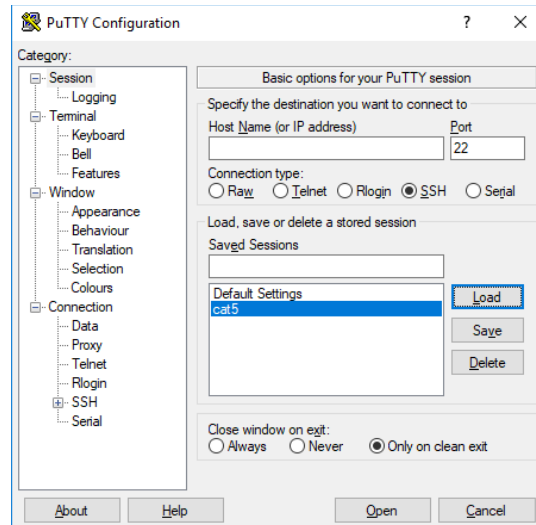# Connecting to Cat5 via SSH from Windows 10

If this is your first time to connect to Cat5 via SSH, jump to the **First-Time-Only Steps** on the next page.
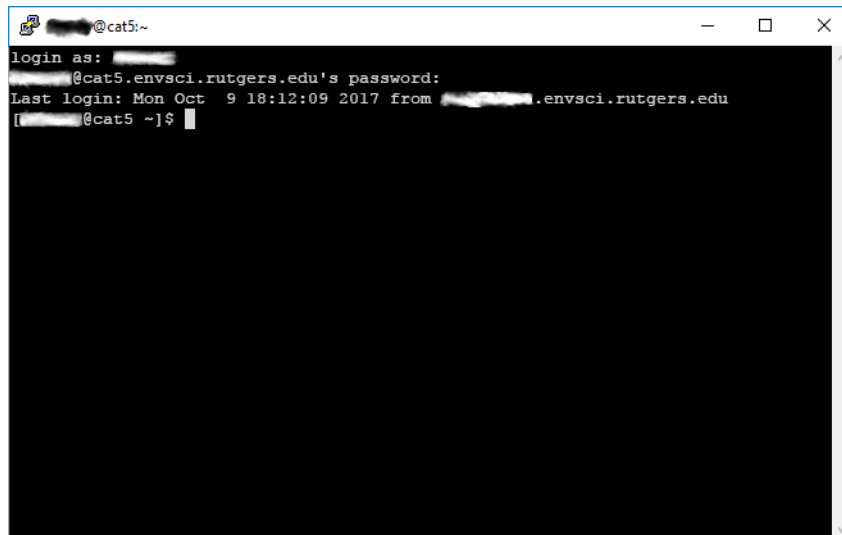
1. Launch Xming if it is not already running (i.e. if the "X" icon is not present in the system tray).

2. Launch PuTTY.

3. Double-click on the "cat5" session.

4. Type your username and password (they will not be visible). Press the **Enter** key after each.

You are connected!

When done, type "exit" and press **Enter** to logout. The PuTTY window will close automatically.

First-Time-Only Steps

To log into Cat5 you must have a Secure Shell ("SSH") client installed. To use graphical ("X-Windows") programs on Cat5, you must have an "X Server" installed, too. While there are other software packages you could choose from, these instructions explain how to install and configure the free **Xming** X-Server and the free **PuTTY** SSH client. If you want to use something else, you're on your own!

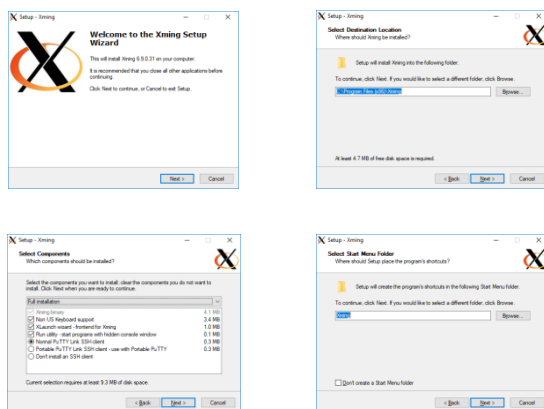## Install Xming (not necessary on ICL computers)

Xming allows the remote computer to draw graphical windows on your screen. If you only intend to run text-based software on the remote server, then you do not need Xming.

