

# Module 2.1: Introduction to UNIX

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Based on slides by:

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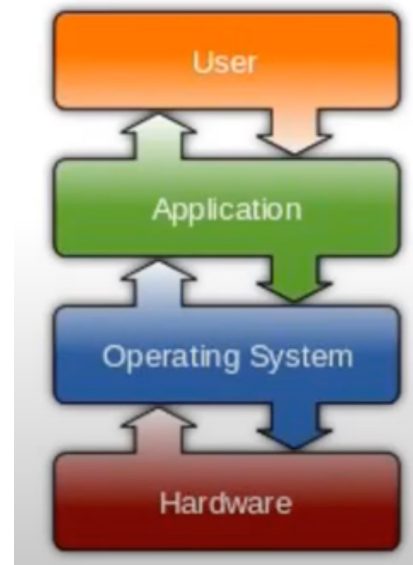
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# Virtual machine

- ▶ Operating system: Software that supports the computer's basic functions
  - ▶ Manages computer hardware (screen, mouse, keyboard)
  - ▶ Provides tools for managing files, running software
  - ▶ Provides a way via software applications to interact with the computer
- ▶ Examples
  - ▶ Windows
  - ▶ OS X
  - ▶ Unix
  - ▶ Linux



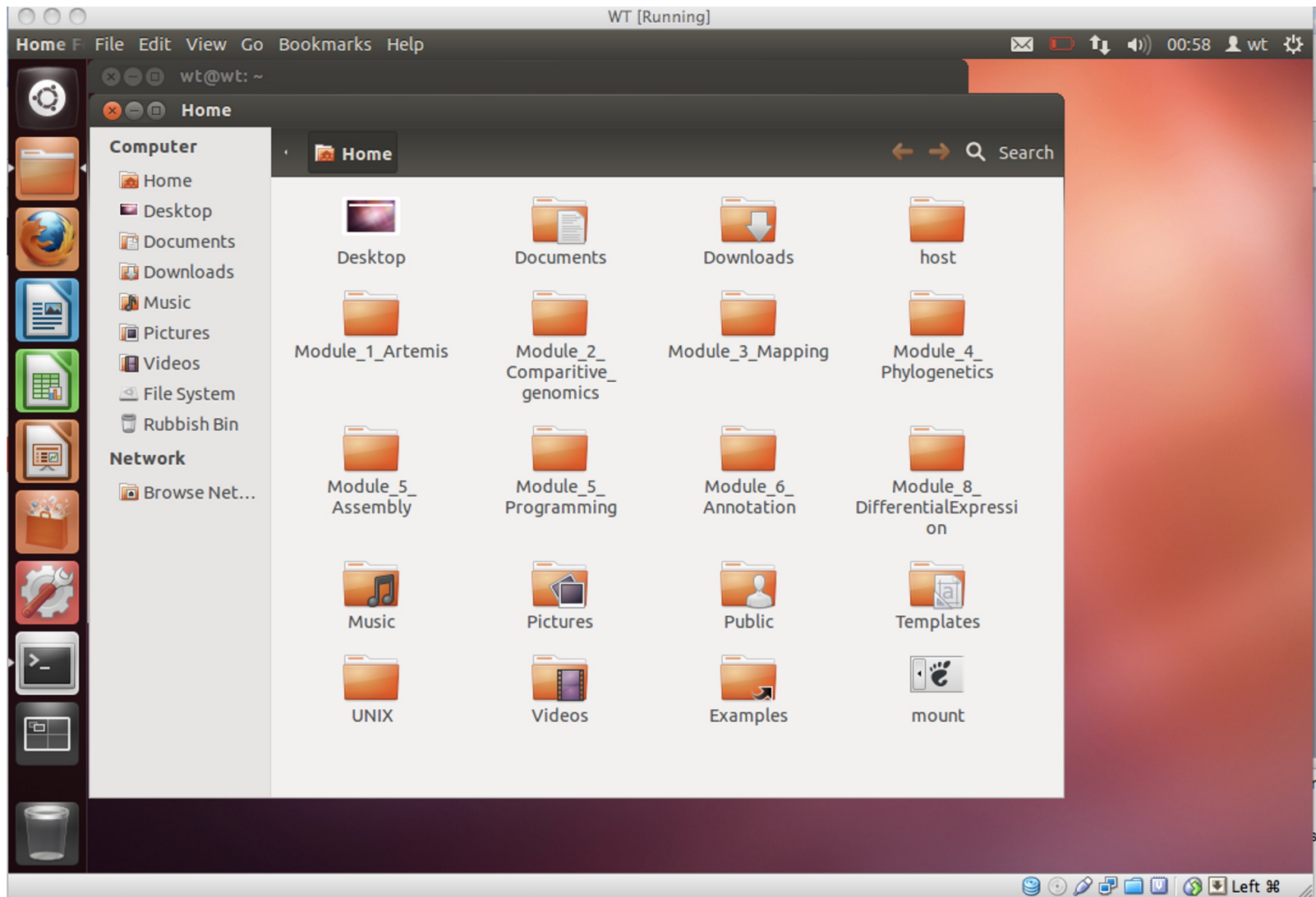
# Virtual machine (VM)

