CS 1550

Lab 1 – Linux/Shell

Basic commands Introduction

Teaching Assistant

Maher Khan

(Slides credited to Henrique Potter)

Recitation TA – Office Hours

- Tuesday
  - 2:00pm - 5:00pm
- Friday
  - 1:00pm – 4:00pm

- Office: SenSq 5802

Recitation slides

- On GitHub:

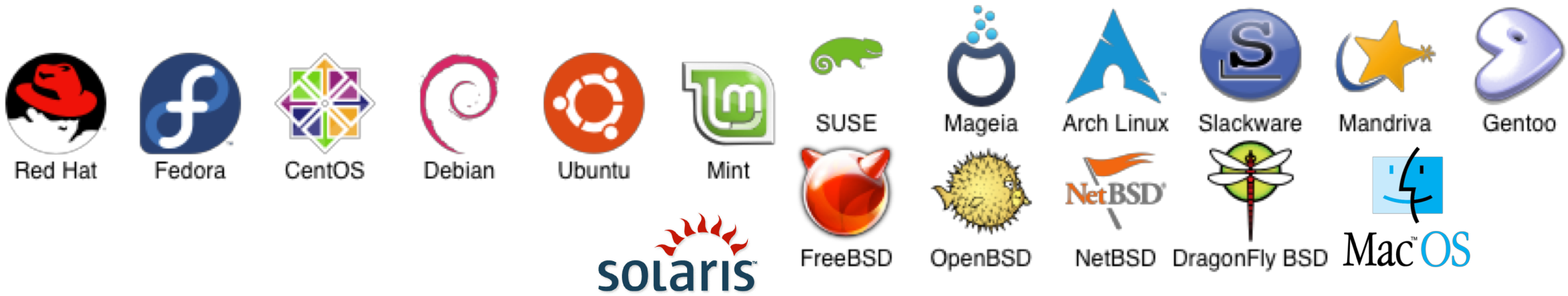
  https://github.com/maher460/Pitt_CS1550_recitation_materials

CS 1550 – Introduction to Operating Systems

- Common operating systems abstractions and mechanisms

CS 1550 – Introduction to Operating Systems

- Common operating systems abstractions and mechanisms
- Will provide basic knowledge common to many modern Operating Systems



Projects

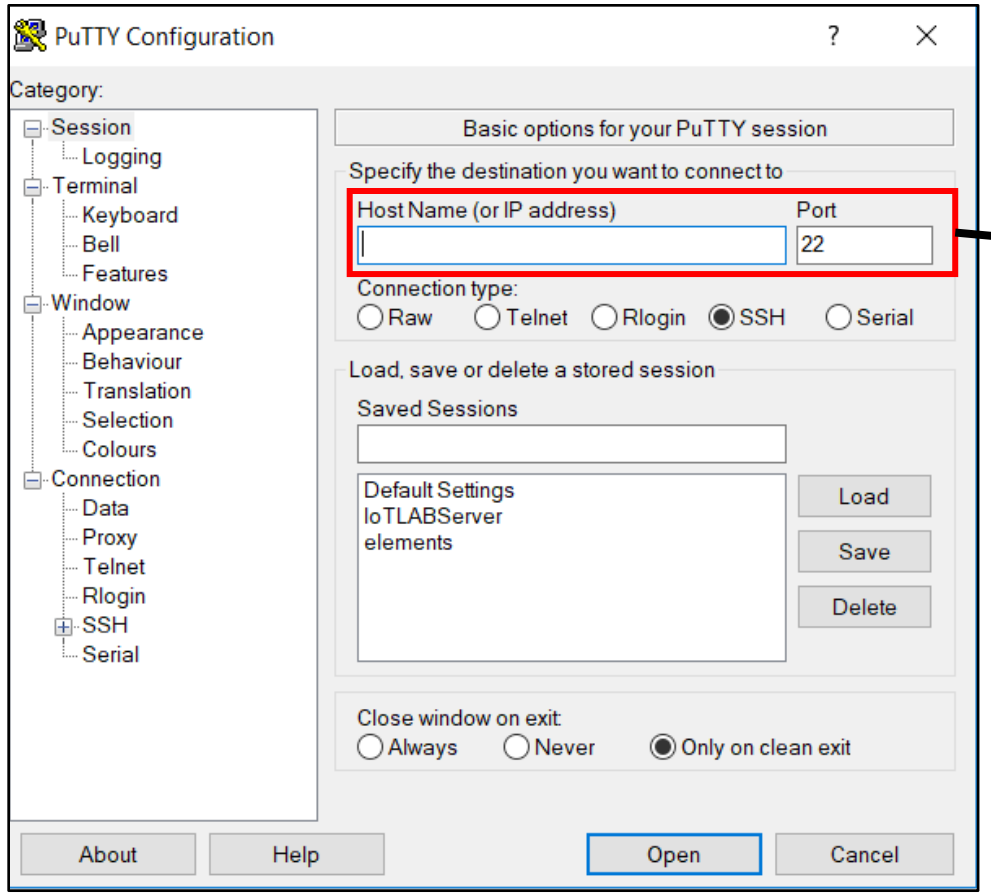
- Projects have to run in the **thoth server**
  - **thoth.cs.pitt.edu**

SSH Clients

- Windows
  - **Putty**
- MacOS/Ubuntu
  - **Terminal**

Windows - Putty

- Download from **www.putty.org**



server address:
thoth.cs.pitt.edu at port 22

Windows - Putty

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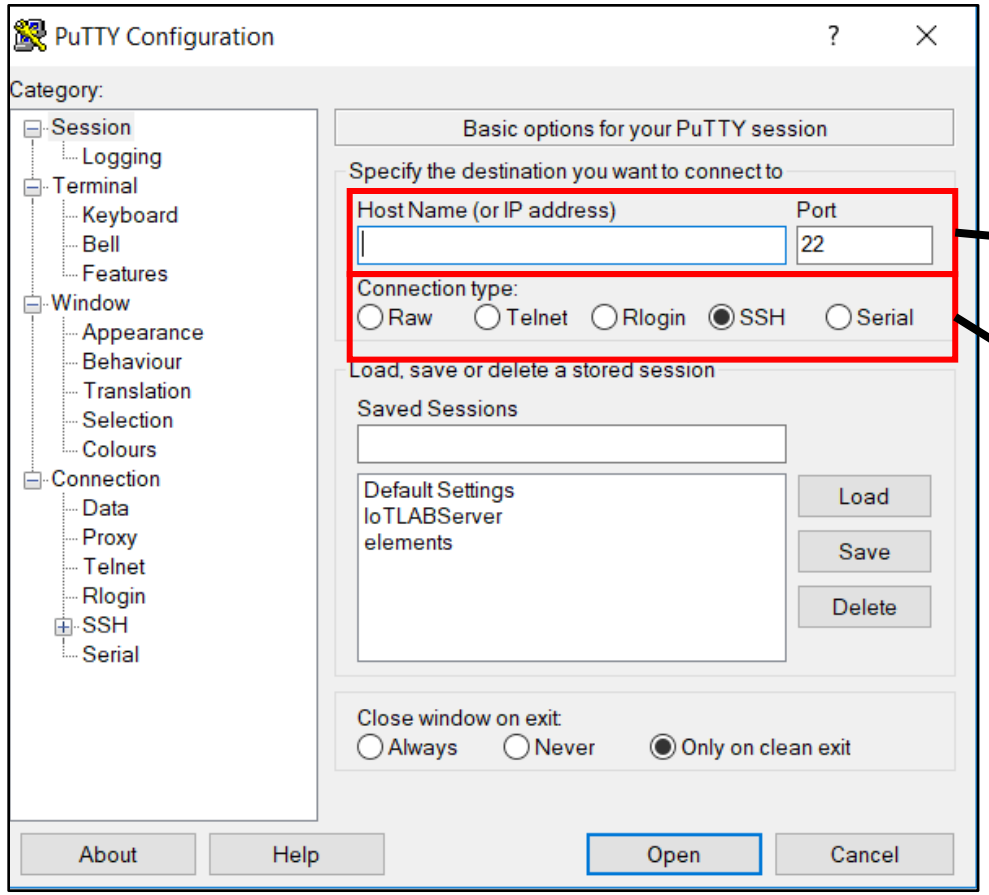

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Use SSH

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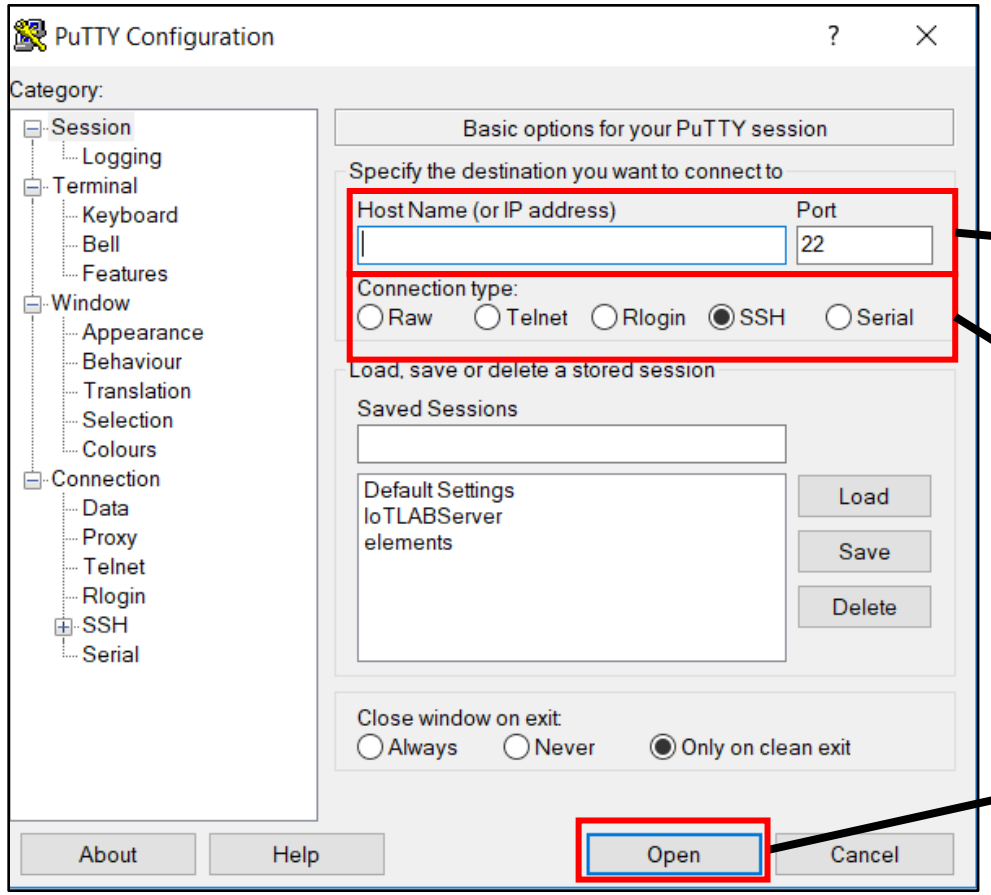