> ⚠ **IMPORTANT:** The files linked below will download automatically. **DO NOT CLICK** on "Download" or "Start Download" buttons on those pages. Those buttons are advertisements and will download other, possibly dangerous, software you do not want!
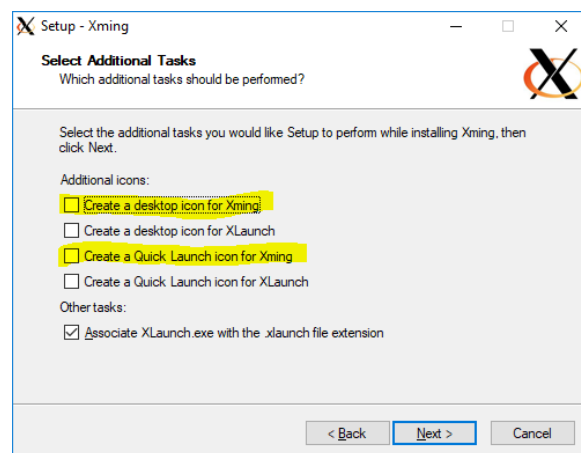
1. To install Xming, first download the two installer programs:

    - https://sourceforge.net/projects/xming/files/Xming/6.9.0.31/Xming-6-9-0-31-setup.exe/download
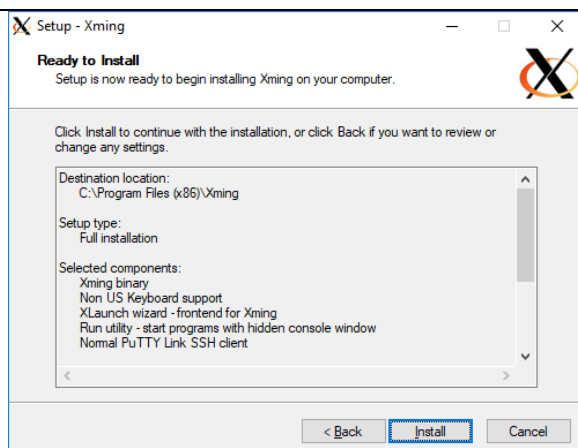   - https://sourceforge.net/projects/xming/files/Xming-fonts/7.7.0.10/Xming-fonts-7-7-0-10-setup.exe/download

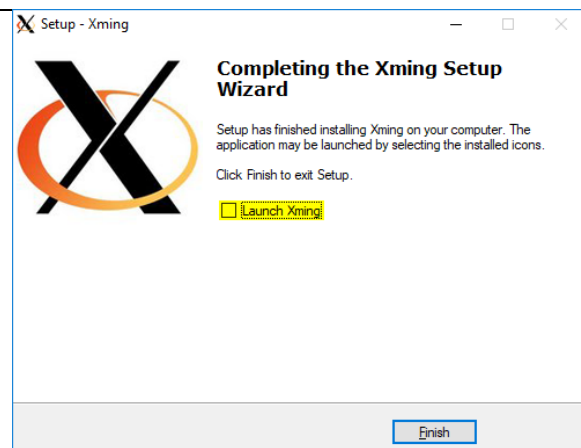2. Start by running the downloaded Xming installer (Xming-6-9-0-31-setup.exe):

(a) Click "Next" on the first four screens.

(b) **Choose** any icon options you like, then click "Next."

(c) Click "Install" to complete the installation.

(d) **Uncheck** "Launch Xming," and click "Finish."

3. Now, launch the Xming Fonts installer (Xming-fonts-7-7-0-10-setup.exe):

(a) Click "Next"   (b) **Check all fonts** (except Cyrillic) and click "Next."   (c) Click "Next" then "Install"

Congratulations, you have installed Xming! Next, install PuTTY (see next page).