- ▶ VM is a computer environment that can be run on any computer
  - ▶ OS, data, software applications
- ▶ Allows you to run one OS (Linux) on another OS (Windows)
- ▶ Created a VM for this course
  - ▶ Linux OS
  - ▶ Data for practicals
  - ▶ Bioinformatics software (bwa, samtools, vcftools, etc)
- ▶ Continue using it on your own machine
  - ▶ Take the course again!
  - ▶ Run bioinformatic analyses

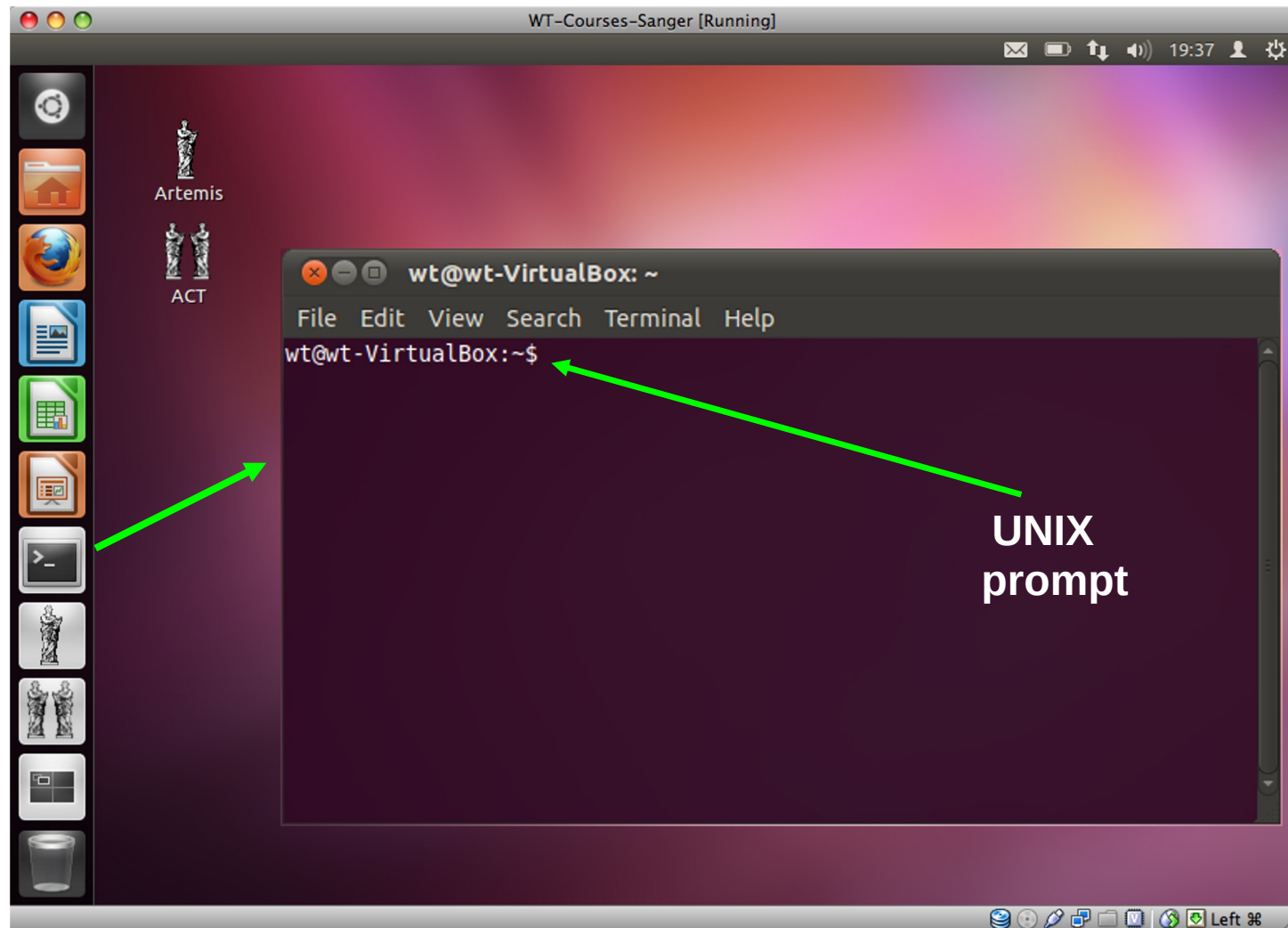
# Unix

- ▶ What is Unix?
  - ▶ Standard operating system (alternative to MS Windows, Mac OS)
  - ▶ Provides a way for you to interact with the computer
  - ▶ Many 'flavours' of Unix, using Linux
  - ▶ Originally created to provide a free UNIX-like OS for PCs
- ▶ Why use Unix?
  - ▶ Output of lots of biological research exists in large text files
  - ▶ Very suitable for working with such files
  - ▶ Powerful and flexible commands for processing large text files
  - ▶ Save you time
  - ▶ Widely used in scientific community
  - ▶ Powerful, robust and stable operating system

