

Learn Programming Basics (C Language)

Lesson #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 each contain a paragraph starting with 'Run [setup-x86_64.exe](#)' and 'Run [setup-x86.exe](#)' respectively, both of which are highlighted with red boxes. The 'Signing key transition' section contains a paragraph about the key used to sign setup binaries. 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

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

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.

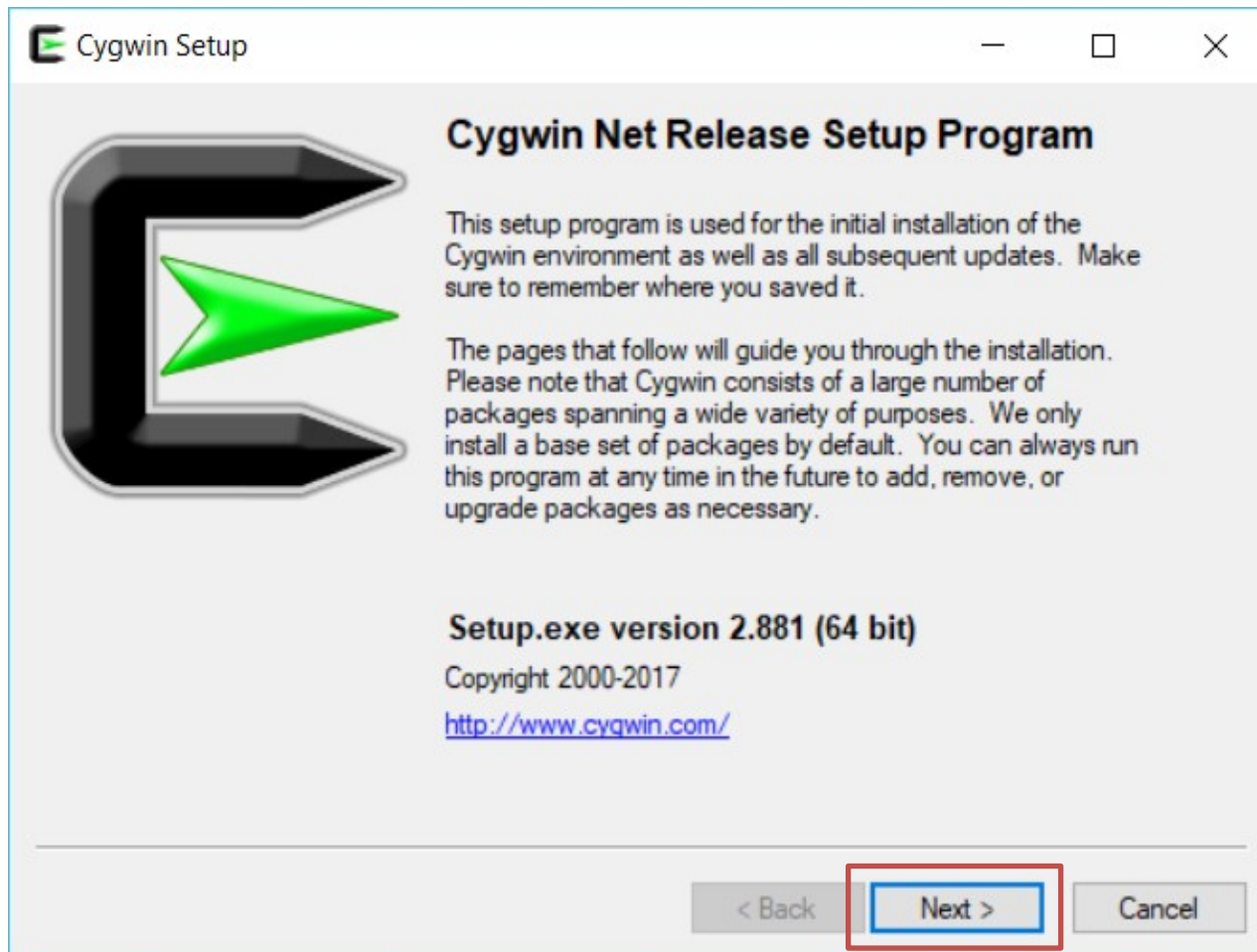
Installing and Updating Cygwin for 32-bit versions of Windows