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Use SSH

Click Open

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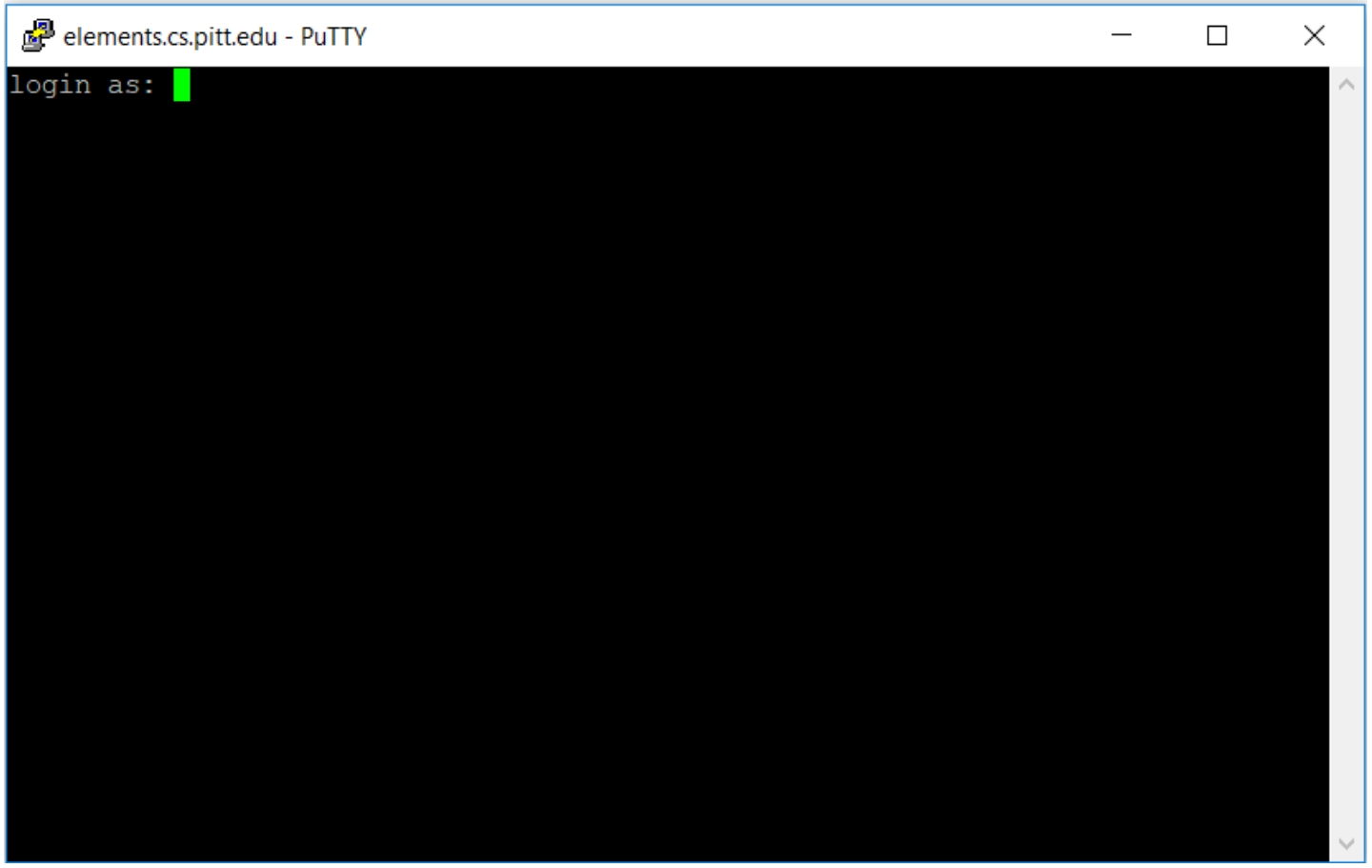

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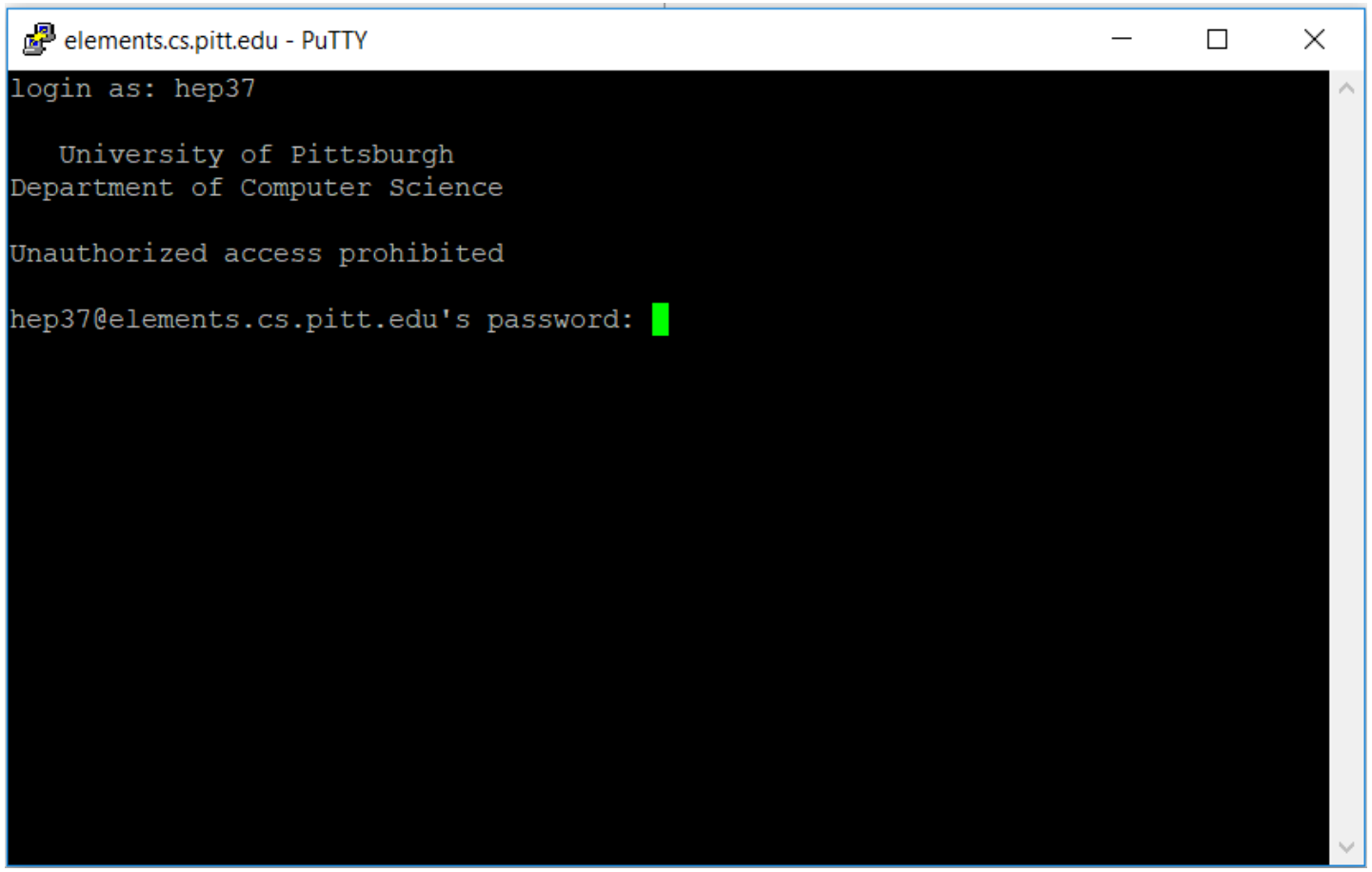

MacOS/Ubuntu - Terminal

- Go to **Applications > Utilities**, and open **Terminal**.

