

Learn Programming Basics (C Language)

# **LAB #000**

# **DOWNLOAD AND INSTALLATION**

## Introduction

- Not be using any IDE (Integrated Development Environment).
- Relying on IDE makes you lazy and more careless.
- Be known of your own mistake, learn through emotional pain.
- Use Google search to search for the different kinds of errors and understand what its means.
- Read the entire PowerPoint slide again if needed.

### **Download and INSTALL (notepad++):**

- <https://notepad-plus-plus.org/downloads/>
- you can use notepad, but its too hardcore, not recommended

### **Download and INSTALL (meld):**

- <https://meldmerge.org/>
- File comparison software

### **Download and INSTALL (cygwin):**

- <https://cygwin.com/install.html>:
- Cygwin is a Linux environment based command prompt

# Download Cygwin

**Download at** <https://cygwin.com/install.html>:

- Click install Cygwin
- Download the setup file
  - setup-x86\_64.exe for 64-bit computer
  - setup-x86.exe for 32-bit computer

The screenshot shows the Cygwin website. On the left is a navigation menu with links like 'Cygwin', 'Install Cygwin', 'Update Cygwin', 'Search Packages', 'Licensing Terms', 'Cygwin/X', 'Community', 'Reporting Problems', 'Mailing Lists', 'Newsgroups', 'IRC channels', 'Gold Stars', 'Mirror Sites', 'Donations', 'Documentation', 'FAQ', 'User's Guide', 'API Reference', 'Acronyms', 'Contributing', 'Snapshots', 'Source in Git', 'Cygwin Packages', and 'Related Sites'. The 'Install Cygwin' link is highlighted with a red box. The main content area has a large 'Cygwin' logo with the tagline 'Get that Linux feeling - on Windows'. Below the logo is the section 'Installing and Updating Cygwin Packages'. This section contains three sub-sections: 'Installing and Updating Cygwin for 64-bit versions of Windows', 'Installing and Updating Cygwin for 32-bit versions of Windows', and 'Signing key transition'. The first two sub-sections contain text about running 'setup-x86\_64.exe' and 'setup-x86.exe' respectively, with the file names highlighted by red boxes. The 'Signing key transition' section mentions a key update and provides a link to 'this mail' for more details. At the bottom of the main content area is a section titled 'General installation notes'.

Cygwin  
Install Cygwin  
Update Cygwin  
Search Packages  
Licensing Terms  
Cygwin/X  
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Reporting Problems  
Mailing Lists  
Newsgroups  
IRC channels  
Gold Stars  
Mirror Sites  
Donations  
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Contributing  
Snapshots  
Source in Git  
Cygwin Packages  
Related Sites

# Cygwin

Get that [Linux](#) feeling - on Windows

## Installing and Updating Cygwin Packages

### Installing and Updating Cygwin for 64-bit versions of Windows

Run [setup-x86\\_64.exe](#) any time you want to update or install a Cygwin package for 64-bit windows. The [signature](#) for [setup-x86\\_64.exe](#) can be used to verify the validity of this binary.

### Installing and Updating Cygwin for 32-bit versions of Windows

Run [setup-x86.exe](#) any time you want to update or install a Cygwin package for 32-bit windows. The [signature](#) for [setup-x86.exe](#) can be used to verify the validity of this binary.

### Signing key transition

The key used to sign setup binaries has been updated. During the transition period, signatures are made using both old (676041BA) and new (1A698DE9E2E56300) public keys [here](#).  
See [this mail](#) for more details.

### General installation notes



## Cygwin Net Release Setup Program

This setup program is used for the initial installation of the Cygwin environment as well as all subsequent updates. Make sure to remember where you saved it.

The pages that follow will guide you through the installation. Please note that Cygwin consists of a large number of packages spanning a wide variety of purposes. We only install a base set of packages by default. You can always run this program at any time in the future to add, remove, or upgrade packages as necessary.