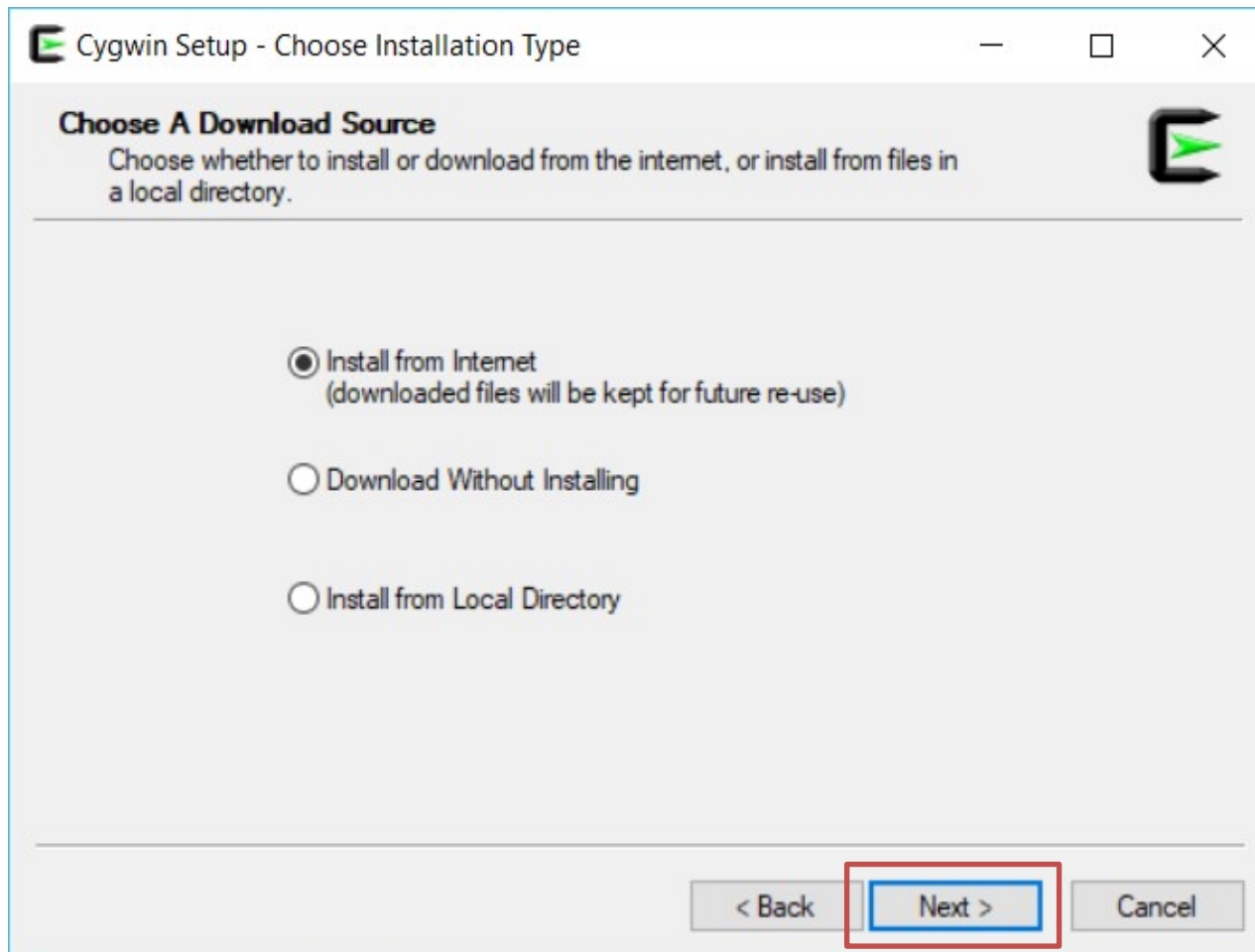
Run [setup-x86.exe](#) any time you want to update or install a Cygwin package for 32-bit windows. The [signature](#) for [setup-x86.exe](#) can be used to verify the validity of this binary.

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





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...

