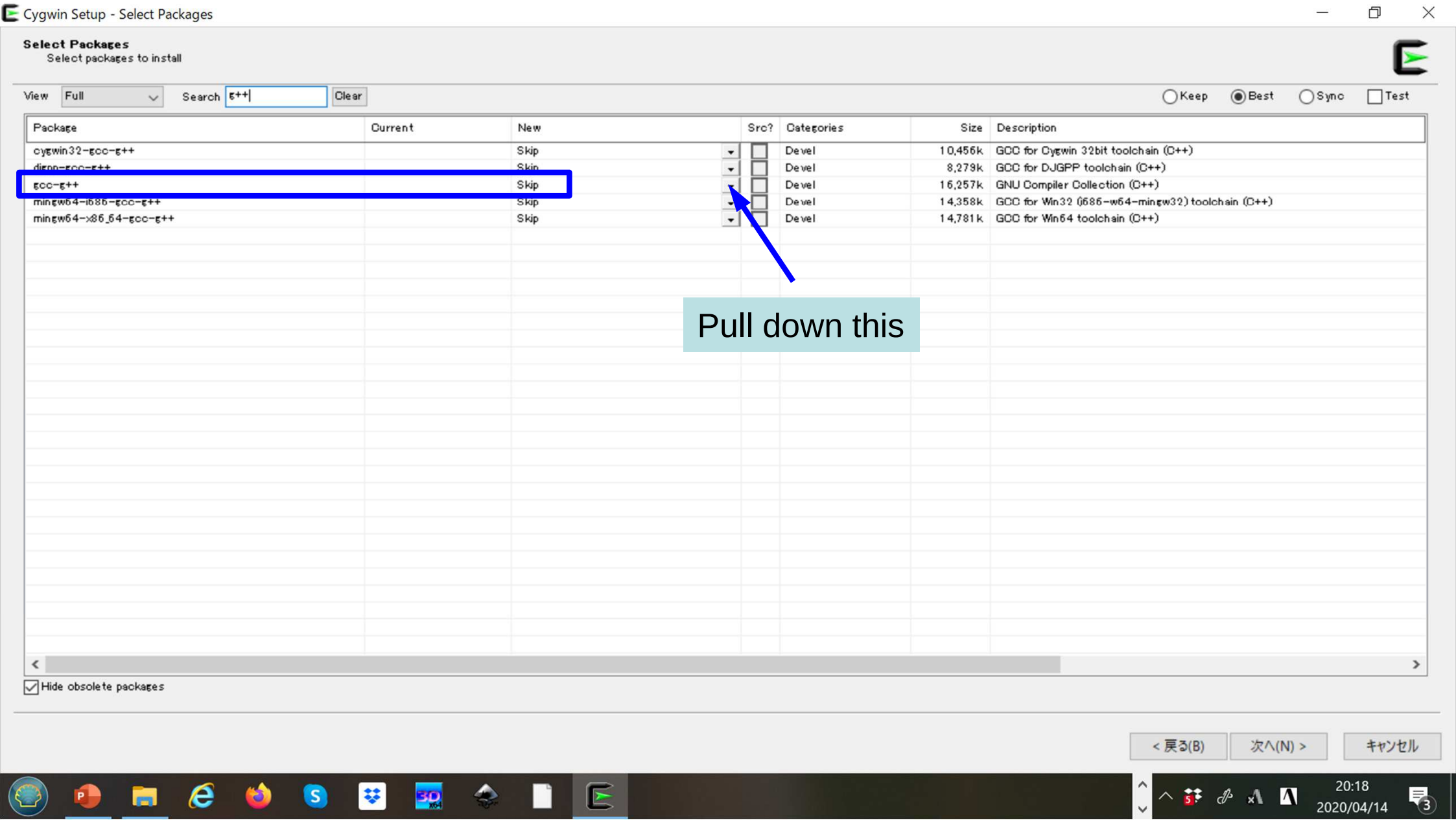
Type “g++”