# Using Unix



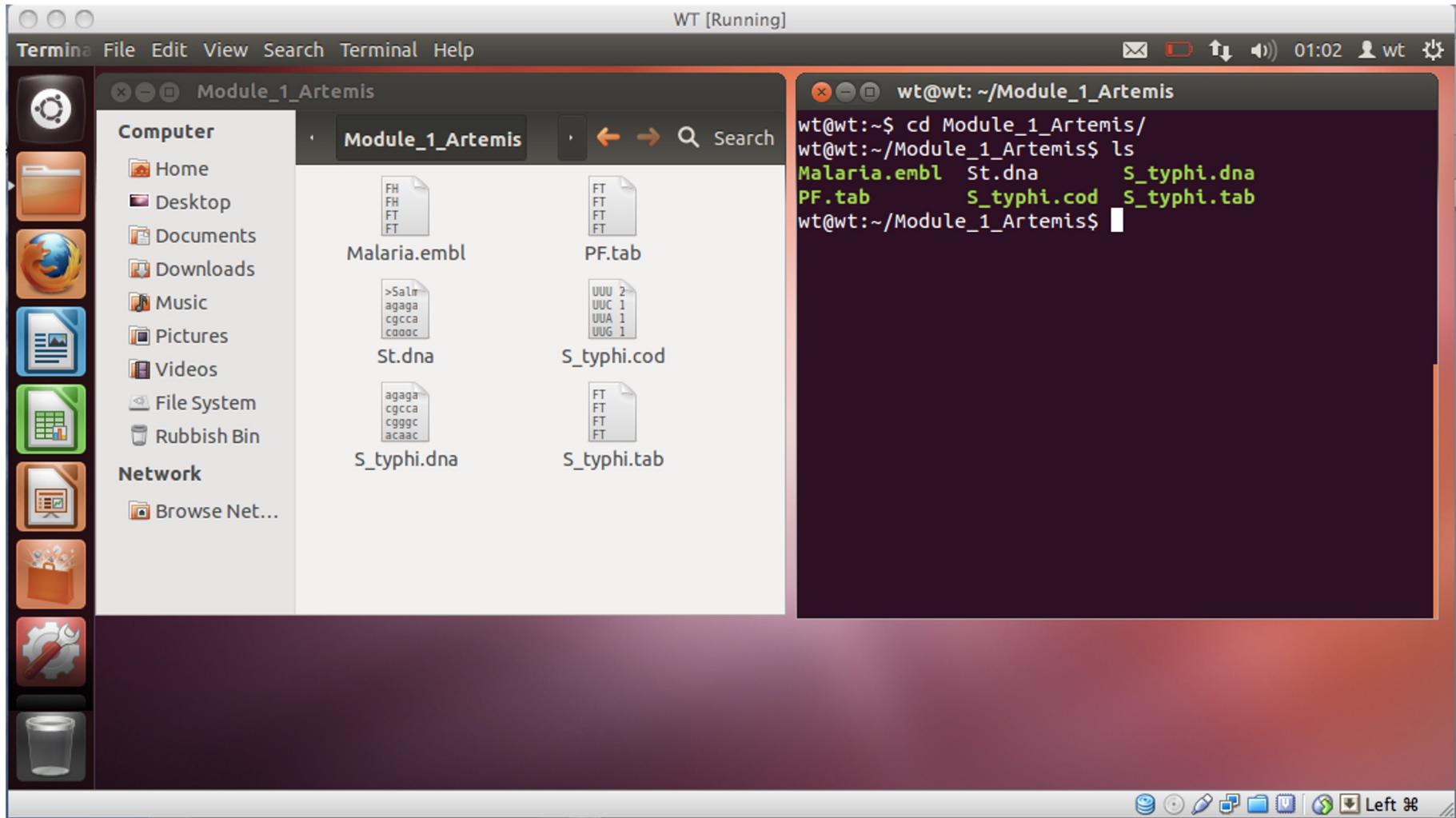
# Terminals and Commandline



# Unix Commands

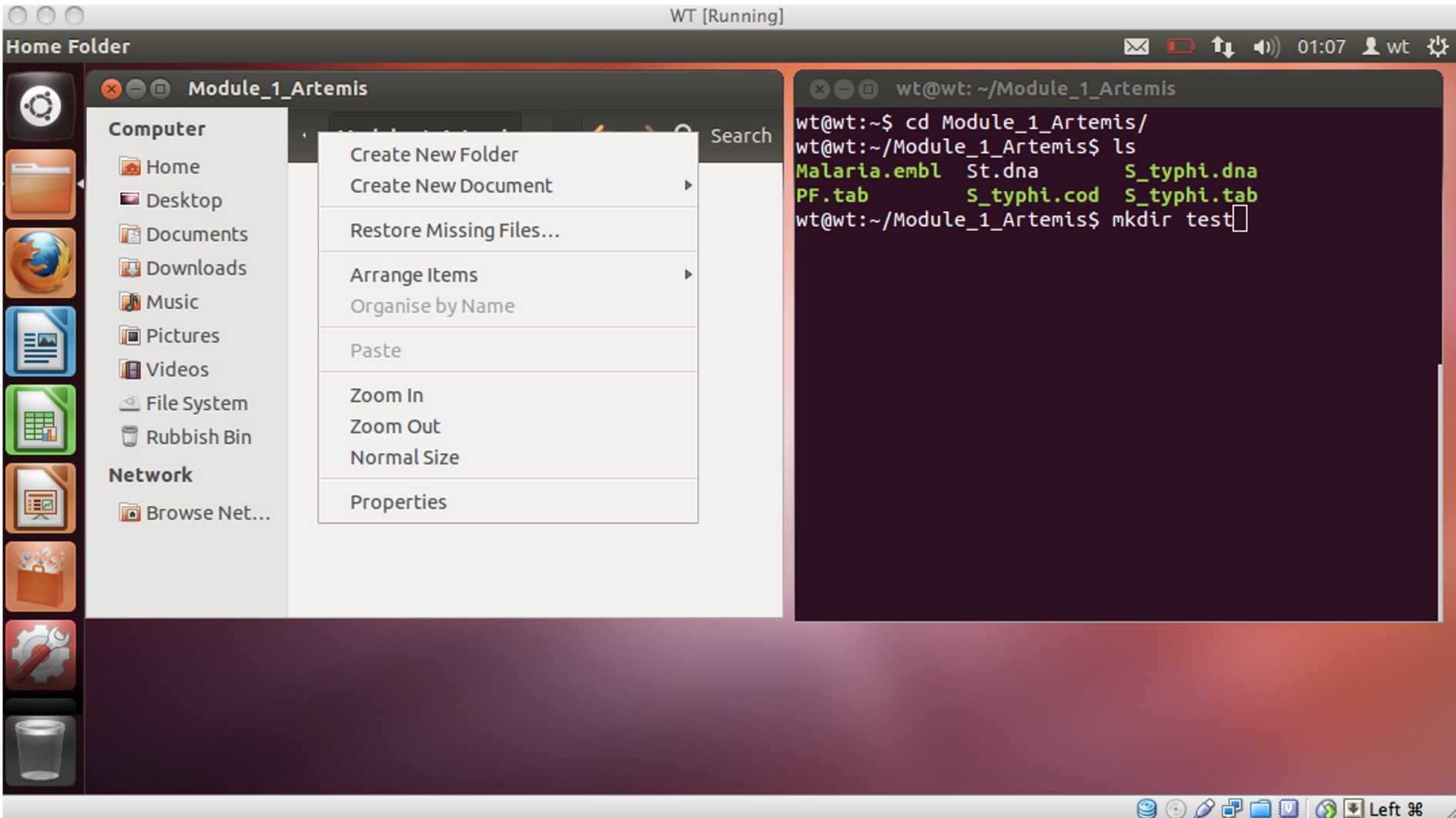
Command	What it does
<b>ls</b>	List the contents of the current directory
<b>cd</b>	Changes a directory
<b>mv</b>	Moves a file
<b>cp</b>	Copies a file
<b>rm</b>	Remove a file
<b>less</b>	Displays the contents of a file
<b>head</b>	Displays the first ten lines of a file
<b>tail</b>	Displays the last ten lines of a file
<b>cat</b>	Concatenate files together
<b>pwd</b>	Print working directory
<b>mkdir</b>	Make a new directory