Install PuTTY (not necessary on ICL computers)

PuTTY is a SSH (Secure Shell) client. It allows you to securely log in to Cat5 and other servers.

1. First, go here to download the PuTTY installer:

- https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

Package files

You probably want one of these. They include versions of all the PuTTY utilities.

(Not sure whether you want the 32-bit or the 64-bit version? Read the FAQ entry.)

MSI ('Windows Installer')

64-bit x86:	putty-64bit-0.76-installer.msi	(or by FTP)	(signature)
64-bit Arm:	putty-arm64-0.76-installer.msi	(or by FTP)	(signature)
32-bit x86:	putty-0.76-installer.msi	(or by FTP)	(signature)

Unix source archive

.tar.gz:	putty-0.76.tar.gz	(or by FTP)	(signature)

2. Look for the links under "**MSI ('Windows Installer')**". Choose the link next to "64-bit x86," "64-bit Arm" or "32-bit x86," whichever one matches your Windows system type

(a) To find out which system type you have, open File Explorer. Right click on "This PC" and click on Properties. You will see a window with a section of information like this:

Device specifications

Device name	
Processor	
Installed RAM	
Device ID	
Product ID	
System type	64-bit operating system, x64-based processor

(b) Look for "System type" and note whether it says "32-bit" or "64-bit" and if it says "x64" or "Arm." Close this window and download the corresponding PuTTY installer.

3. Run the PuTTY installer you just downloaded:
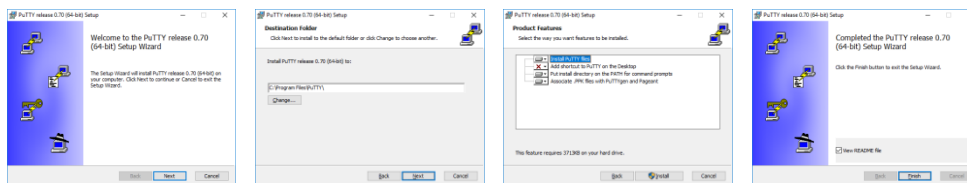
Click "Next" twice, then "Install" and "Finish." There are no real choices to make here.

Congratulations, you have installed PuTTY! Now create a PuTTY session for your connection (next page).

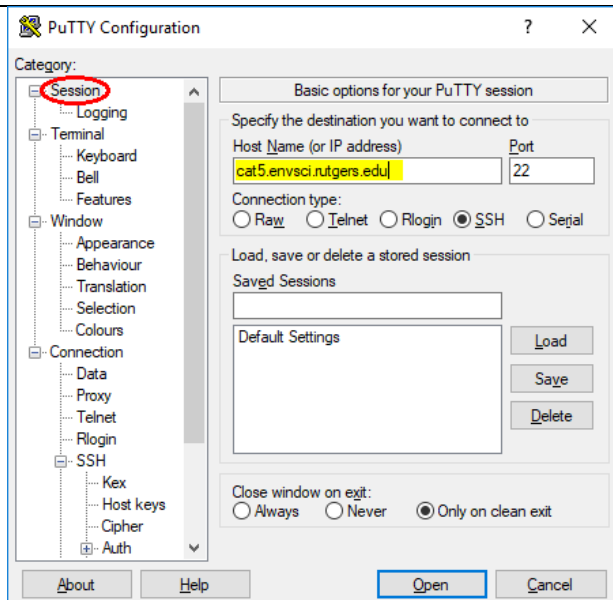# Create a PuTTY Session for Cat5 (do this on ICL and home computers)