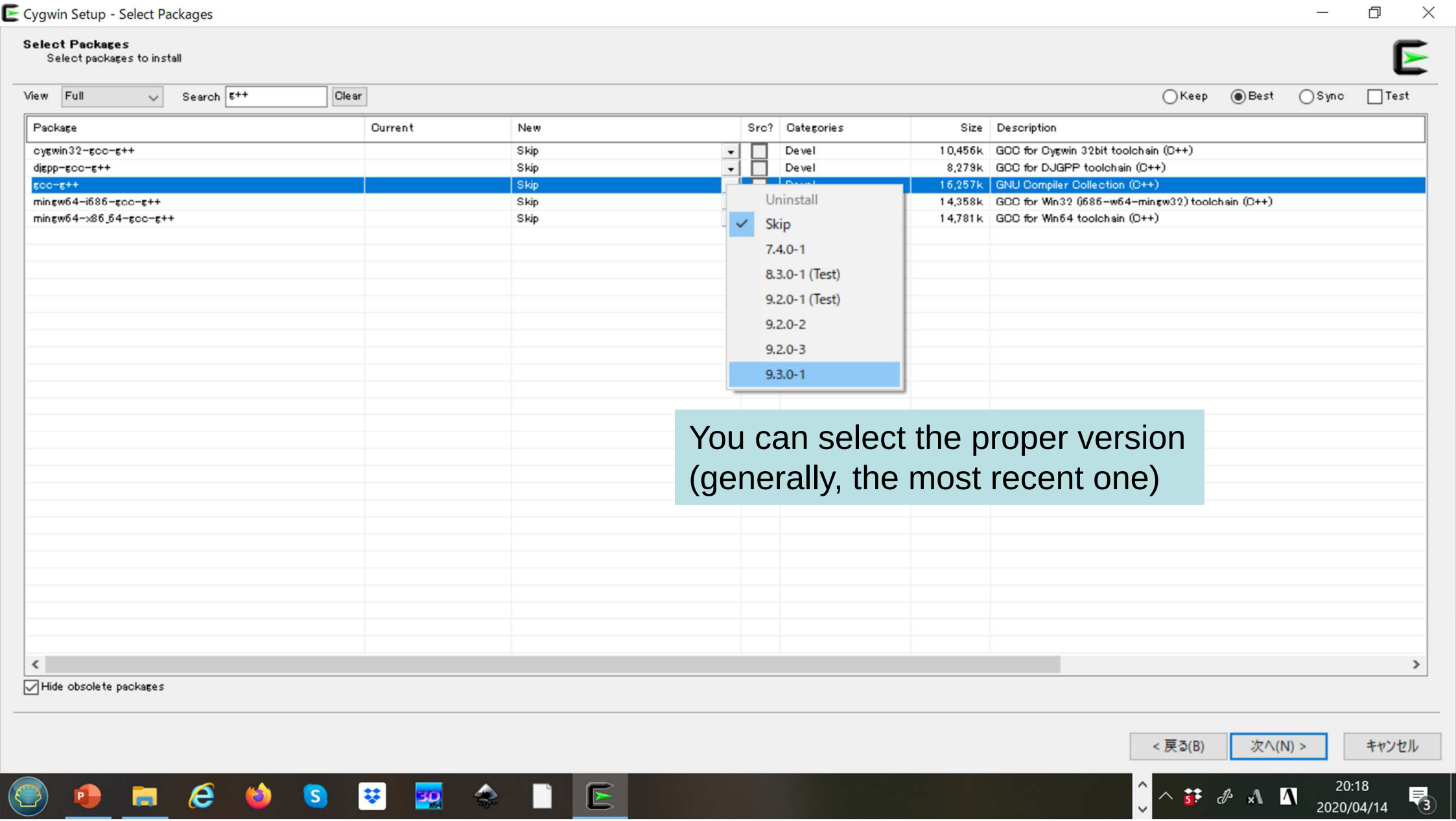
If “Skip” appears, it is not installed yet

In the following 4-pages, a example of manual install of “g++” is described.