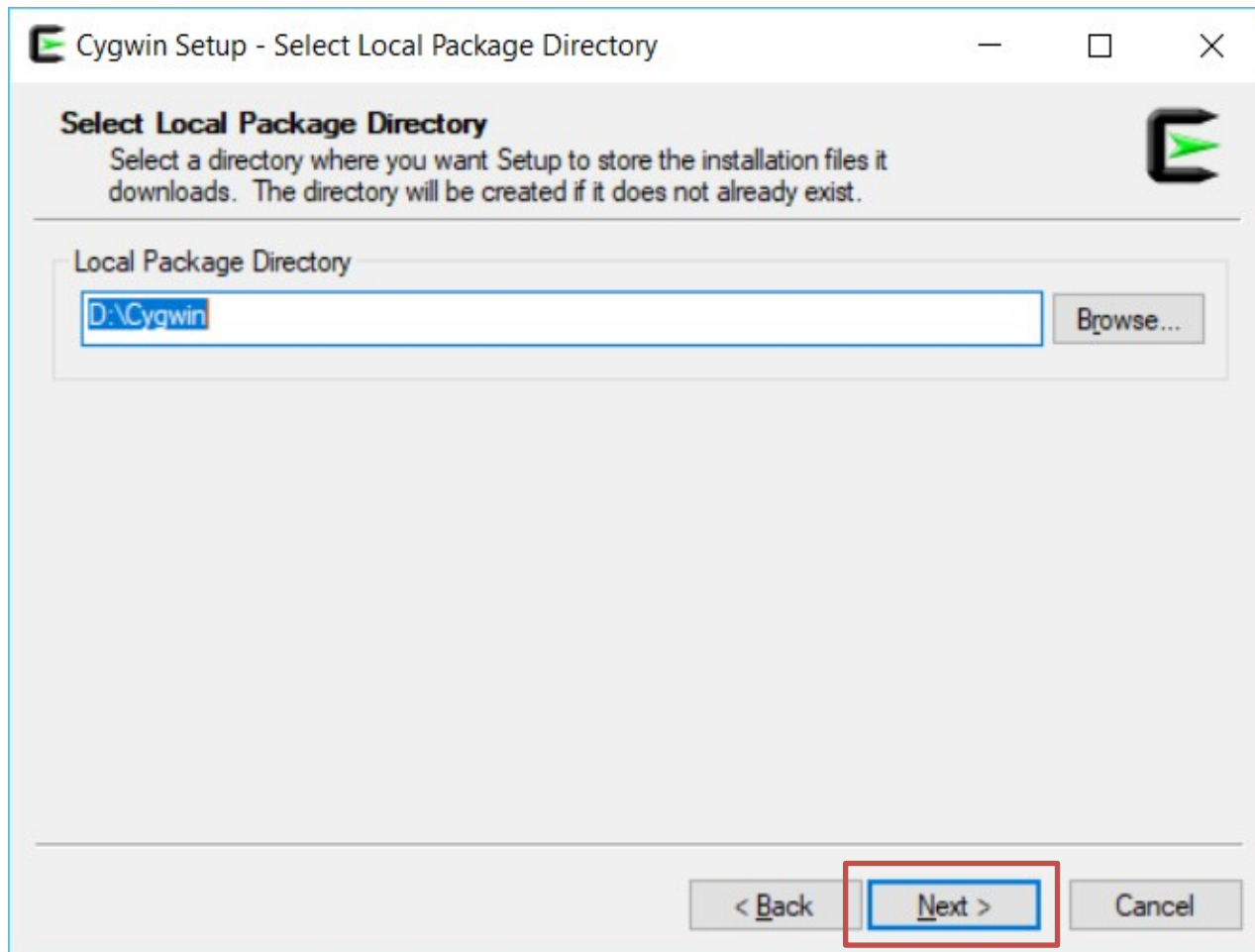
Install For

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

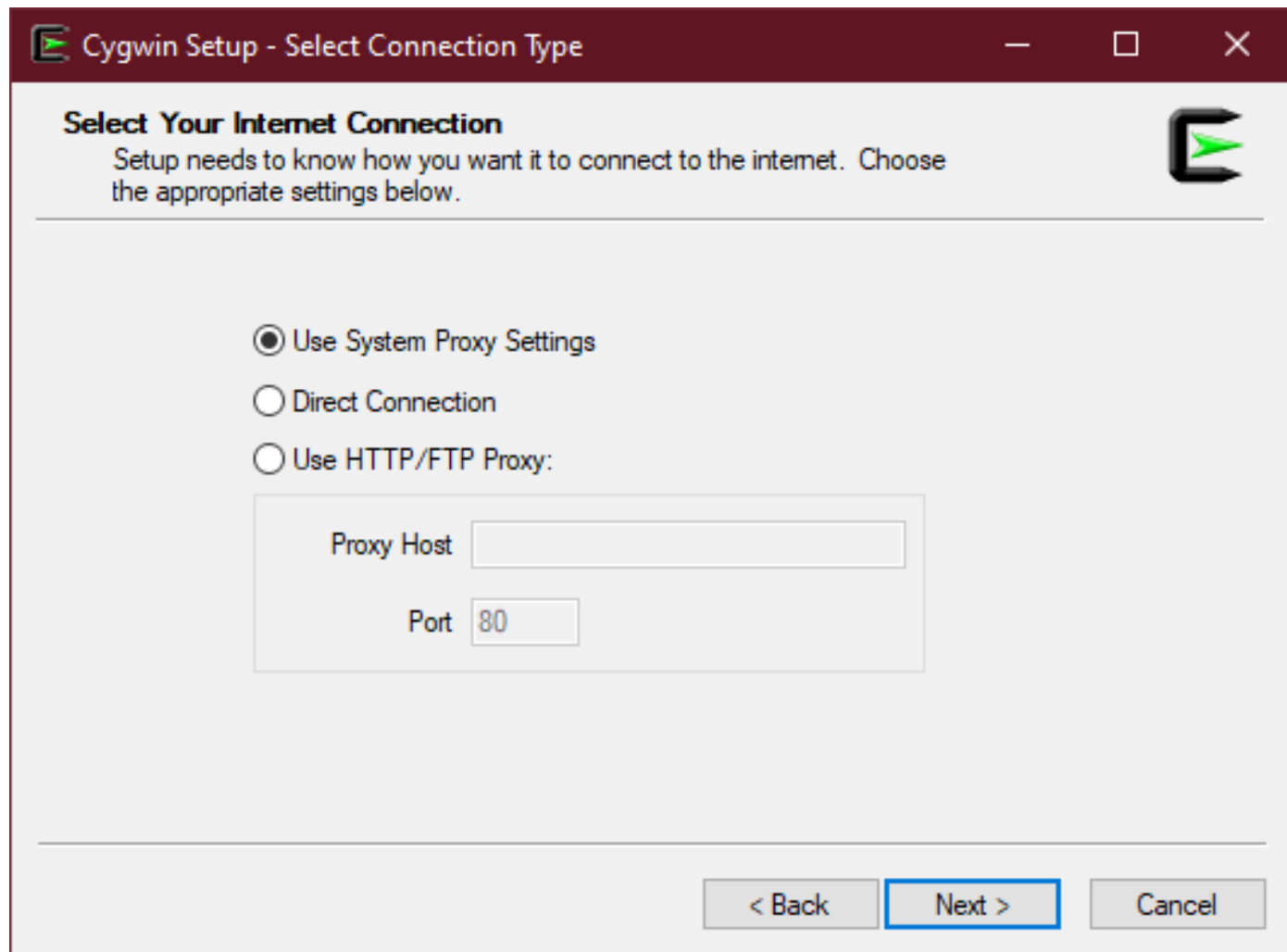
☐ **Just Me**
Cygwin will still be available to all users, but Desktop Icons, Cygwin Menu Entries, and important Installer information are only available to the current user. Only select this if you lack Administrator privileges or if you have specific needs.

< Back **Next >** Cancel

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



Use System Proxy Settings



The screenshot shows a window titled "Cygwin Setup - Select Connection Type". The window has a dark red title bar with standard Windows window controls (minimize, maximize, close). The main content area is light gray. At the top left, there is a Cygwin logo (a green arrow pointing right) followed by the text "Cygwin Setup - Select Connection Type". Below this, the section "Select Your Internet Connection" is displayed in bold. Underneath, a paragraph states: "Setup needs to know how you want it to connect to the internet. Choose the appropriate settings below." To the right of this text is a large Cygwin logo. Below the text, there are three radio button options: "Use System Proxy Settings" (which is selected), "Direct Connection", and "Use HTTP/FTP Proxy:". Below the "Use HTTP/FTP Proxy:" option, there is a text box for "Proxy Host" and a smaller text box for "Port" containing the value "80". At the bottom right of the window, there are three buttons: "< Back", "Next >" (which is highlighted with a blue border), and "Cancel".

Select Your Internet Connection

Setup needs to know how you want it to connect to the internet. Choose the appropriate settings below.