**Setup.exe version 2.881 (64 bit)**

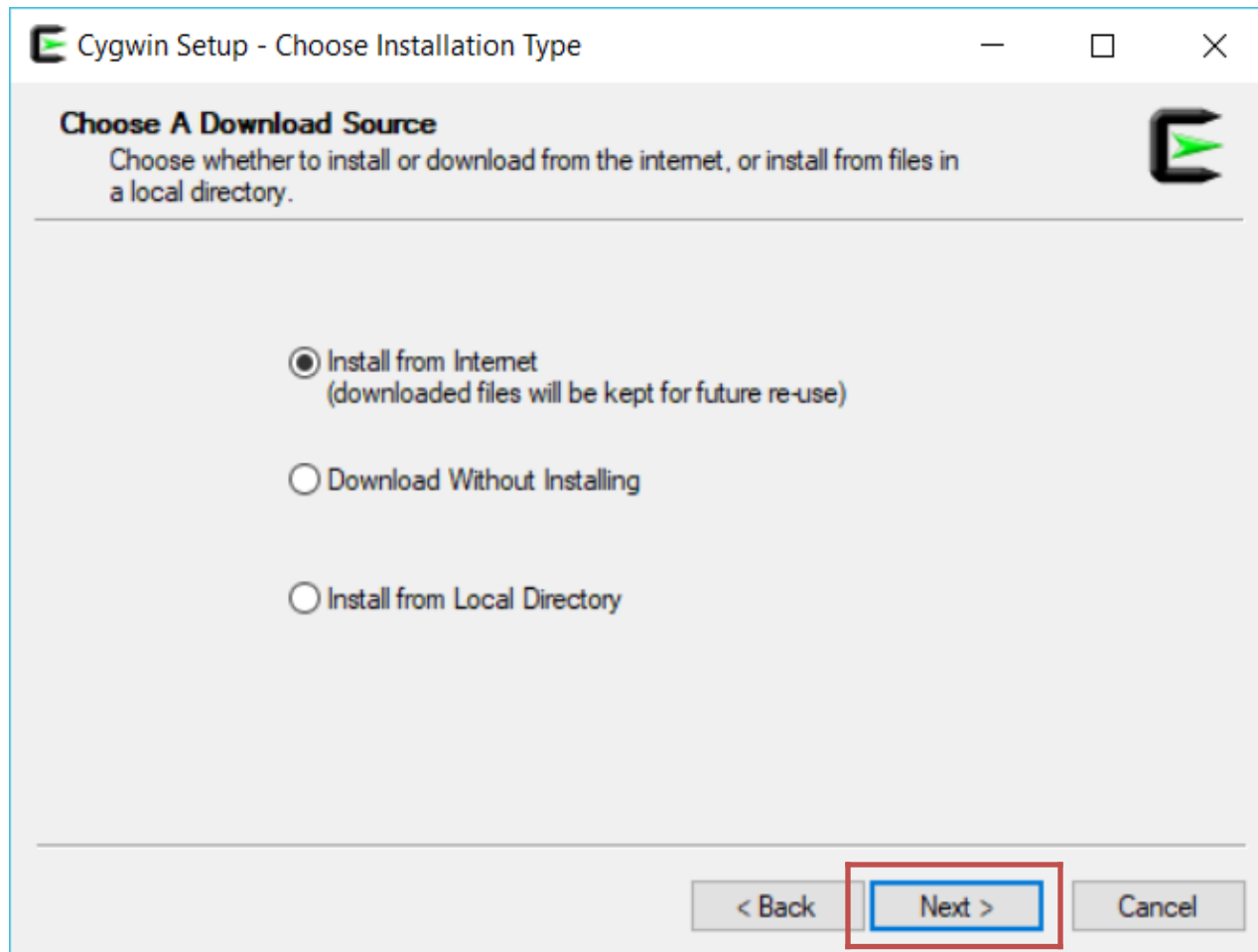
Copyright 2000-2017

<http://www.cygwin.com/>

< Back

Next >

Cancel



## Use default root directory (recommended)

**Cygwin Setup - Choose Installation Directory**

**Select Root Install Directory**  
Select the directory where you want to install Cygwin. Also choose a few installation parameters.

Root Directory  
C:\cygwin64 Browse...