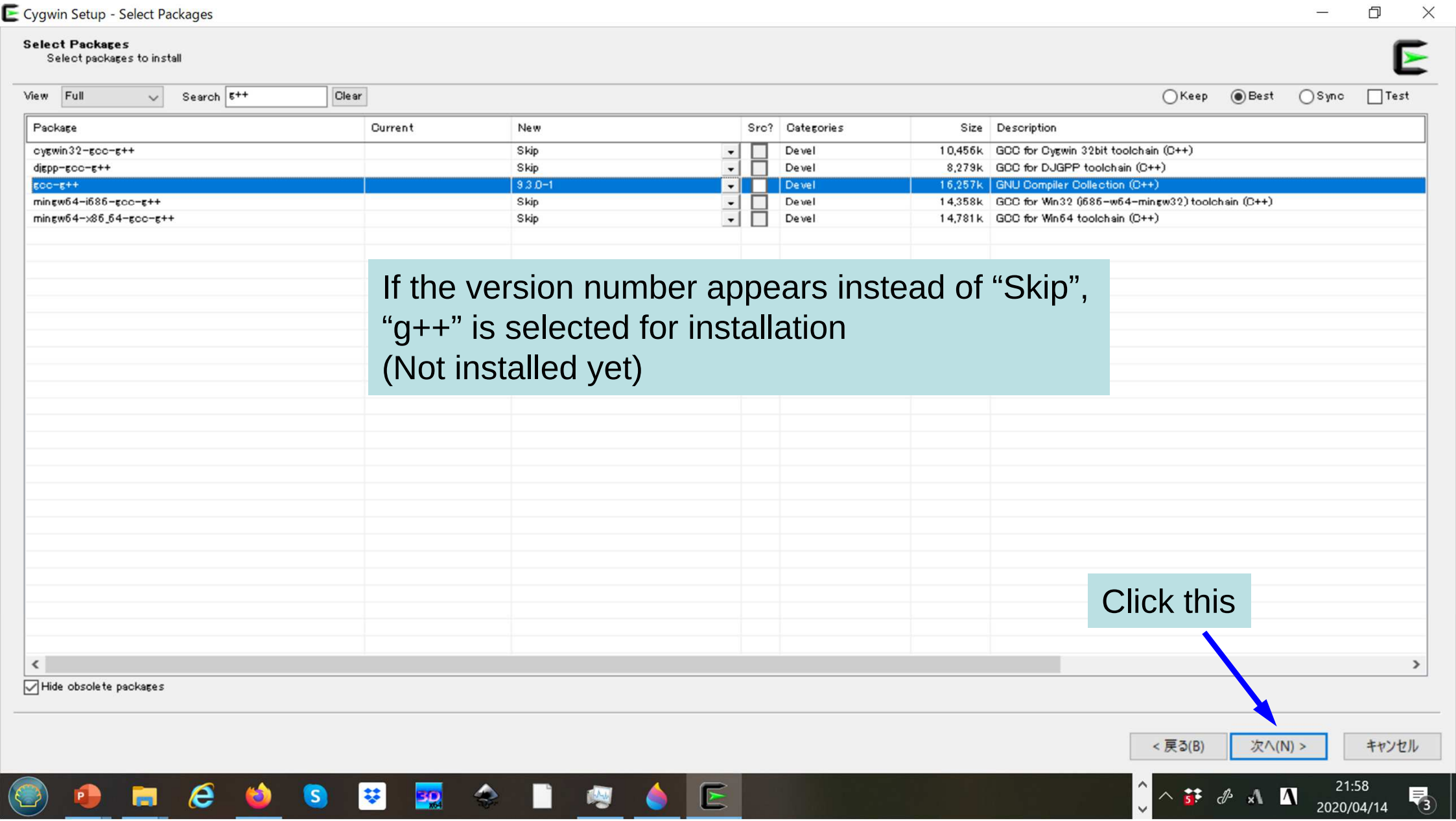
Installing “g++” (2/4)



Installing “g++” (3/4)



Installing “g++” (4/4)



Confirm Successful Installation of “gcc”

```
$ gcc -v

組み込み spec を使用しています。
COLLECT_GCC=gcc
COLLECT_LTO_WRAPPER=/usr/lib/gcc/x86_64-pc-cygwin/9.3.0/lto-wrapper.exe
ターゲット: x86_64-pc-cygwin
configure 設定: /cygdrive/i/szsz/tmpp/gcc/gcc-9.3.0-1.x86_64/src/gcc-9.3.0/configure --
srcdir=/cygdrive/i/szsz/tmpp/gcc/gcc-9.3.0-1.x86_64/src/gcc-9.3.0 --prefix=/usr --exec-prefix=/usr --
localstatedir=/var --sysconfdir=/etc --docdir=/usr/share/doc/gcc --htmldir=/usr/share/doc/gcc/html -C
--build=x86_64-pc-cygwin --host=x86_64-pc-cygwin --target=x86_64-pc-cygwin --without-libiconv-prefix -
-without-libintl-prefix --libexecdir=/usr/lib --enable-shared --enable-shared-libgcc --enable-static -
-enable-version-specific-runtime-libs --enable-bootstrap --enable-__cxa_atexit --with-dwarf2 --with-
tune=generic --enable-languages=c,c++,fortran,lto,objc,obj-c++ --enable-graphite --enable-
threads=posix --enable-libatomic --enable-libgomp --enable-libquadmath --enable-libquadmath-support --
disable-libssp --enable-libada --disable-symvers --with-gnu-ld --with-gnu-as --with-cloog-
include=/usr/include/cloog-isl --without-libiconv-prefix --without-libintl-prefix --with-system-zlib -
-enable-linker-build-id --with-default-libstdcxx-abi=gcc4-compatible --enable-libstdcxx-filesystem-ts
スレッドモデル: posix
gcc バージョン 9.3.0 (GCC)
```