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```
henrique in ~home-laptop->$ ssh user@IPaddress:port
```

MacOS/Ubuntu - Terminal

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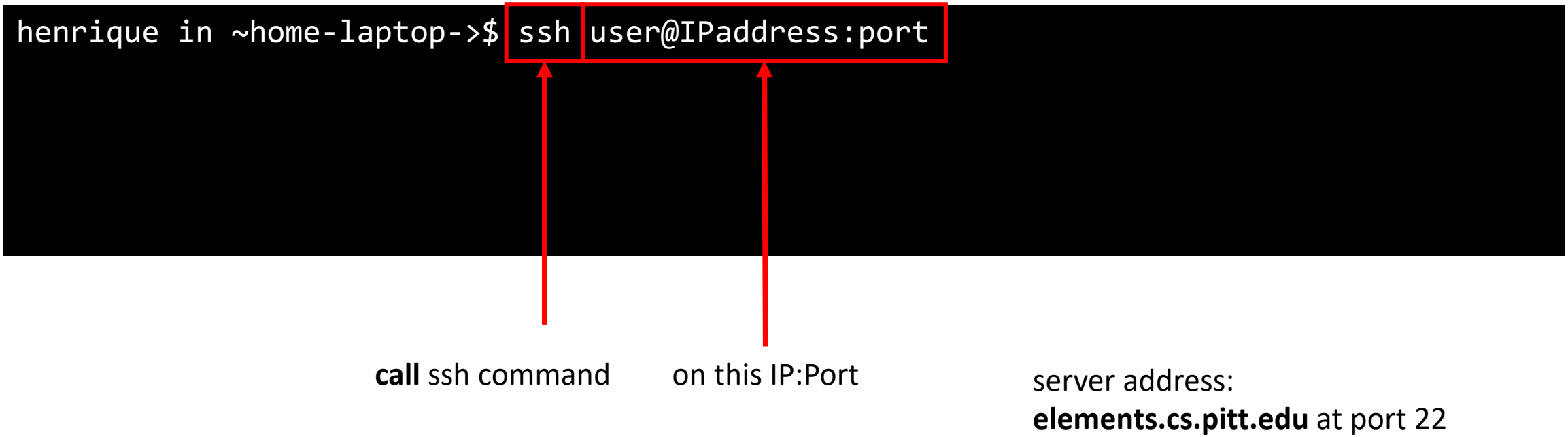

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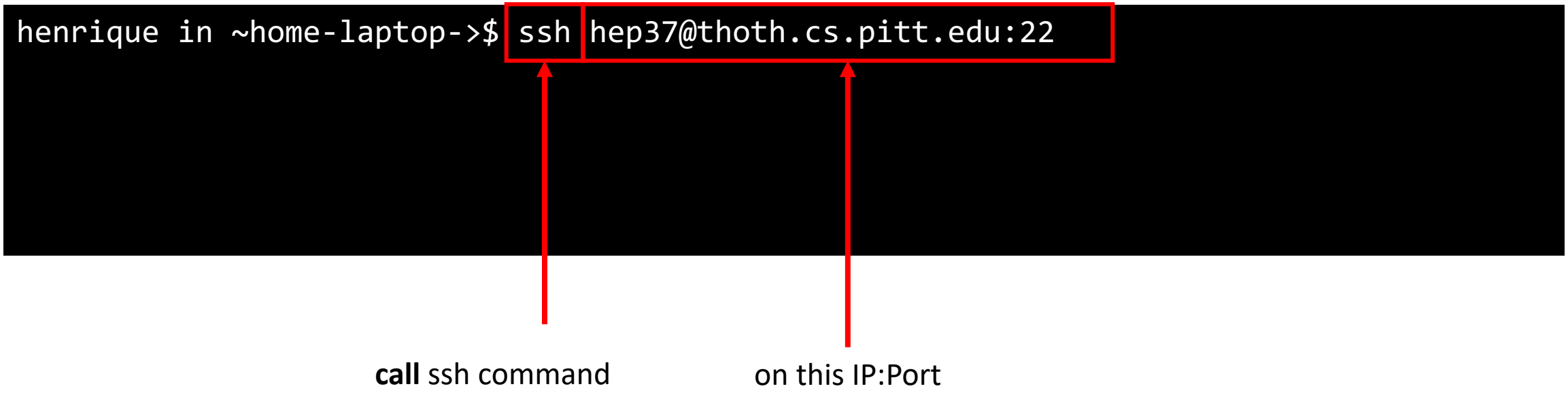


MacOS/Ubuntu - Terminal

- Go to **Applications > Utilities**, and open **Terminal**.