Launch PuTTY (under the "PuTTY" folder in your Start menu). Follow these steps to create your session:
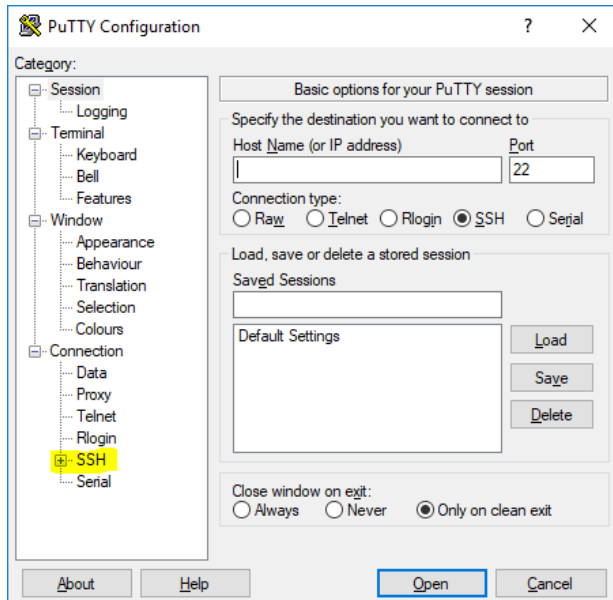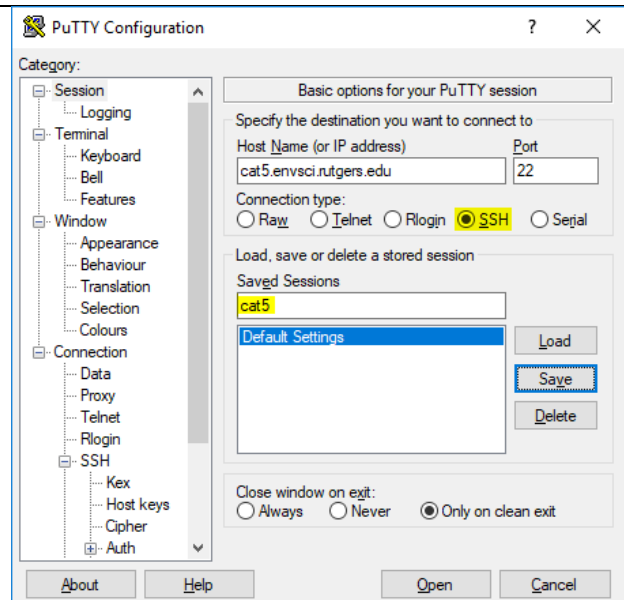
(a) In the tree on the left side, under "Connection", click on the "+" next to "SSH" to expand it.
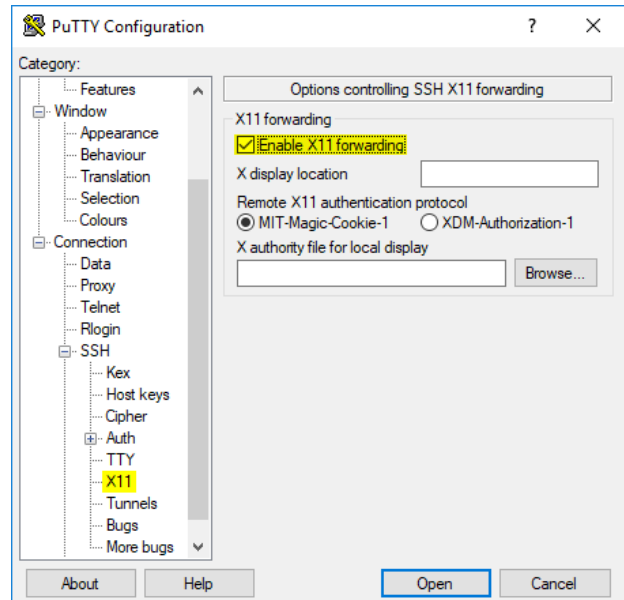
(b) Then click on "X11" under "SSH."
Check the box next to "Enable X11 forwarding."

(c) Now scroll the tree to the top and click on "Session." Under "Host Name", type "cat5.envsci.rutgers.edu" (without the quotes).