☒ Use System Proxy Settings

☐ Direct Connection

☐ Use HTTP/FTP Proxy:

Proxy Host

Port

< Back Next > Cancel

Find your respective region and download mirror site (Optional)

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

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.

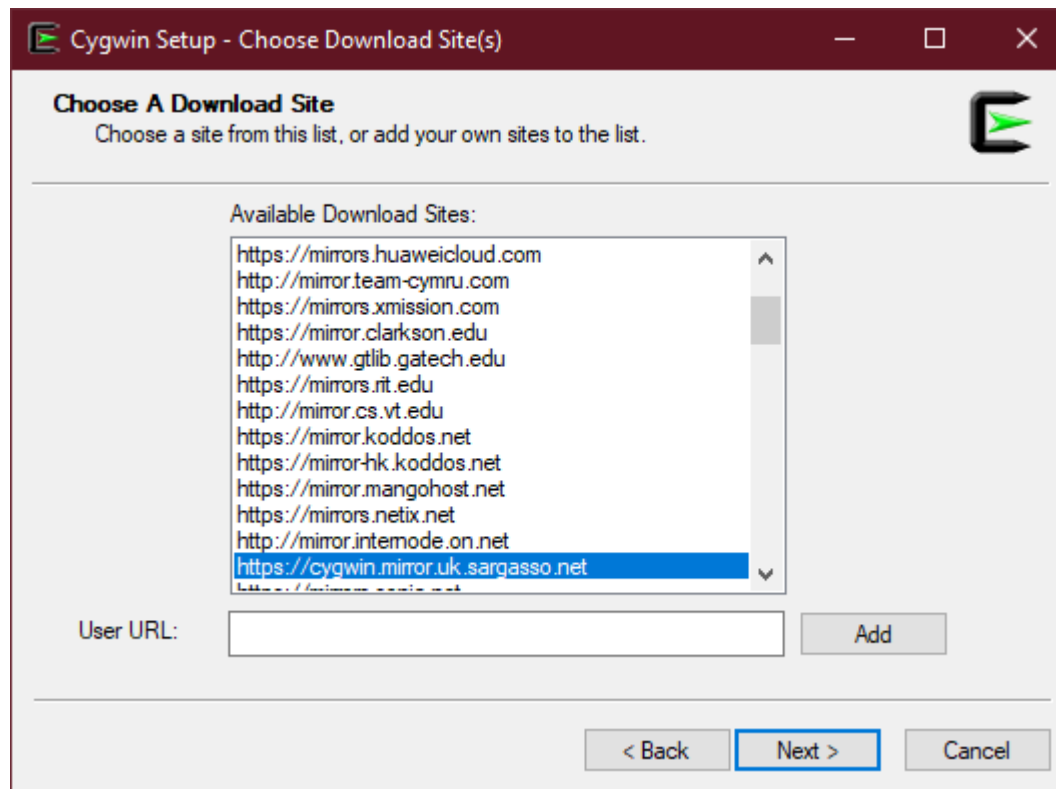
There is [more information for Mirror Administrators](#).