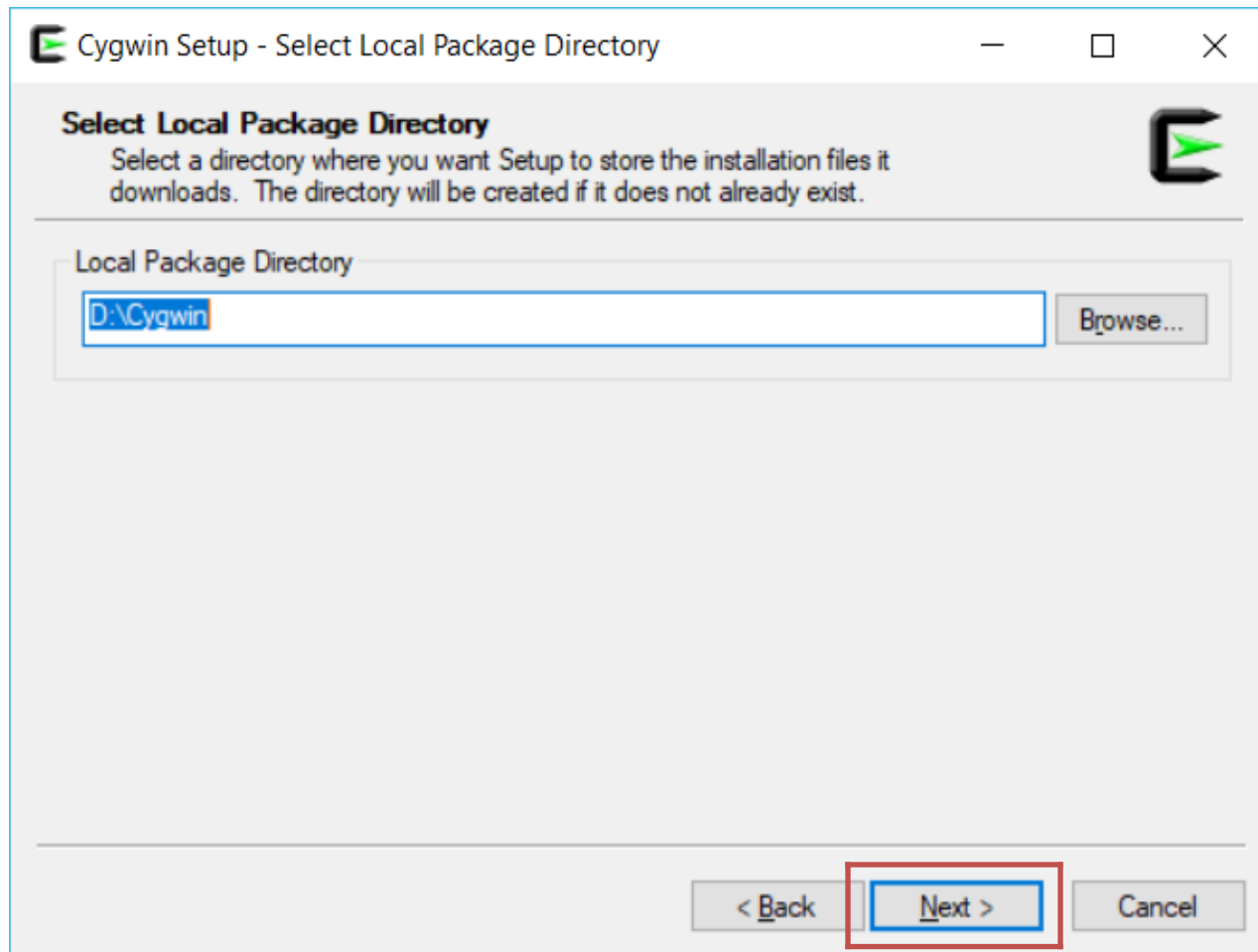
Install For

☒ All Users (RECOMMENDED)  
Cygwin will be available to all users of the system.

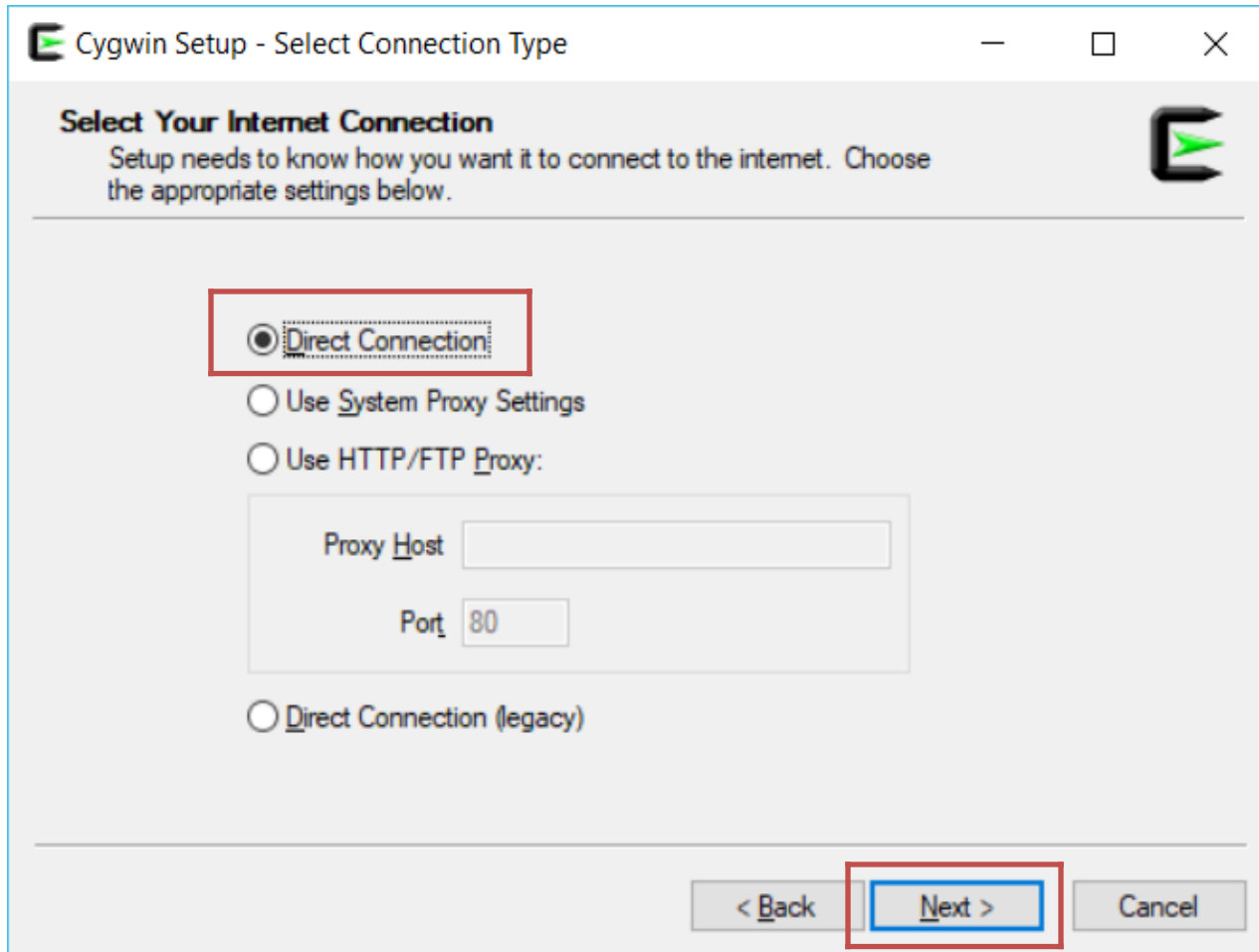
☐ Just Me  
Cygwin will still be available to all users, but Desktop Icons, Cygwin Menu Entries, and important Installer information are only available to the current user. Only select this if you lack Administrator privileges or if you have specific needs.