Confirm Successful Installation of “gfortran”

```
$ gfortran -v

組み込み spec を使用しています。
COLLECT_GCC=gfortran
ターゲット: x86_64-pc-cygwin
configure 設定: /cygdrive/i/szsz/tmpp/gcc/gcc-9.3.0-1.x86_64/src/gcc-9.3.0/confi
gure --srcdir=/cygdrive/i/szsz/tmpp/gcc/gcc-9.3.0-1.x86_64/src/gcc-9.3.0 --prefi
x=/usr --exec-prefix=/usr --localstatedir=/var --sysconfdir=/etc --docdir=/usr/s
hare/doc/gcc --htmldir=/usr/share/doc/gcc/html -C --build=x86_64-pc-cygwin --hos
t=x86_64-pc-cygwin --target=x86_64-pc-cygwin --without-libiconv-prefix --without
-libintl-prefix --libexecdir=/usr/lib --enable-shared --enable-shared-libgcc --e
nable-static --enable-version-specific-runtime-libs --enable-bootstrap --enable-
__cxa_atexit --with-dwarf2 --with-tune=generic --enable-languages=c,c++,fortran,
lto,objc,obj-c++ --enable-graphite --enable-threads=posix --enable-libatomic --e
nable-libgomp --enable-libquadmath --enable-libquadmath-support --disable-libssp
--enable-libada --disable-symvers --with-gnu-ld --with-gnu-as --with-cloog-incl
ude=/usr/include/cloog-isl --without-libiconv-prefix --without-libintl-prefix --
with-system-zlib --enable-linker-build-id --with-default-libstdcxx-abi=gcc4-comp
atible --enable-libstdcxx-filesystem-ts
スレッドモデル: posix
gcc バージョン 9.3.0 (GCC)
```

Confirm Successful Installation of “ssh-keygen (OpenSSH)”

```
$ ssh-keygen --h

ssh-keygen: unknown option -- -
usage: ssh-keygen [-q] [-b bits] [-C comment] [-f output_keyfile] [-m format]
                  [-t dsa | ecdsa | ecdsa-sk | ed25519 | ed25519-sk | rsa]
                  [-N new_passphrase] [-O option] [-w provider]
       ssh-keygen -p [-f keyfile] [-m format] [-N new_passphrase]
                   [-P old_passphrase]
       ssh-keygen -i [-f input_keyfile] [-m key_format]
       ssh-keygen -e [-f input_keyfile] [-m key_format]
       ssh-keygen -y [-f input_keyfile]
(…)
       ssh-keygen -L [-f input_keyfile]
       ssh-keygen -A [-f prefix_path]
       ssh-keygen -k -f krl_file [-u] [-s ca_public] [-z version_number]
                  file ...
       ssh-keygen -Q -f krl_file file ...
       ssh-keygen -Y find-principals -s signature_file -f allowed_signers_file
       ssh-keygen -Y check-novalidate -n namespace -s signature_file
       ssh-keygen -Y sign -f key_file -n namespace file ...
       ssh-keygen -Y verify -f allowed_signers_file -I signer_identity
                 -n namespace -s signature_file [-r revocation_file]
```

Confirm Successful Installation of “ssh (OpenSSH)”

```
$ ssh

usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface]
           [-b bind_address] [-c cipher_spec] [-D [bind_address:]port]
           [-E log_file] [-e escape_char] [-F configfile] [-I pkcs11]
           [-i identity_file] [-J [user@]host[:port]] [-L address]
           [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
           [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
           [-w local_tun[:remote_tun]] destination [command]
```

Confirm Successful Installation of “make, emacs, vi etc”

```
$ make -version

GNU Make 4.3
このプログラムは x86_64-pc-cygwin 用にビルドされました
Copyright (C) 1988-2020 Free Software Foundation, Inc.
ライセンス GPLv3+: GNU GPL バージョン 3 以降 <http://gnu.org/licenses/gpl.html>
これはフリーソフトウェアです: 自由に変更および配布できます.
法律の許す限り、  無保証  です.
```

```
$ emacs -version

GNU Emacs 26.3
Copyright (C) 2019 Free Software Foundation, Inc.
GNU Emacs comes with ABSOLUTELY NO WARRANTY.
You may redistribute copies of GNU Emacs
under the terms of the GNU General Public License.
For more information about these matters, see the file named COPYING.
```

```
$ vi -version

VIM - Vi IMproved 8.2 (2019 Dec 12, compiled Mar 30 2020 21:54:08)
Garbage after option argument: "-version"
More info with: "vim -h"
```

Please install ALL environments before April 21 (W)

- **Generally, installation of Cygwin takes a time (60-90 mins)**
- **I recommend you to complete this during coming weekend**

- **Another choice is WSL (Windows Subsystem for Linux), if you are familiar with both of Linux and Windows**