```
henrique in ~home-laptop->$ ssh hep37@thoth.cs.pitt.edu:22

   University of Pittsburgh
Department of Computer Science

Unauthorized access prohibited

hap44@elements.cs.pitt.edu's password:
```

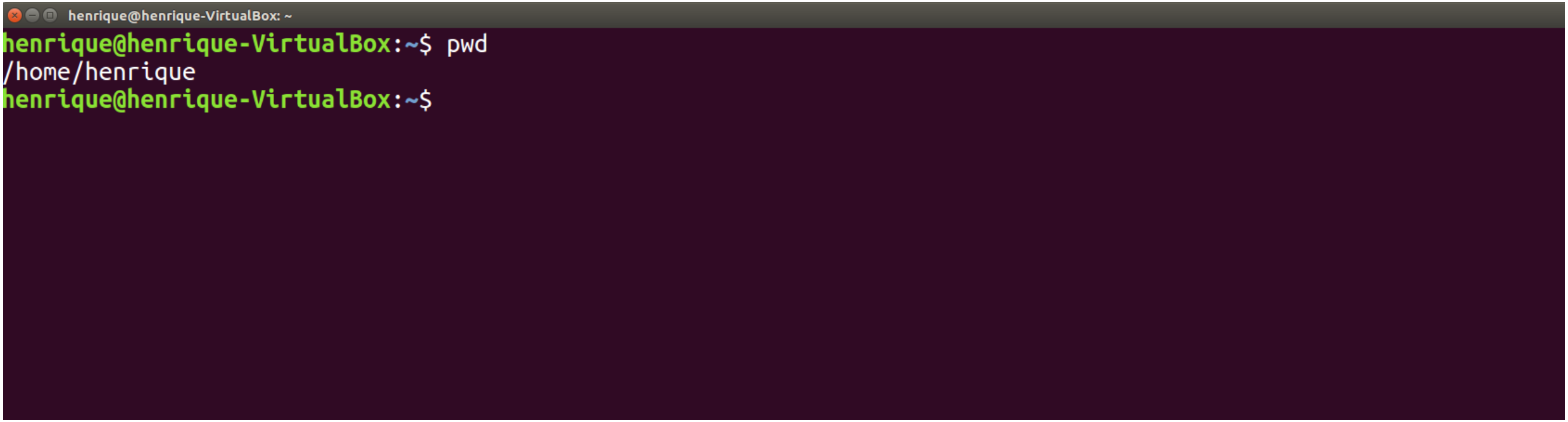
Just type and **press enter,** no cursor will show

Basic Linux Shell commands

- Once into a elements machine
  - Read, create directories and files
  - Compile C/C++ code
  - Whatever program/service you install or the OS already offers

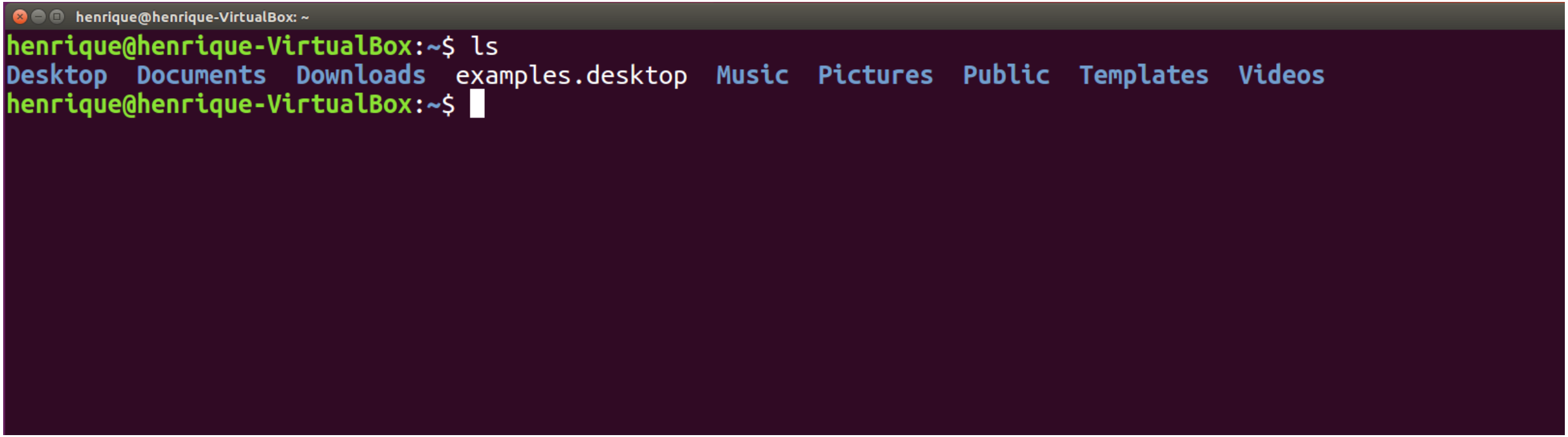
Basic Linux Shell commands

- Check Current Directory - **pwd**



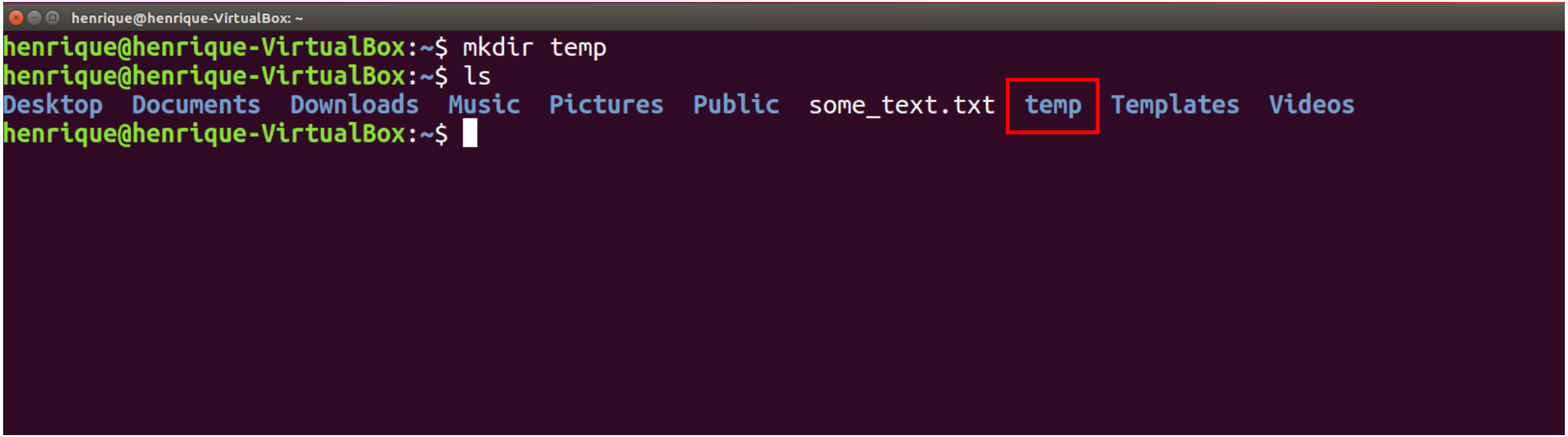
Basic Linux Shell commands

- List directories - **ls**



Basic Linux Shell commands

- Create/Remove directory – **mkdir/rmdir**



Basic Linux Shell commands

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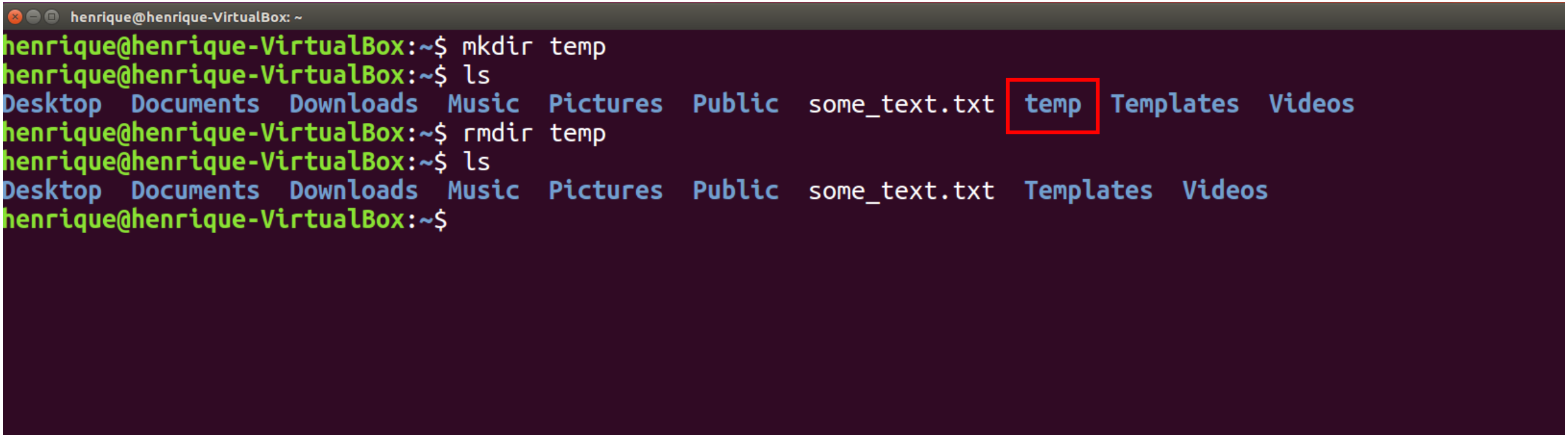
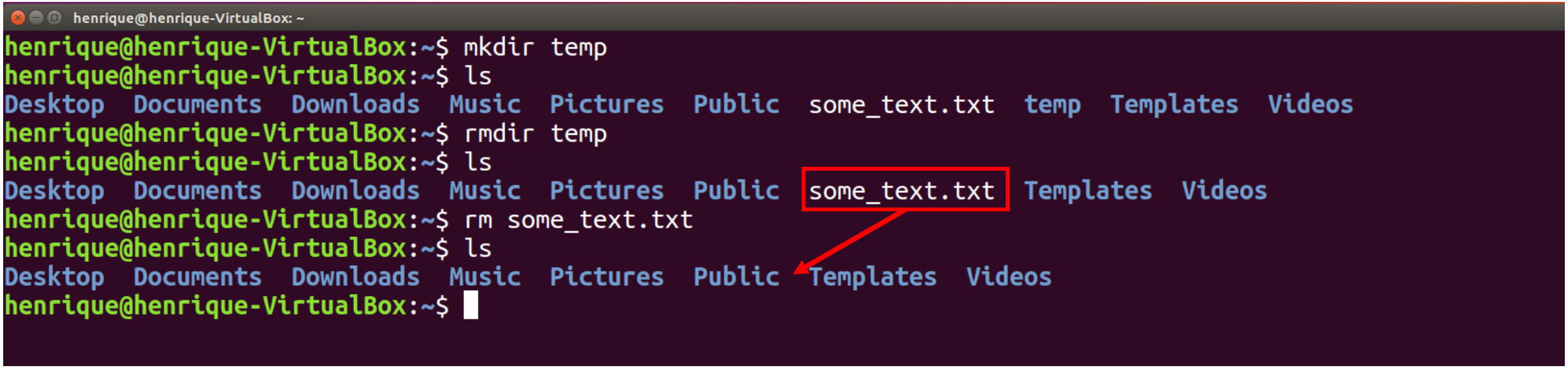


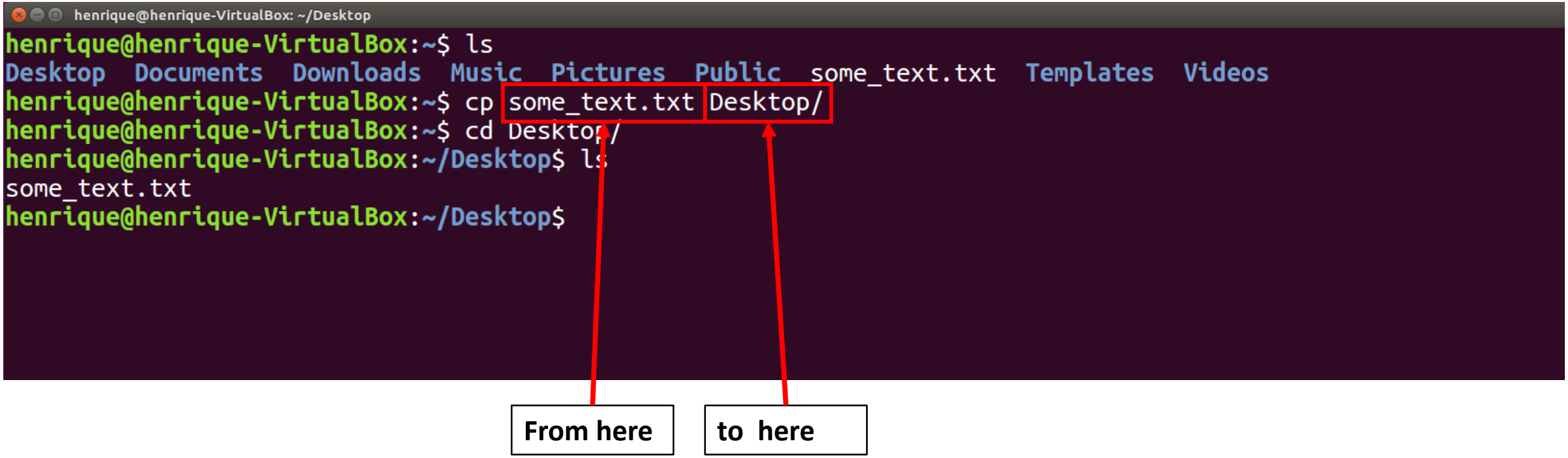
Basic Linux Shell commands

- Remove files – **rm**



Basic Linux Shell commands

- Copy files from anywhere to anywhere – **cp**



Basic Linux Shell commands

- Move files from anywhere to anywhere – **mv**

mv **<current path> <new path>**

mv **some_text.txt Desktop/**

Environment variables

- Environment variables can hold textual information stored within the system that can be used by OS programs

  - ***env*** – Lists all of the environment variables in the shell
  - ***printenv*** – Prints all (if no environment variable is specified) of environment variables and definitions of the current environment
  - ***export*** – Assigns or defines an environment variable
  - ***unset*** – Deletes the environment variable

The Makefile

- Small programs
  - single file

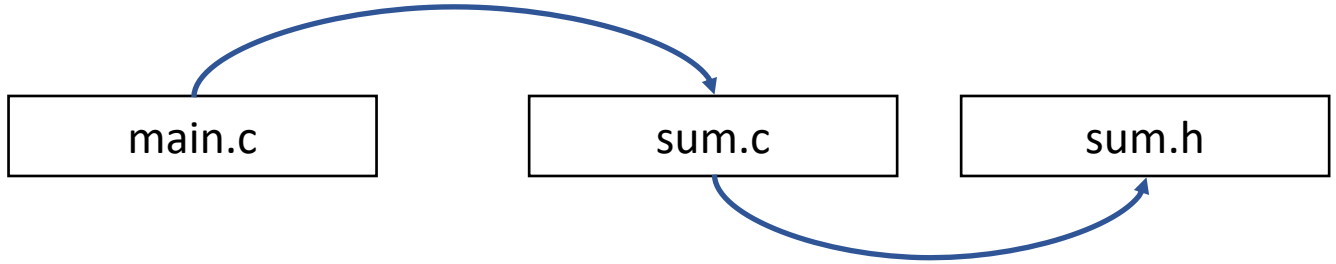
The Makefile

- Small programs (easy to compile)
  - single file