< Back **Next >** Cancel

Local Package Directory can be installed anywhere, for example in D:\Cygwin



## Select Direct Connection



The image shows a Windows installer window titled "Cygwin Setup - Select Connection Type". The window has a standard Windows title bar with minimize, maximize, and close buttons. The main content area has a header "Select Your Internet Connection" with a sub-header "Setup needs to know how you want it to connect to the internet. Choose the appropriate settings below." Below this, there are three radio button options: "Direct Connection" (which is selected and highlighted with a red rectangle), "Use System Proxy Settings", and "Use HTTP/FTP Proxy:". The "Use HTTP/FTP Proxy:" option is expanded, showing a "Proxy Host" text box and a "Port" text box with the value "80". Below these options is a "Direct Connection (legacy)" option. At the bottom right, there are three buttons: "< Back", "Next >" (highlighted with a red rectangle), and "Cancel".

Cygwin Setup - Select Connection Type

**Select Your Internet Connection**  
Setup needs to know how you want it to connect to the internet. Choose the appropriate settings below.

☒ Direct Connection

☐ Use System Proxy Settings

☐ Use HTTP/FTP Proxy:

Proxy Host

Port

☐ Direct Connection (legacy)

< Back Next > Cancel



## Find your respective region and download mirror site (Optional)

- <https://cygwin.com/install.html>

Cygwin  
Install Cygwin  
Update Cygwin  
Search Packages  
Licensing Terms  
Cygwin/X  
Community  
Reporting Problems  
Mailing Lists  
Newsgroups  
IRC channels  
**Go to stars**  
Mirror Sites  
Donations  
Documentation  
FAQ  
User's Guide  
API Reference  
Acronyms  
Contributing  
Snapshots  
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Cygwin Packages  
Related Sites

# Cygwin

Get that [Linux](#) feeling - on Windows

## Mirror Sites

The following sites have generously agreed to mirror our main Cygwin ftp site. To save on download time, please choose a mirror site near you when selecting a mirror when using setup to [install or update](#) Cygwin.

*Note:* We automatically poll these mirrors on a regular basis to ensure that mirrors have the latest [Cygwin packages](#) available. The list of mirrors below reflects all of the mirrors who appear to have up-to-date copies of the Cygwin release area.

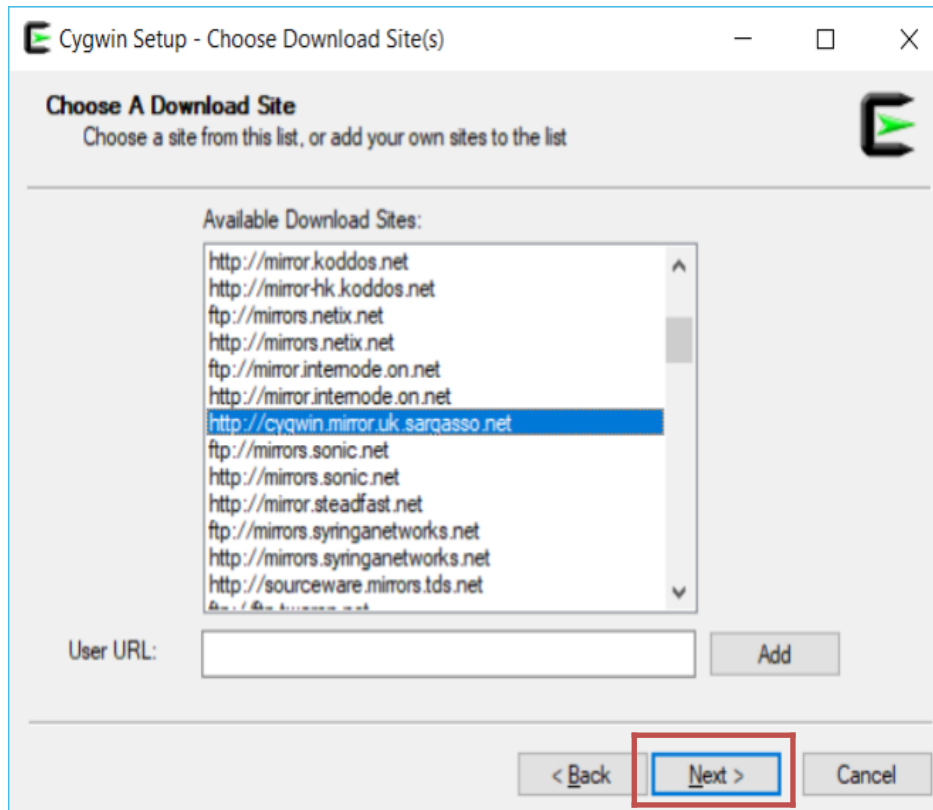
There is [more information for Mirror Administrators](#).