Mirror site list

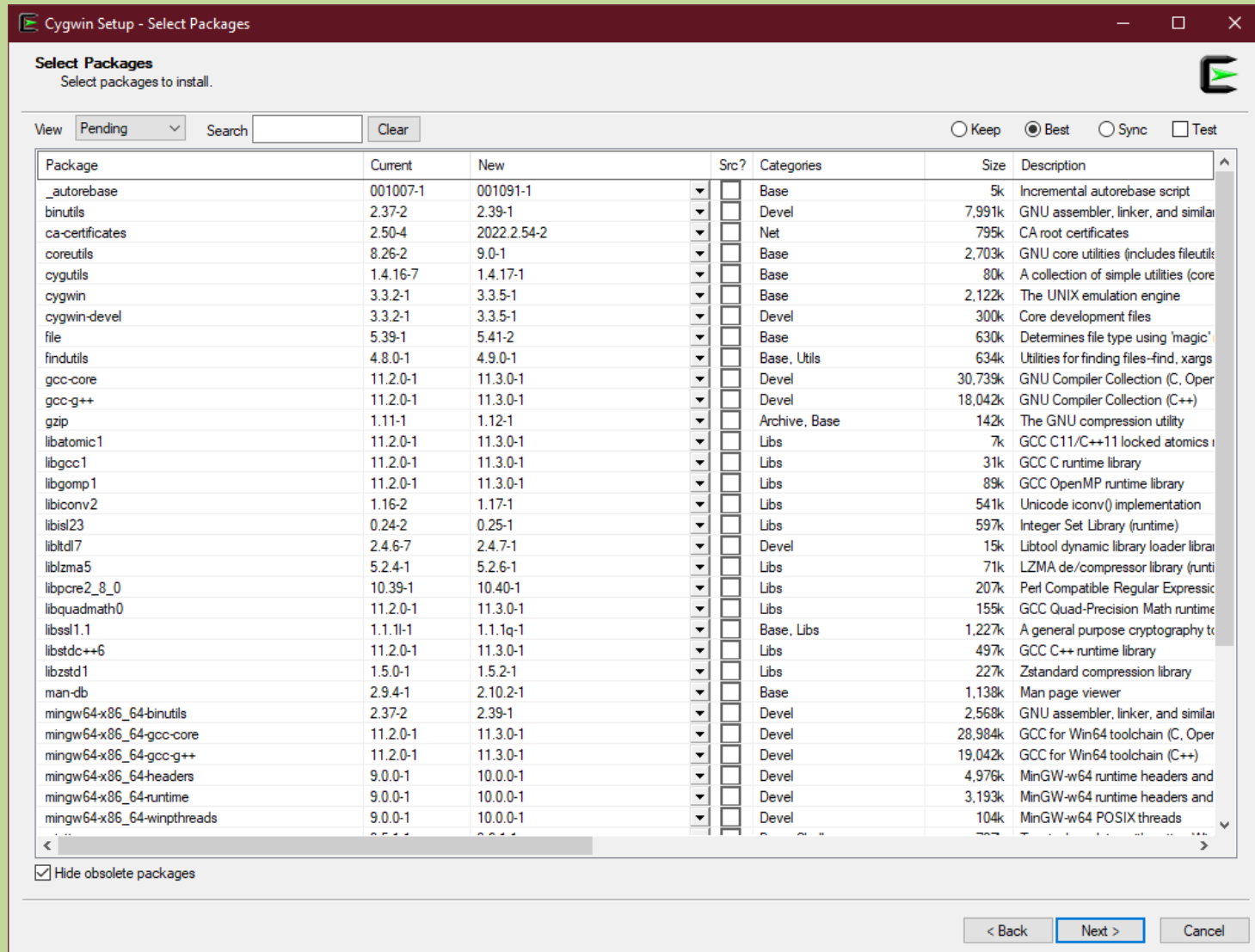
- Africa:
 - South Africa: <ftp.is.co.za>(ftp)
- Asia:
 - China: <mirrors.163.com>(http), <mirrors.neusoft.edu.cn>(http), <mirrors.ustc.edu.cn>(http), <mirrors.163.com>(https), <mirrors.aliyun.com>(https), <mirrors.neusoft.edu.cn>(https), <mirrors.sjtug.sjtu.edu.cn>(https), <mirrors.ustc.edu.cn>(https)
 - 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.vz.yamagata-u.ac.jp>(ftp), <ftp.iij.ad.jp>(http), <ftp.jaist.ac.jp>(http), <ftp.vz.yamagata-u.ac.jp>(http), <ftp.iij.ad.jp>(https), <ftp.jaist.ac.jp>(https), <ftp.vz.yamagata-u.ac.jp>(https)
 - Korea: <ftp.kist.ac.kr>(ftp), <ftp.kist.ac.kr>(https), <ftp.kist.ac.kr>(rsync)
 - 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.rafal.ca>(ftp), <mirror.csclub.uwaterloo.ca>(ftp), <cygwin.mirror.rafal.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 and restart the setup




If the installation success, you should see something this:



Package to download:

- gcc-core
- gcc-g++
- make
- mingw64-i686-gcc-g++ (32-bit optional)
- mingw64-x86_64-gcc-g++

Example image:

 Cygwin Setup - Select Packages

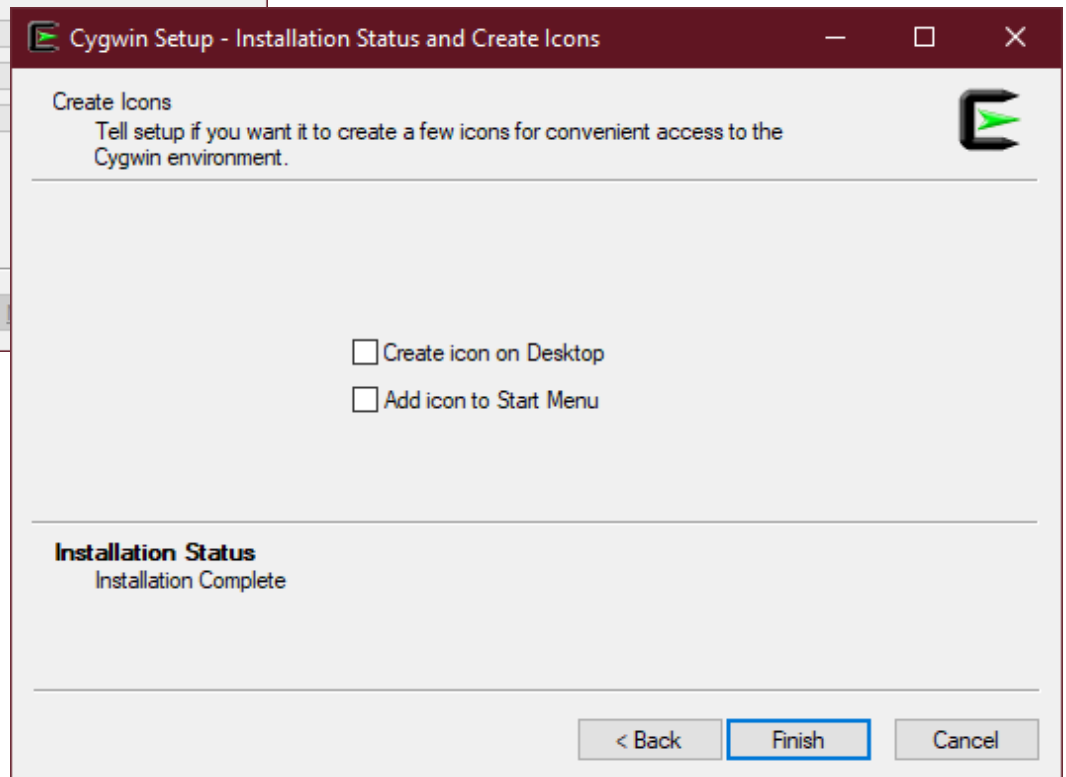
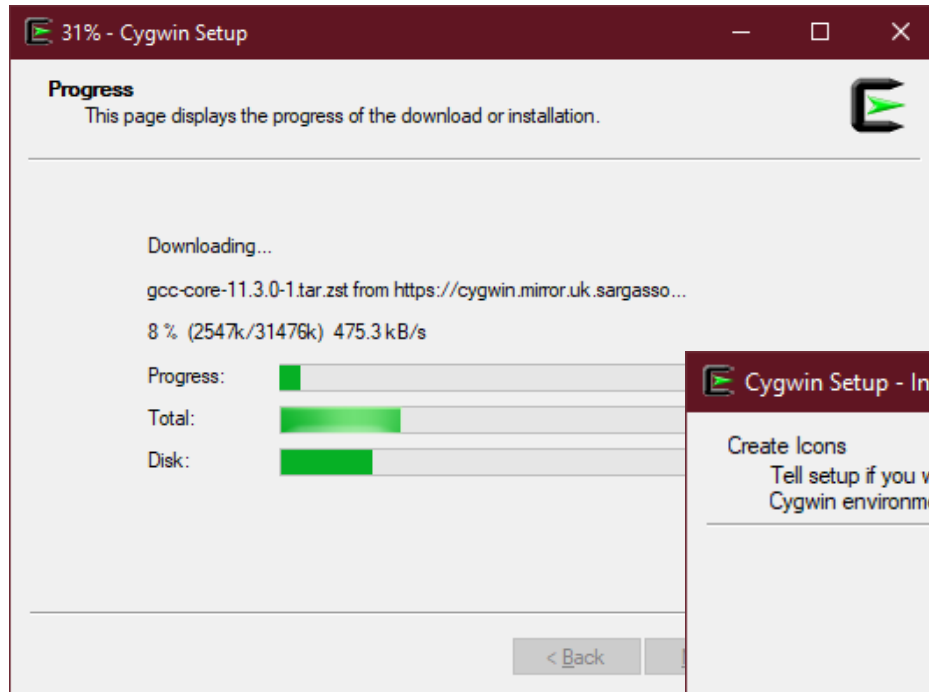
Select Packages
Select packages to install