```
~home-laptop->$ gcc main.c –o calculator
```

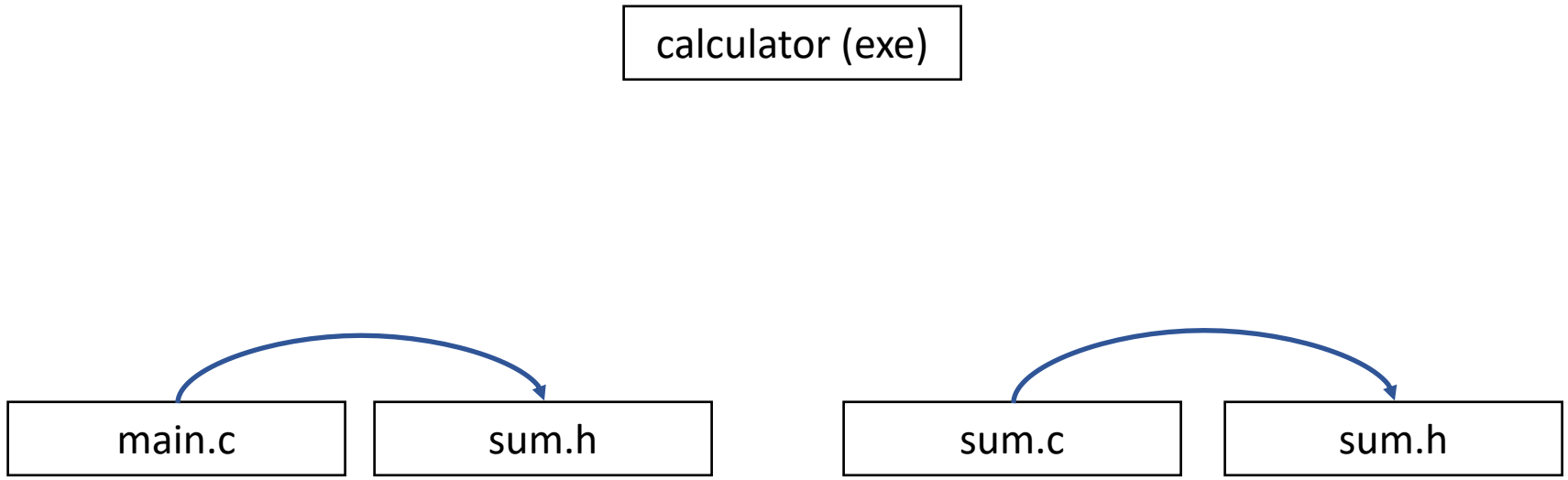
The Makefile

- Small programs (easy to compile)
  - single file
- Bigger programs
  - multiple files



The Makefile

The Makefile



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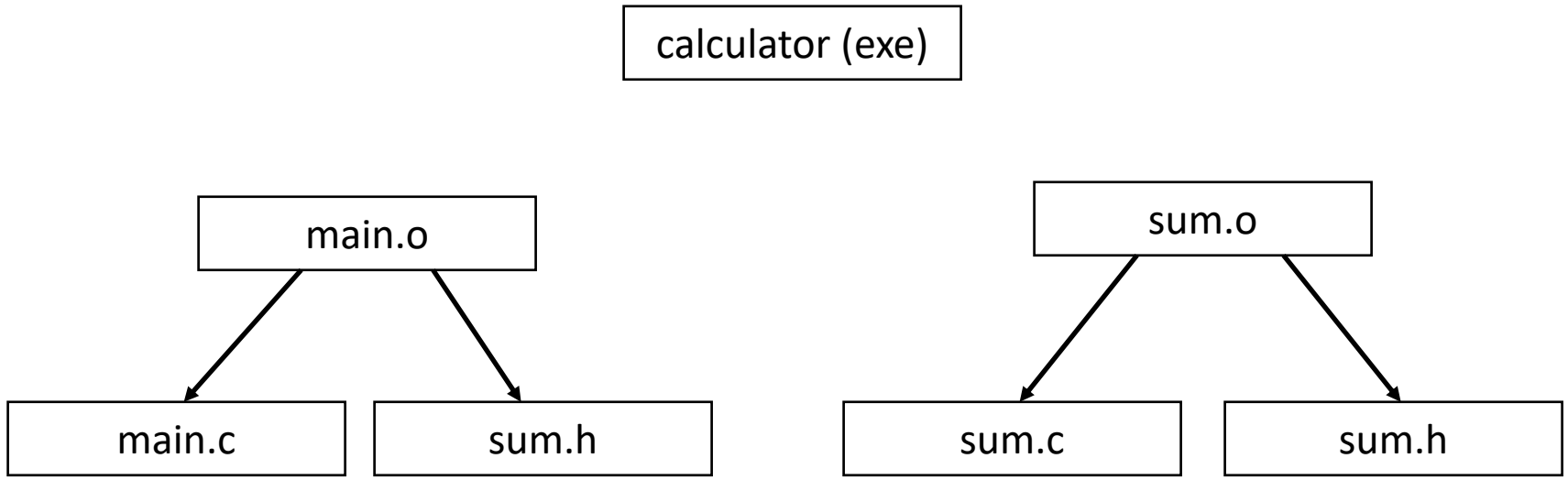

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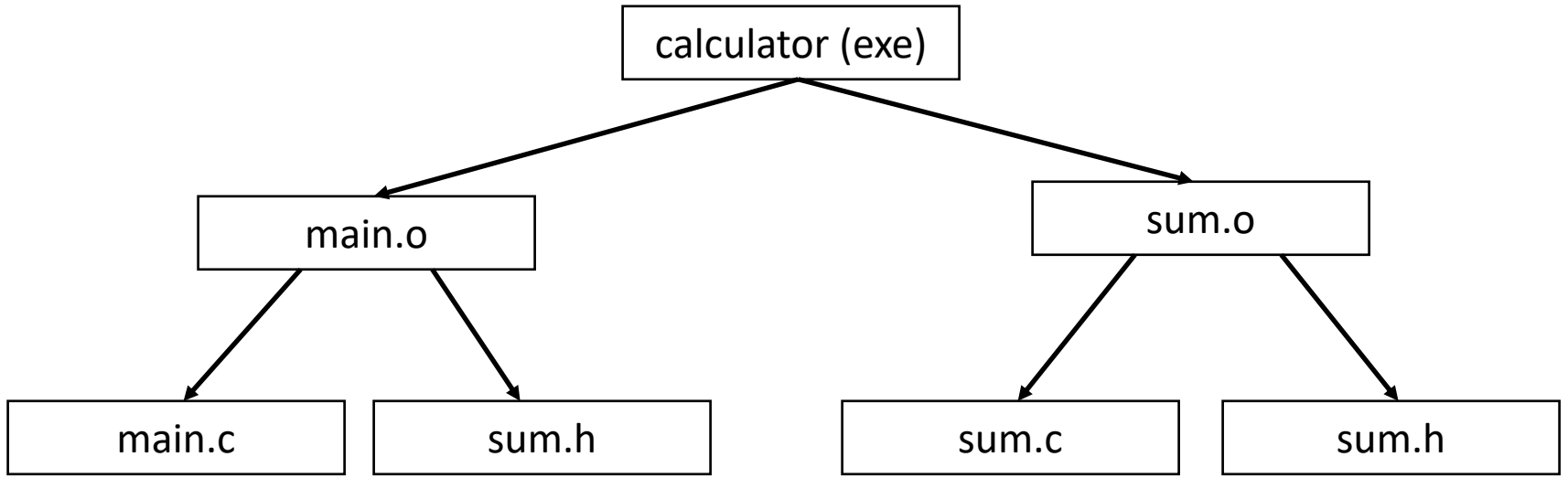

The Makefile

```
calculator: main.o sum.o
  gcc –o calculator main.o sum.o
```

The Makefile

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calculator: main.o sum.o
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main.o: main.c sum.h
  gcc –c main.c
```

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The Makefile

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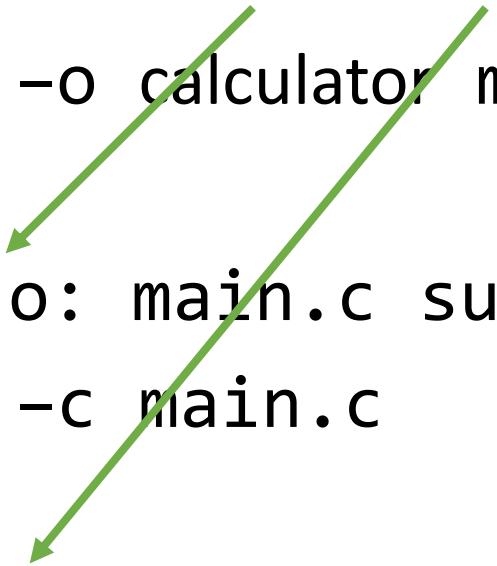