### Mirror site list

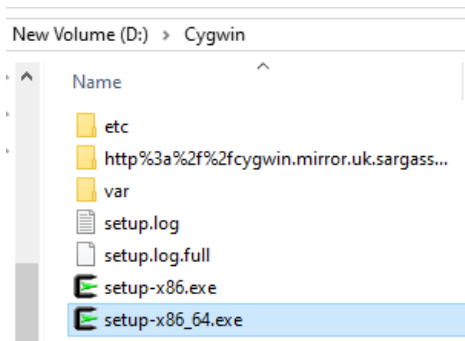
- Africa:
  - South Africa: <ftp.is.co.za>(ftp)
- Asia:
  - China: <mirrors.163.com>(http), <mirrors.neusoft.edu.cn>(http), <mirrors.ustc.edu.cn>(http), <mirrors.163.com>(https), <mirrors.aliyun.com>(https), <mirrors.neusoft.edu.cn>(https), <mirrors.sjtug.sjtu.edu.cn>(https), <mirrors.ustc.edu.cn>(https)
  - Hong Kong: <mirror-hk.koddos.net>(http), <mirror-hk.koddos.net>(https), <mirror-hk.koddos.net>(rsync)
  - Israel: <mirror.isoc.org.il>(http), <mirror.isoc.org.il>(https)
  - Japan: <ftp.iij.ad.jp>(ftp), <ftp.jaist.ac.jp>(ftp), <ftp.yz.yamagata-u.ac.jp>(ftp), <ftp.iij.ad.jp>(http), <ftp.jaist.ac.jp>(http), <ftp.yz.yamagata-u.ac.jp>(http), <ftp.iij.ad.jp>(https), <ftp.jaist.ac.jp>(https), <ftp.yz.yamagata-u.ac.jp>(https)
  - Korea: <ftp.krikt.ac.kr>(ftp), <ftp.krikt.ac.kr>(https)
  - Philippines: <mirror.rise.ph>(ftp), <mirror.rise.ph>(http)
  - Singapore: <download.nus.edu.sg>(http), <download.nus.edu.sg>(https)
  - Taiwan: <ftp.ntu.edu.tw>(ftp), <ftp.ntu.edu.tw>(http), <ftp.twaren.net>(ftp), <ftp.ntu.edu.tw>(http)
- Australasia:
  - Australia: <mirror.internode.on.net>(ftp), <mirror.aarnet.edu.au>(http), <mirror.internode.on.net>(http), <mirror.aarnet.edu.au>(https)
  - New Caledonia: <mirror.lagoon.nc>(ftp), <mirror.lagoon.nc>(http), <mirror.lagoon.nc>(rsync)
  - New Zealand: <ucmirror.canterbury.ac.nz>(ftp), <ucmirror.canterbury.ac.nz>(http)
- Canada:
  - Alberta: <mirror.cpsc.ucalgary.ca>(http), <mirror.cpsc.ucalgary.ca>(https)
  - Manitoba: <ftp.muug.ca>(ftp), <muug.ca>(http), <muug.ca>(https)
  - Ontario: <cygwin.mirror.rafael.ca>(ftp), <mirror.csclub.uwaterloo.ca>(ftp), <cygwin.mirror.rafael.ca>(http), <mirror.csclub.uwaterloo.ca>(http), <mirror.csclub.uwaterloo.ca>(https)
  - Quebec: <cygwin.mirror.globo.tech>(http)