(d) Make sure "Connection type" is set to "SSH". Under "Saved Sessions", type "cat5" (without the quotes) and click "Save". Click "Cancel" to exit.

Your session is now created!
Next, log in for the first time (see next page).

First Log In

The first time you log in, a few things will be different from subsequent connections.
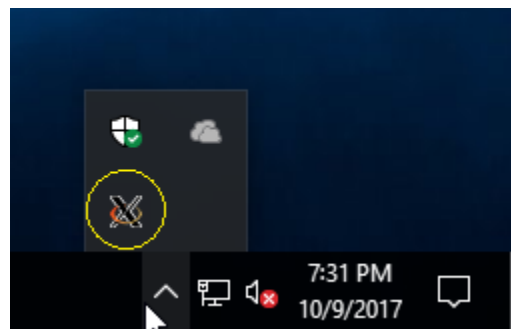
Launch Xming

First launch Xming. The first time you run it, you may see a Firewall alert like this:

You can click "Cancel" to continue blocking this feature. It is not needed for general use.

Xming does not bring up any windows. You can tell it is running by the "X" icon in the system tray (the set of icons in the lower-right of the desktop):


⚠ **IMPORTANT:** Always make sure Xming is running **before** launching PuTTY. Otherwise, graphics will not work!

Launch PuTTY

Now launch PuTTY. You will see the configuration screen as before.
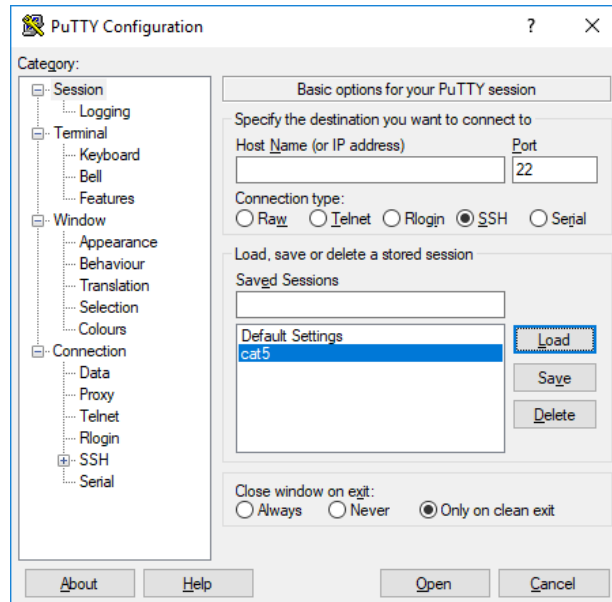
Double-click on the "cat5" session to start it. The first time you connect to Cat5 you will see a security alert from PuTTY saying it does not recognize the server, asking if you trust the "host key." Examples:
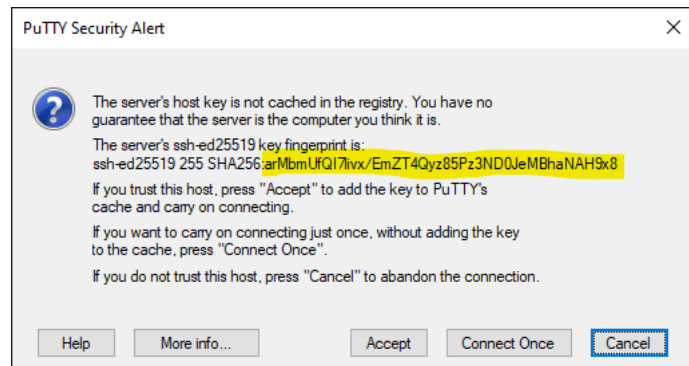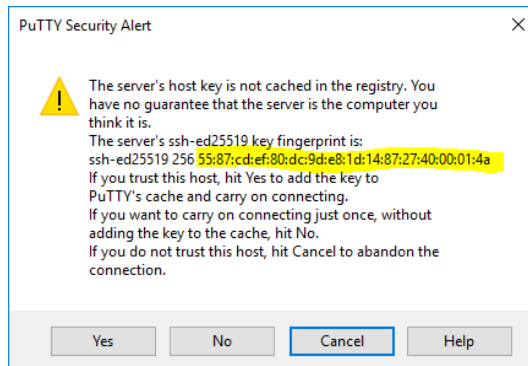