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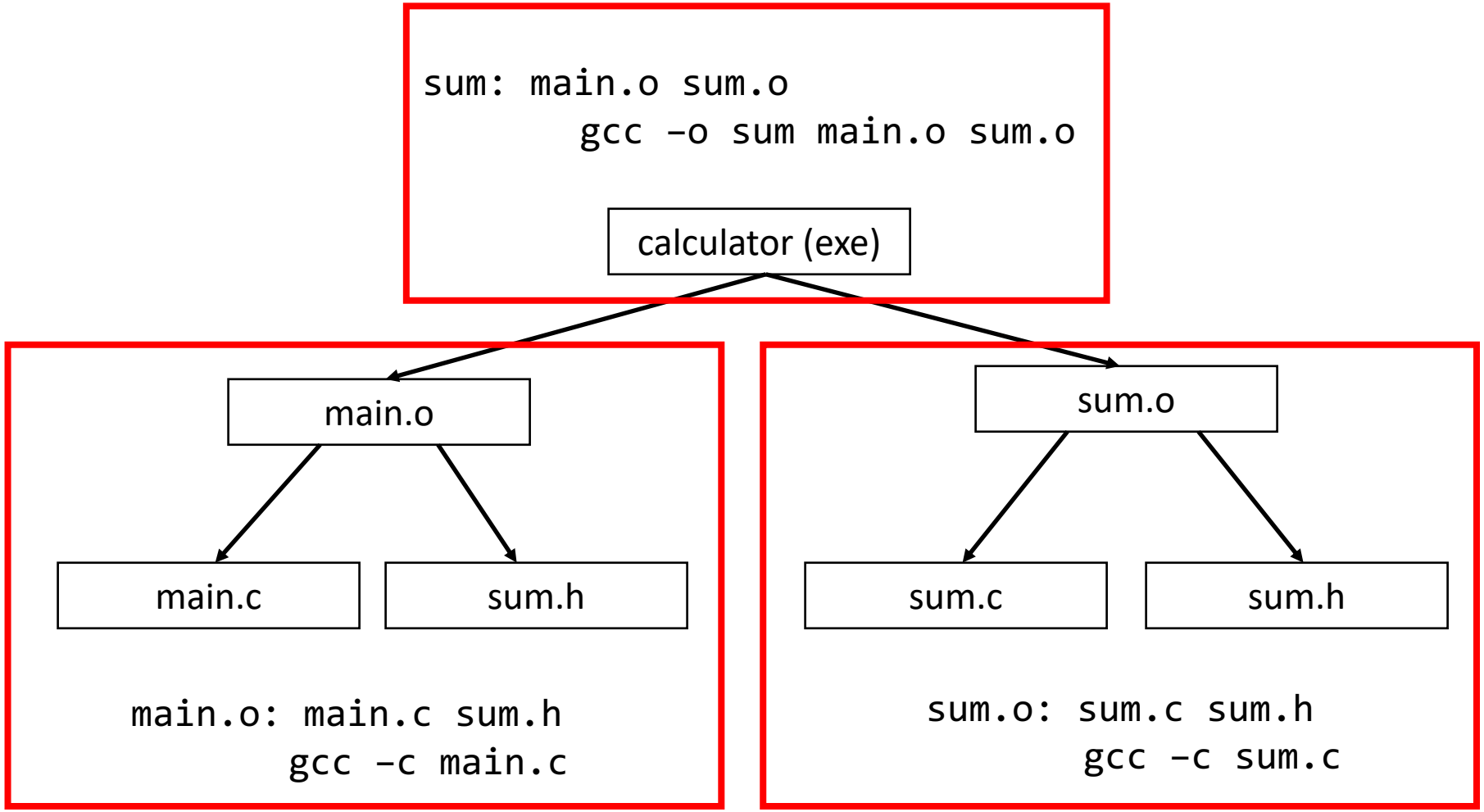


The Makefile

- Running “make”

```
~home-laptop->$ make calculator
```

The Makefile

```
calculator: main.o sum.o
 gcc –o calculator main.o sum.o
main.o: main.c sum.h
 gcc –c main.c
sum.o: sum.c sum.h
 gcc –c sum.c
clean:
    -rm -f *.o
```

The Makefile

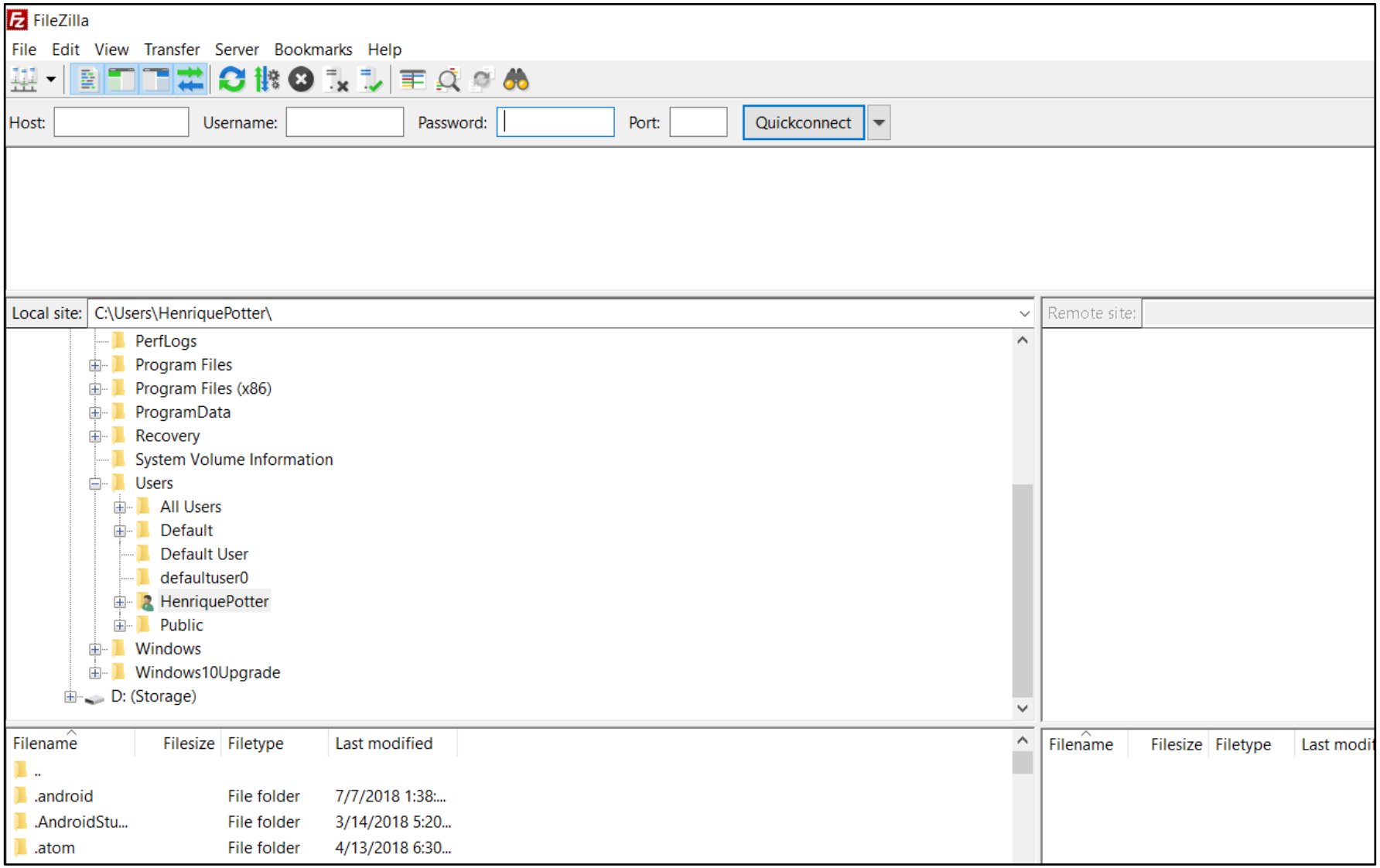
- Running “make”

```
~home-laptop->$ make clean
```

GUI based FTP Clients

- FileZilla – Windows/MacOS
  - Copy files with drag and drop
  - Create directories
  - Delete files

GUI based FTP Clients



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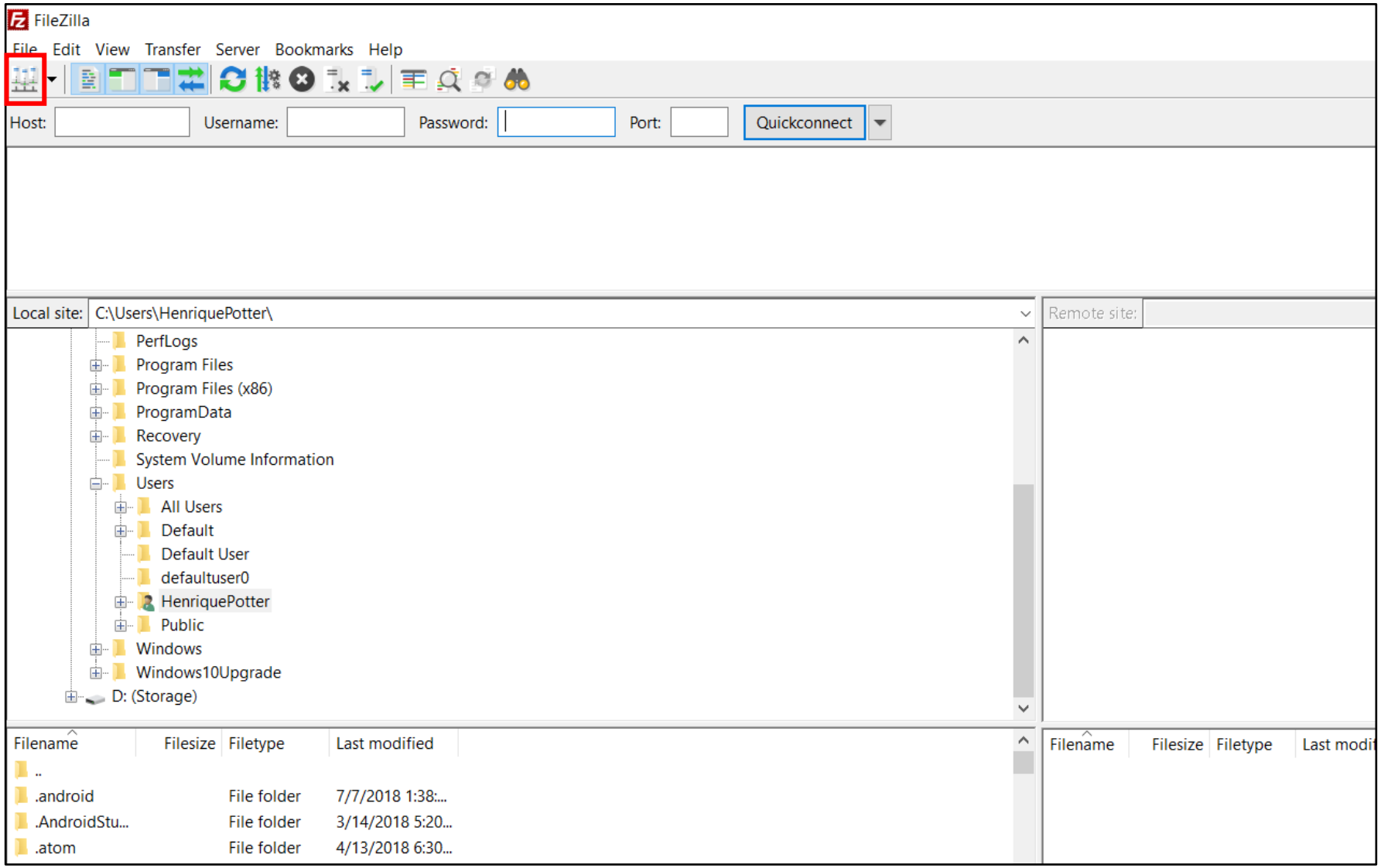