## Choosing download site

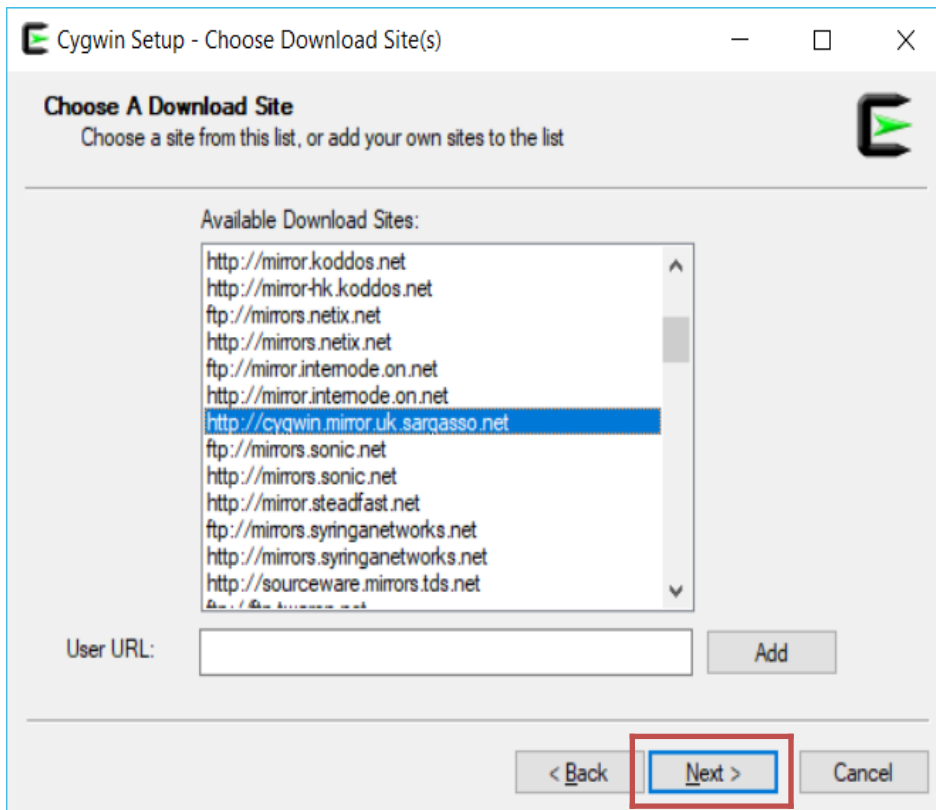
- Choose a https website.
- Choosing a download site is tricky it's a trial and error of choosing which download site.
- In this case the highlighted website is chosen;
- then Click Next and wait for setup to complete.



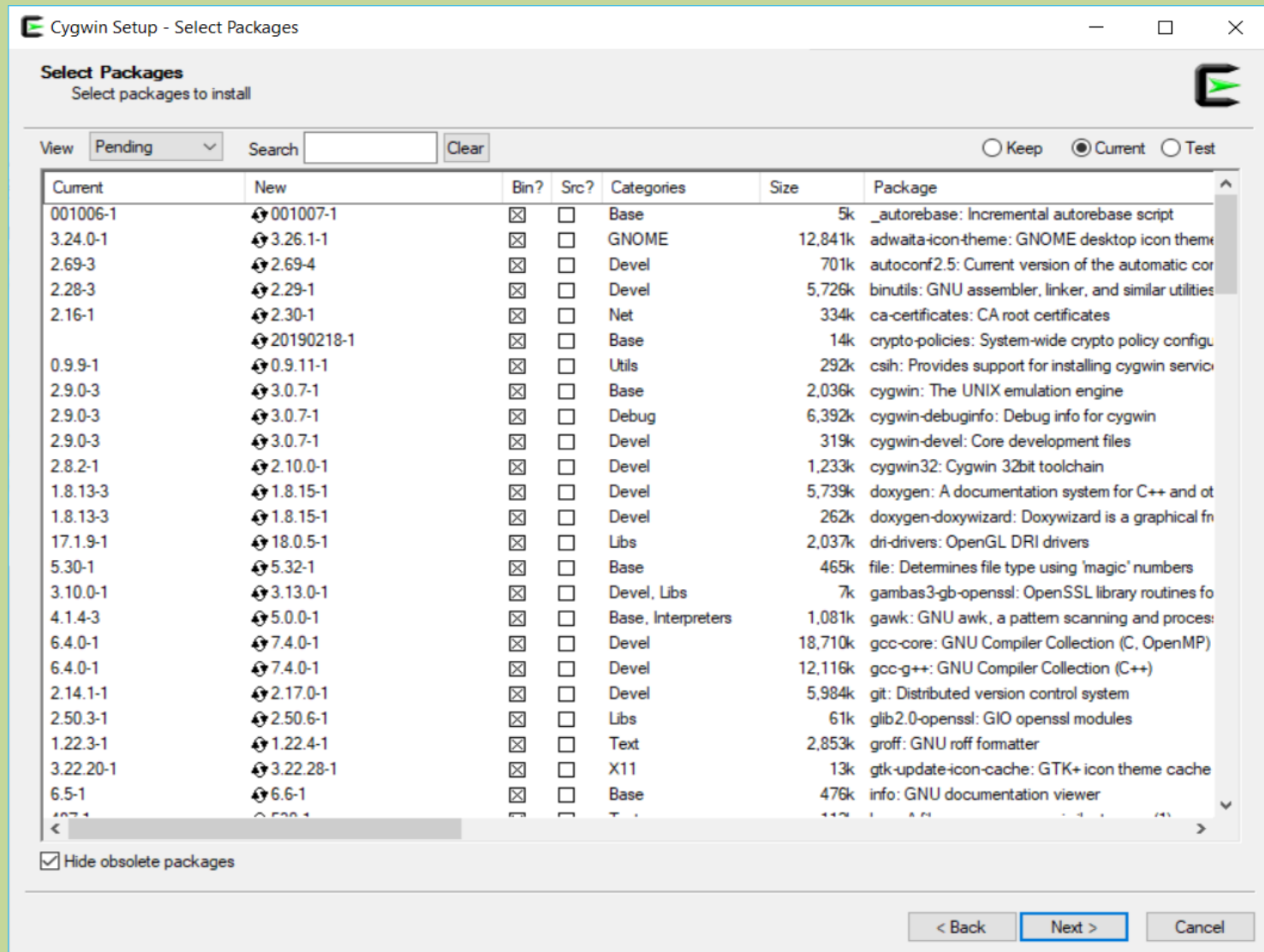
## If the installation got stuck, close the setup and restart