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



Testing

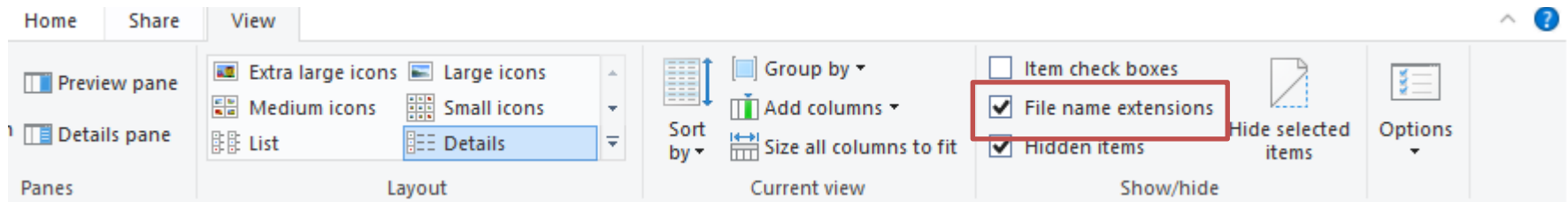
After installation, you should see Cygwin64 Terminal on your desktop

- 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





Go to your working default folders

- On first installation, you MUST open the Cygwin terminal at least once to generate the default folder.
- Go to: This PC → C: → cygwin64 → home → \$(your PC's username)
- Turn on [File name extensions]
- Turn on [Hidden Items] (optional)



Test Cygwin by writing your first programming text file

- Create a txt file and rename your file to “a.c”.
- make sure to change the file extension as well.

 a.txt	10/27/2020 12:30 AM	Text Document	0 KB
 a.c	10/27/2020 12:31 AM	C File	1 KB

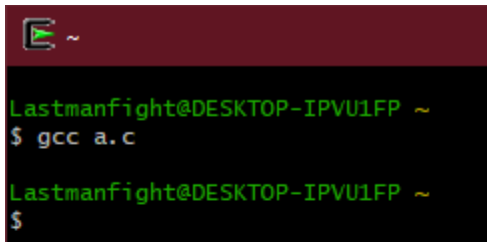
- Open the file using notepad++, set as default application to open this type of file for ease of use.
- Copy this exact code snippet into your a.c file.

```
#include <stdio.h>
```

```
int main(){  
    printf("DONKEY BALLS");  
    scanf("%d");  
    return 0;  
}
```

Test Cygwin by Compiling your first program

- Enter the command: **“gcc a.c”**.
- If no error occurs, you should see these;
- An **“a.exe”** file should be generated in the same directory as the file.

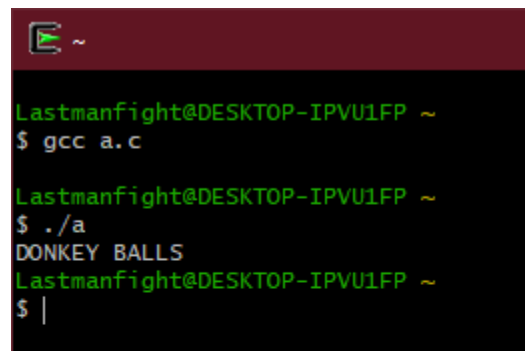


```
Lastmanfight@DESKTOP-IPVU1FP ~  
$ gcc a.c  
Lastmanfight@DESKTOP-IPVU1FP ~  
$
```

 a.exe	10/27/2020 12:32 AM	Application	152 KB
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Run your .exe file

- Enter the command: **“./a.exe”** OR **“./a”** to run the file.
- It should print out these, and then Ctrl + C to stop:



```
Lastmanfight@DESKTOP-IPVU1FP ~  
$ gcc a.c  
  
Lastmanfight@DESKTOP-IPVU1FP ~  
$ ./a  
DONKEY BALLS  
Lastmanfight@DESKTOP-IPVU1FP ~  
$ |
```

Test Cygwin by Compiling your first program

Enter the command: "x86_64-w64-mingw32-gcc **a.c**" OR;

Enter the command: "x86_64-w64-mingw32-g++ **a.c**".

- If no error occurs, you should see these;
- An "a.exe" file should be generated in the same directory as the file.

Run your .exe file

- Double click "./a.exe".
- Should see no errors.
- Ctrl + C to close console.
- Ctrl + L to clear console.