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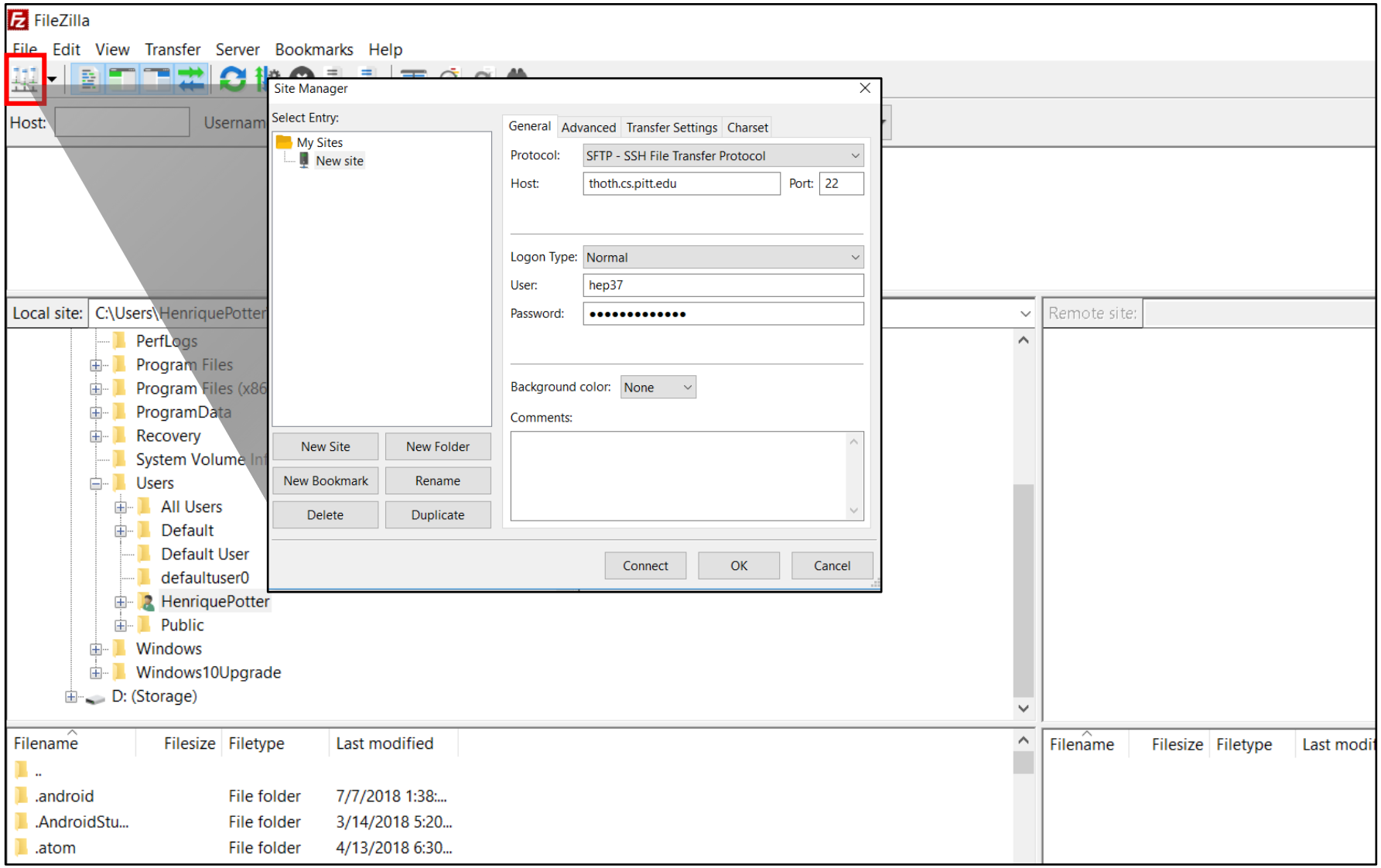

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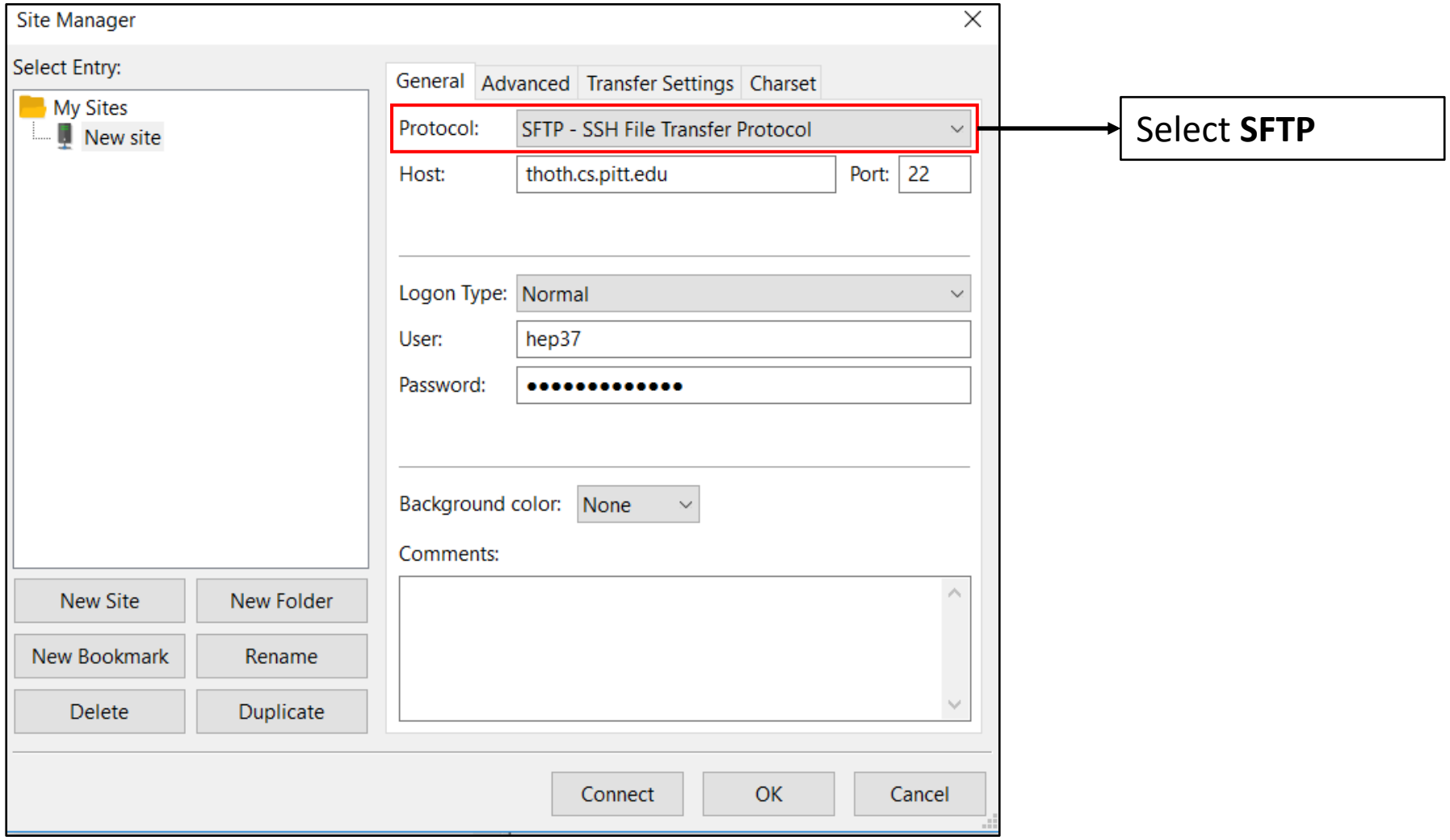