## Find and choose the next download site




## Download success, should see something this



## Package to download:

- cygwin32-gcc-core
- cygwin32-gcc-g++
- gcc-g++
- make
- mingw64-i686-gcc-g++
- mingw64-x86\_64-gcc-g++

## Example image:

 Cygwin Setup - Select Packages

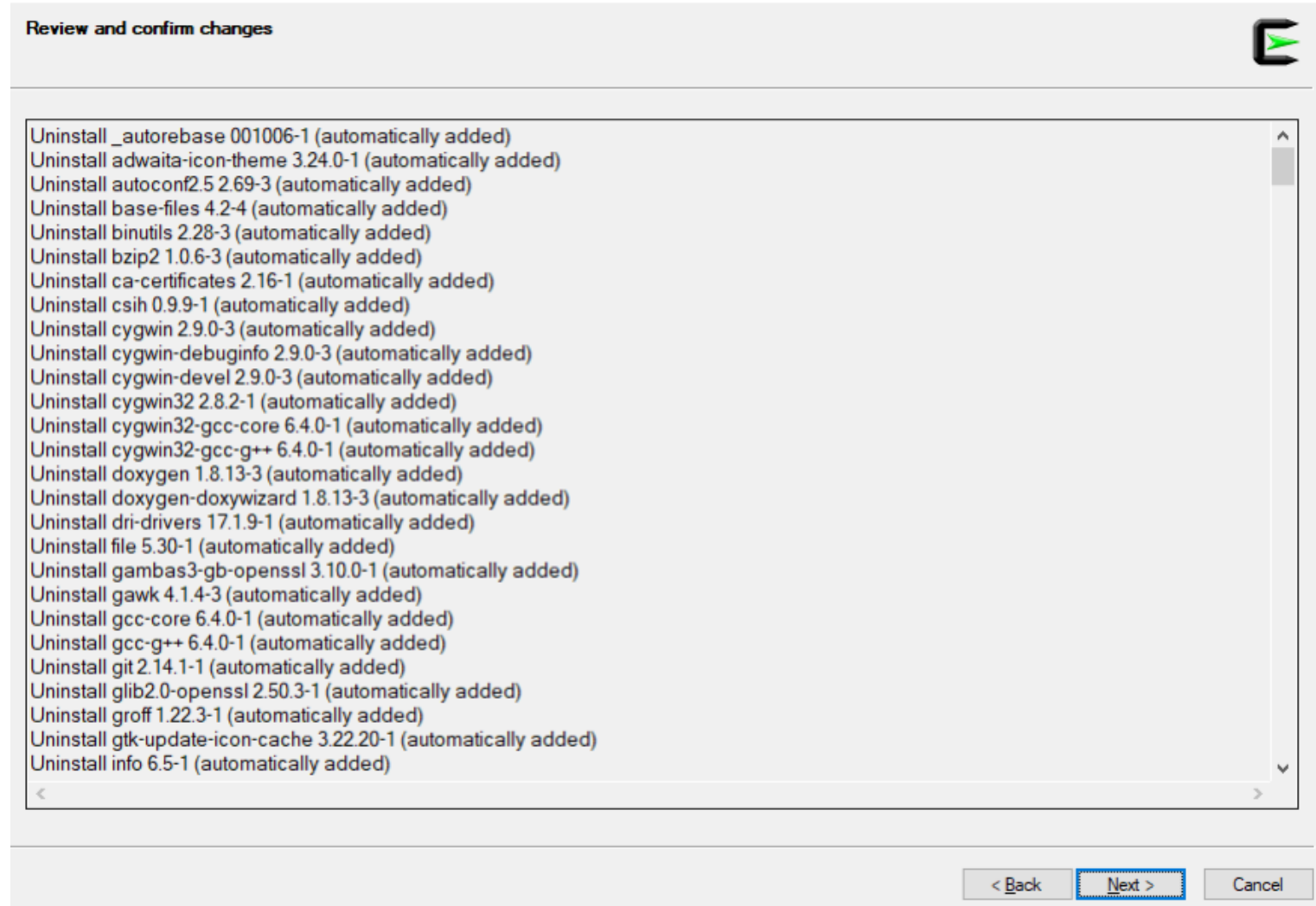
**Select Packages**  
Select packages to install