# ls command

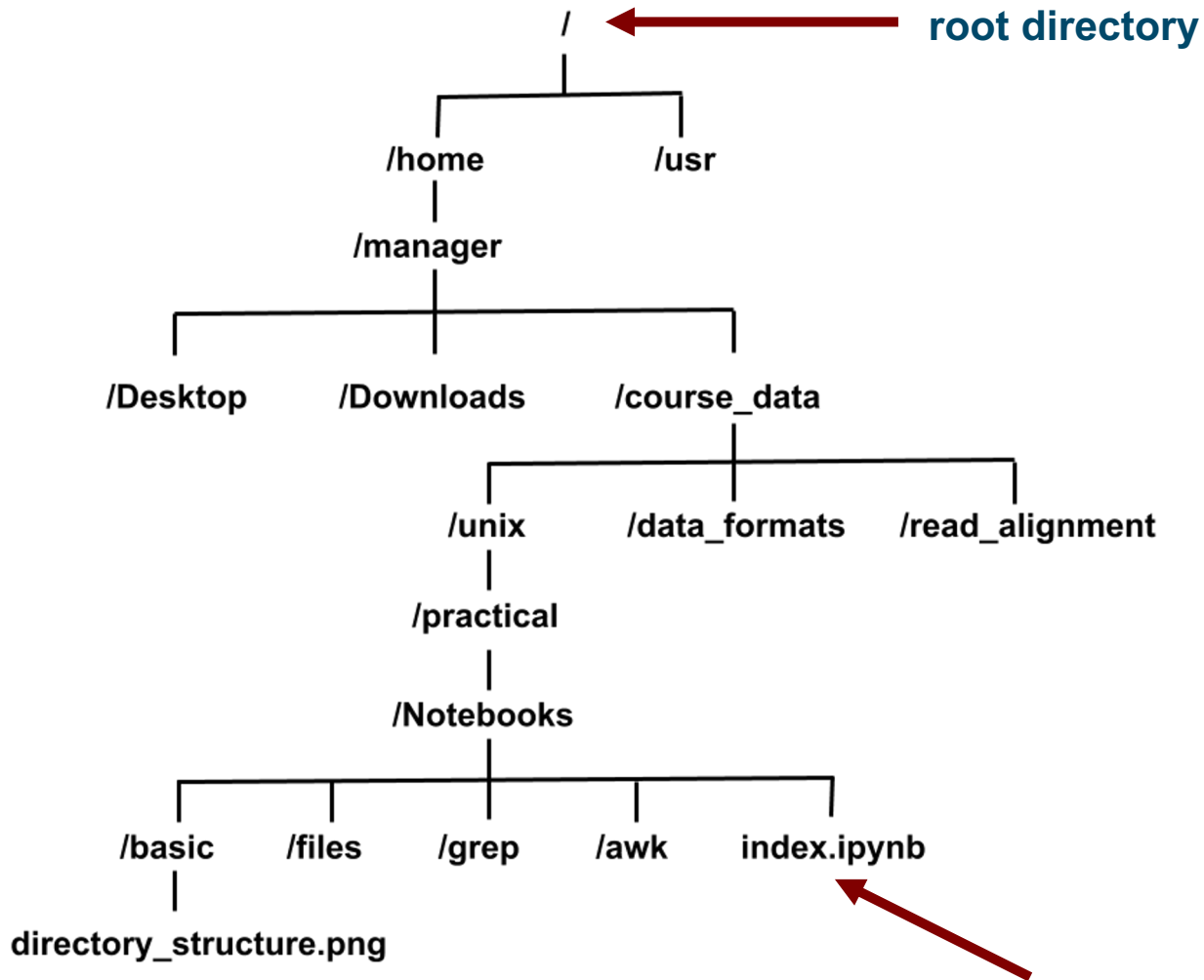




# mkdir command



# Directory Structure



`/home/manager/course_data/unix/practical/Notebooks/index.ipynb`

# Unix Tips & Tricks

- ▶ Unix is case sensitive
  - ▶ Typing LS is NOT the same as typing ls
- ▶ You need to put spaces between
  - ▶ a command
  - ▶ the values passed to the command
    - ▶ `mkdir new_dir` will create a new directory
    - ▶ `mkdirnew_dir` will just give an error!
- ▶ Unix is not psychic! If you misspell the name of command or a file it will not understand you

# Exercise time!

- ▶ Open your VM
- ▶ Open a terminal window.
- ▶ Go to course\_data/unix

```
cd course_data/unix/
```

- ▶ Open the exercises, which are in Github or in:

```
/home/manager/course_data/unix/practical/unix.pdf
```

e.g.

```
firefox /home/manager/course_data/unix/practical/unix.pdf
```

- ▶ Follow the instructions!

# Exercise time!

- ▶ Solutions (inside `course_data/unix/practical`):

`course_data/unix/practical/.unix_solutions.pdf`