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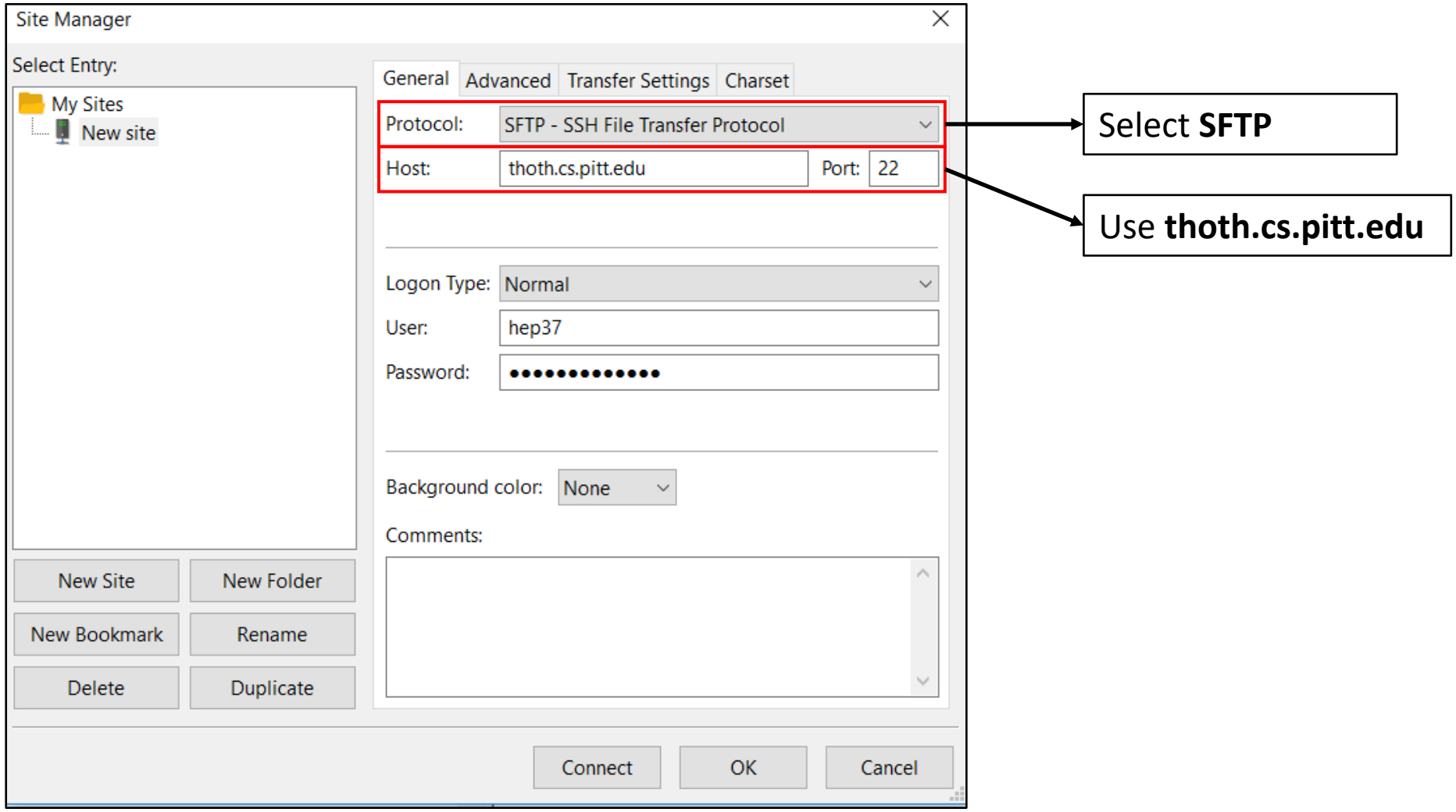

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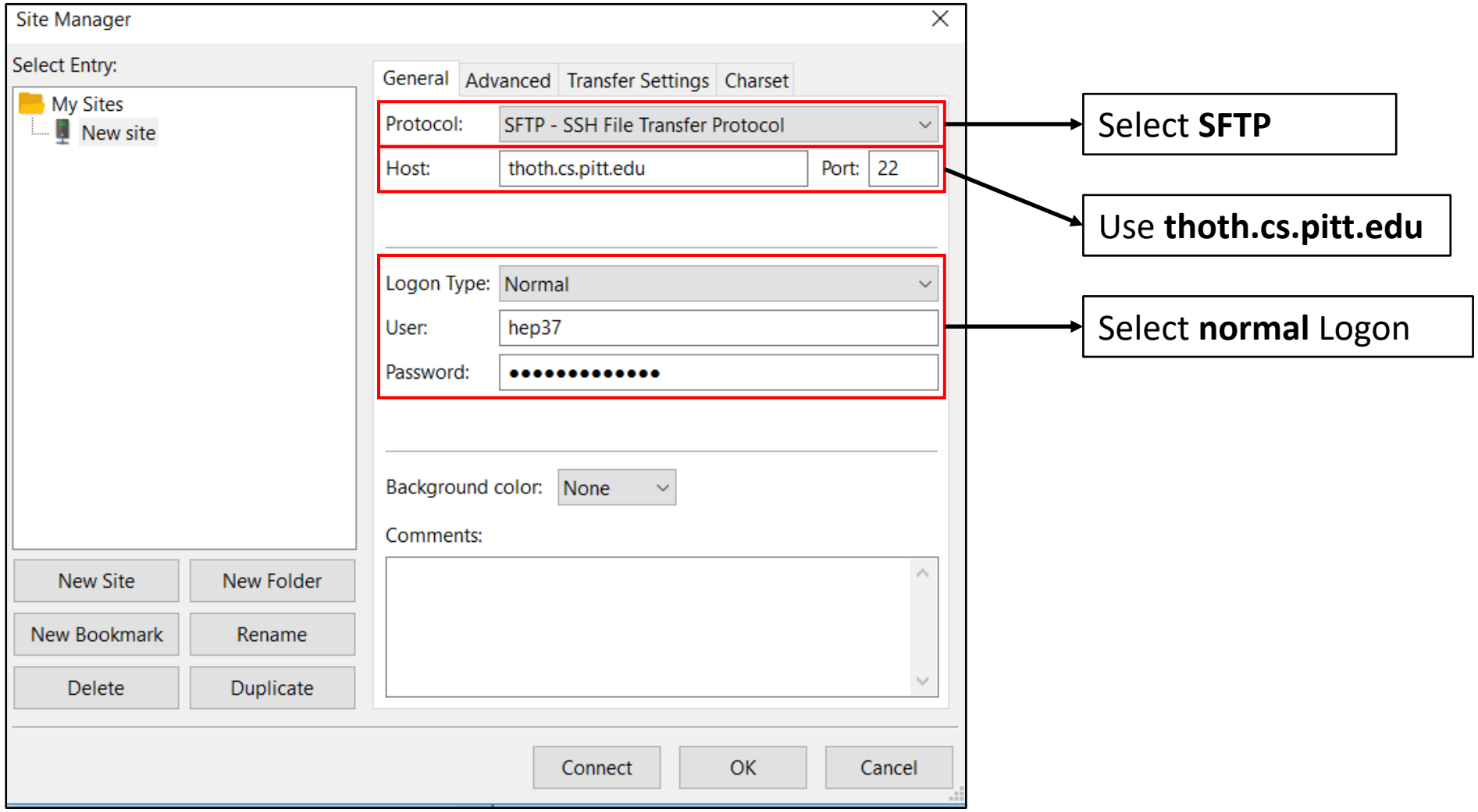

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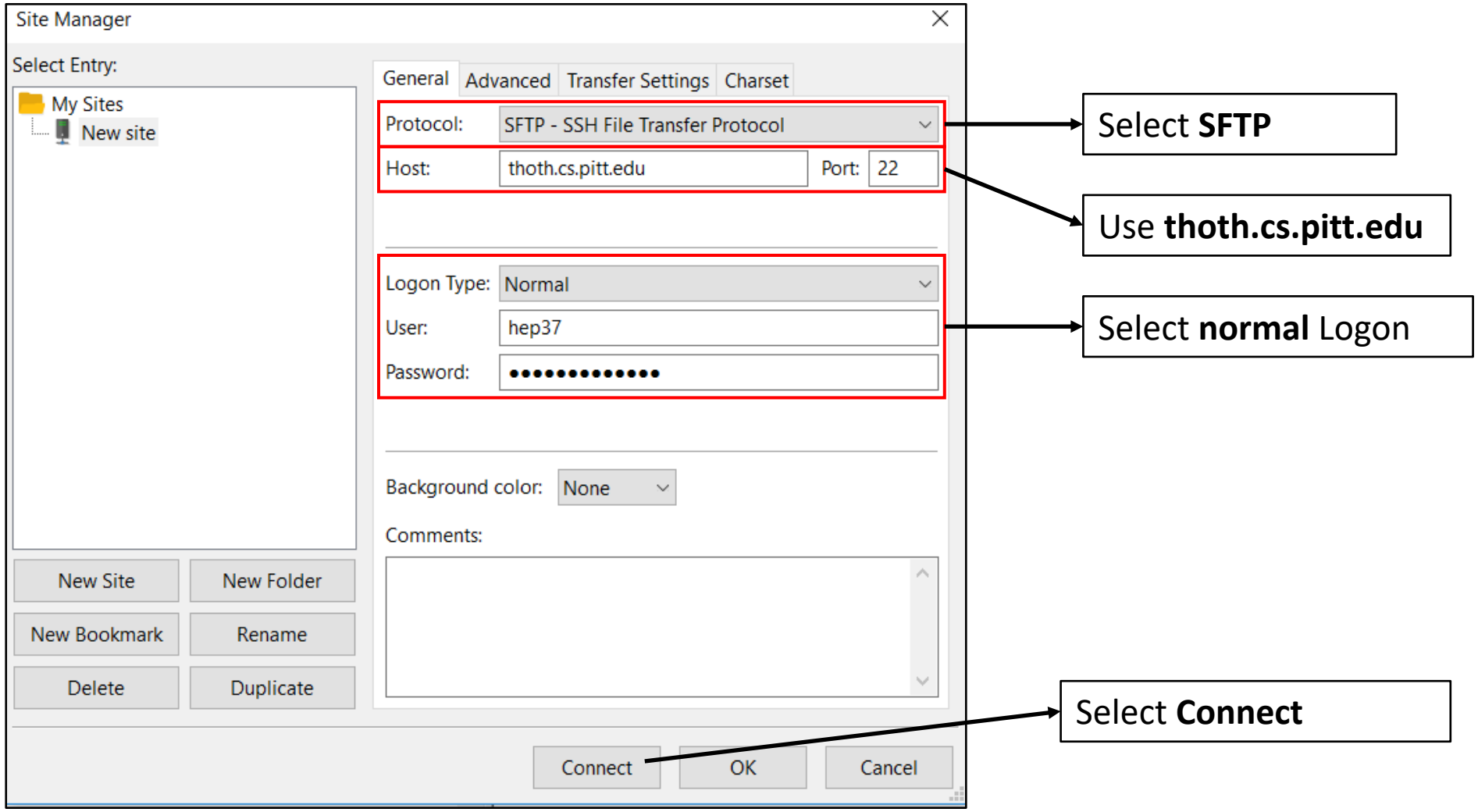

CS 1550

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