To verify the secure connection, check that the provided fingerprint (highlighted in yellow in the screenshots; it may differ on your screen) *exactly* matches one of the following three valid fingerprints:

- `arMbmUfQI7livx/EmZT4Qyz85Pz3ND0JeMBhaNAH9x8`
- `55:87:cd:ef:80:dc:9d:e8:1d:14:87:27:40:00:01:4a`
- `ee:05:33:ed:1e:5c:31:84:86:b9:8c:11:15:1a:9d:6f`

If it matches one of those, then click "Yes" to connect. If it does **NOT** match any of them, then please check Cat5 Host Key Fingerprints on the DES website for more possible values.

Do not accept an unverified host key!

A window will appear that lets you communicate with the Cat5 server by typing.
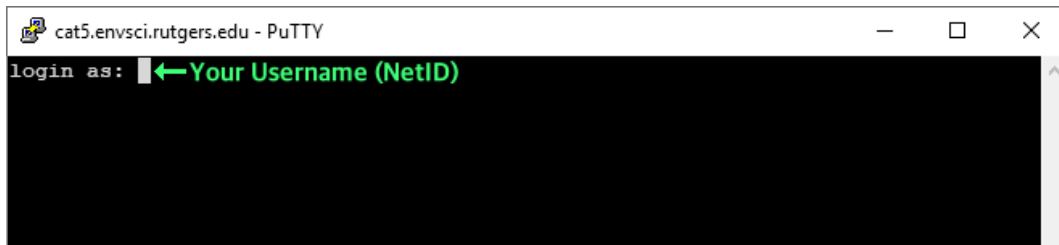
Type your Cat5 username, as previously given to you (usually your NetID), then press the **Enter** key.

At this point, you will be asked to enter your password. If you are using a temporary password provided to you, then **follow the steps below** to choose a new password. Otherwise, enter your usual Cat5 password and you will be connected.

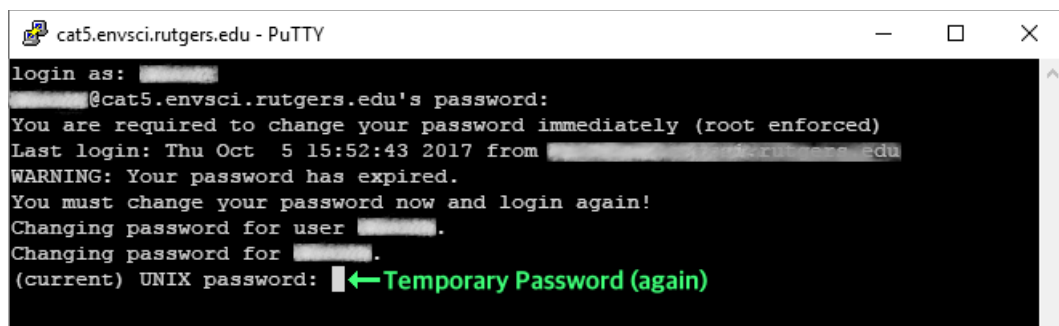> ⚠ **Important:** Passwords **will not be visible** on the screen while you type them.

Congratulations, you are now completely setup to use Cat5 via PuTTY and Xming. Enjoy!