View  Search

☐ Keep ☒ Best ☐ S

Package	Current	New	Src?	Categories	Size	Description
cygwin32-gcc-g++	6.4.0-1	Keep	<input type="checkbox"/>	Devel	10,456k	GCC for Cygwin 32bit toolchain (C++)
djgpp-gcc-g++		Skip	<input type="checkbox"/>	Devel	8,279k	GCC for DJGPP toolchain (C++)
gcc-g++	11.3.0-1	11.3.0-1	<input type="checkbox"/>	Devel	18,042k	GNU Compiler Collection (C++)
mingw64-i686-gcc-g++	11.3.0-1	Keep	<input type="checkbox"/>	Devel	18,830k	GCC for Win32 (i686-w64-mingw32) toolchain (C++)
mingw64-x86_64-gcc-g++	11.3.0-1	Keep	<input type="checkbox"/>	Devel	19,042k	GCC for Win64 toolchain (C++)

Click next and next and install all package



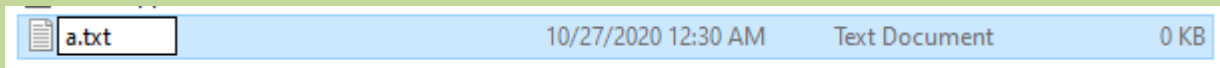
After installation, you should see Cygwin on your desktop

- Double click it and a command prompt should be opened
- Must open the command prompt first, as it will create a folder in your root

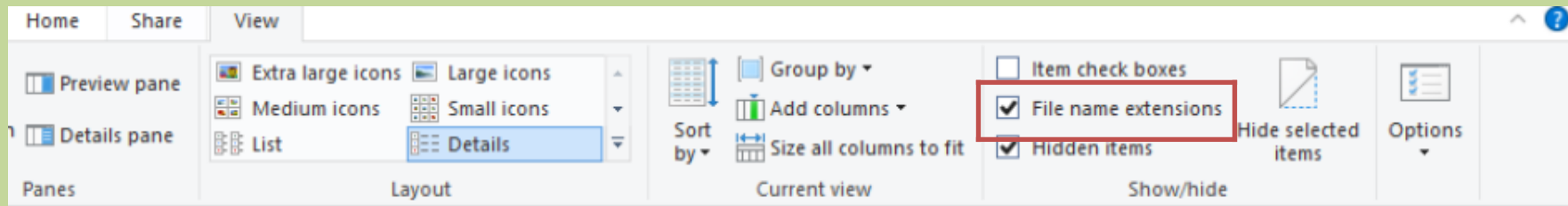


```
gNEW-9VE3IA1M3PK ~  
a.txt  
file not recognized: File format not recognized  
t2: error: ld returned 1 exit status  
gNEW-9VE3IA1M3PK ~  
a.c  
gNEW-9VE3IA1M3PK ~  
KOPEKO  
gNEW-9VE3IA1M3PK ~  
a.c  
gNEW-9VE3IA1M3PK ~  
KOPEKO  
gNEW-9VE3IA1M3PK ~
```

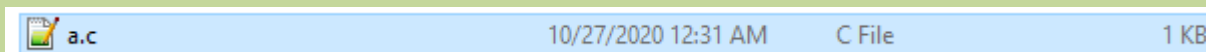
- Open your folder to
- "This pc > windows (C:) cygwin64 > home > \${your PC's username}"



- Make sure you turn on file name extensions view



- Create a txt file and rename your file to "a.c"




## Test Cygwin by writing your first programming text file

- Open your file using notepad++



- Copy this exact code into your a.c file

 a.txt - Notepad  
File Edit Format View Help  

```
#include <stdio.h>


int main(void)
{
    printf("PEKOPEKOPEKO");
    return 0;
}
```



## Test Cygwin by Compiling your first program

- Enter the command: “**gcc a.c**”
- a.exe file should be generated in the same directory as the file

```
$ gcc a.c
```

 a.exe

10/27/2020 12:32 AM

Application

152 KB

## Run your .exe file

- Enter the command: “./a.exe” OR “./a” to execute the file
- It should print out these:

```
$ ./a
PEKOPEKOPEKO
```