Setting a New Password

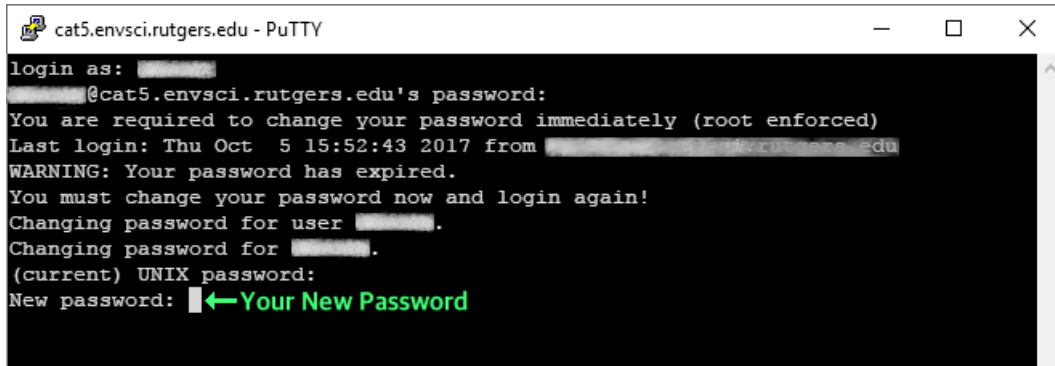After entering your username you will see the password prompt:
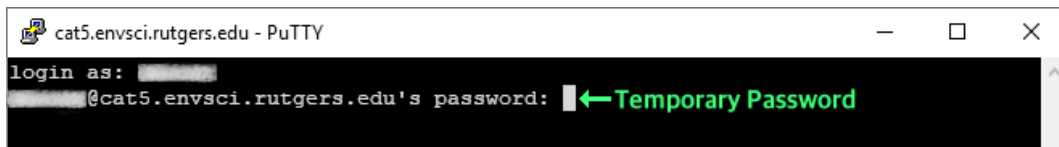
Type the Temporary Password previously given to you, and then press the **Enter** key.

Type the Temporary Password **again**, and then press the **Enter** key.
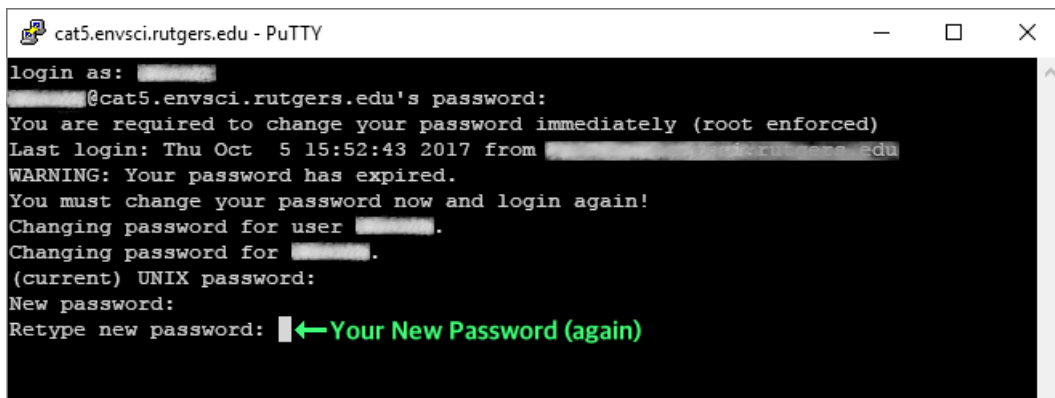
⚠ **Repeating:** Passwords **will not be visible** on the screen while you type them.

Next you will see prompts to enter your new password.

Now type your new, made-up password. No one else will know this, so you should be able to remember it, but people should not be able to easily guess what it is. Don't use a dumb password such as "password" or someone's name or birthday. Press the **Enter** key when done.

Finally, type your new, made-up password **again** to confirm it, and then press the **Enter** key.

If you type in the wrong temporary password, or if your new passwords do not match, then this process will abort and you will have to start over by connecting to Cat5 again.

Once you have successfully changed your password, Cat5 will disconnect, and the PuTTY window will close automatically. The next time you connect to Cat5, you will log in normally (as shown on page 1), and enter your new password only. You do not need your Temporary Password any longer.

Congratulations, you are now completely setup to use Cat5 via PuTTY and Xming. Enjoy!