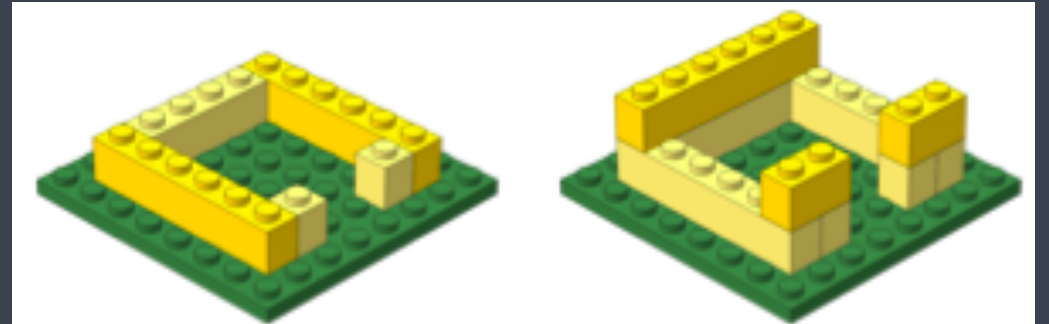


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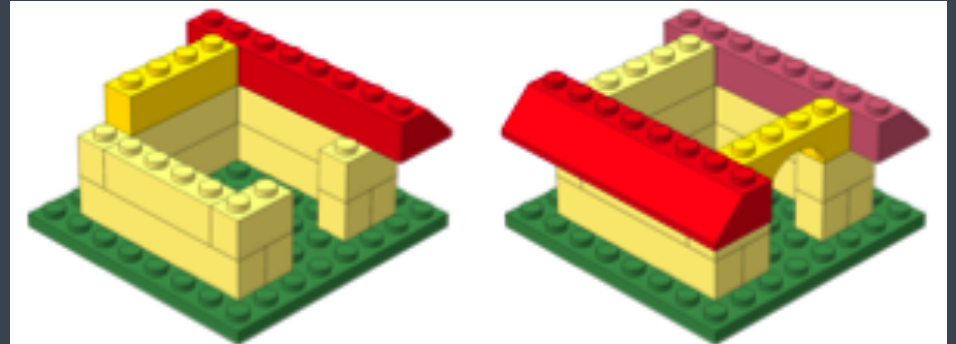
Building blocks

The Foundation!



- ✓ Unix command line interface or the Unix shell

Build on it...



✓ Unix command line interface or the Unix shell

- handle large data files
- perform repetitive tasks efficiently
- use high-performance computing environments
- perform bioinformatics analyses



<http://en.wikipedia.org/wiki/Unix>, <http://en.wikipedia.org/wiki/Tux>

What is UNIX?

- ✦ Unix is an operating system
- ✦ It was originally developed at Bell labs in the late 60s for programmers
- ✦ Easily coordinates the use and sharing of a computer's (or a system's) resources and allows multi-user capacity, among other features

Why UNIX?

- ✦ Unix is **stable**, **efficient** and **powerful**
- ✦ It is very popular and widely used
- ✦ Can easily handle complex tasks on large datasets
- ✦ Repetitive tasks can be very fast and very easy

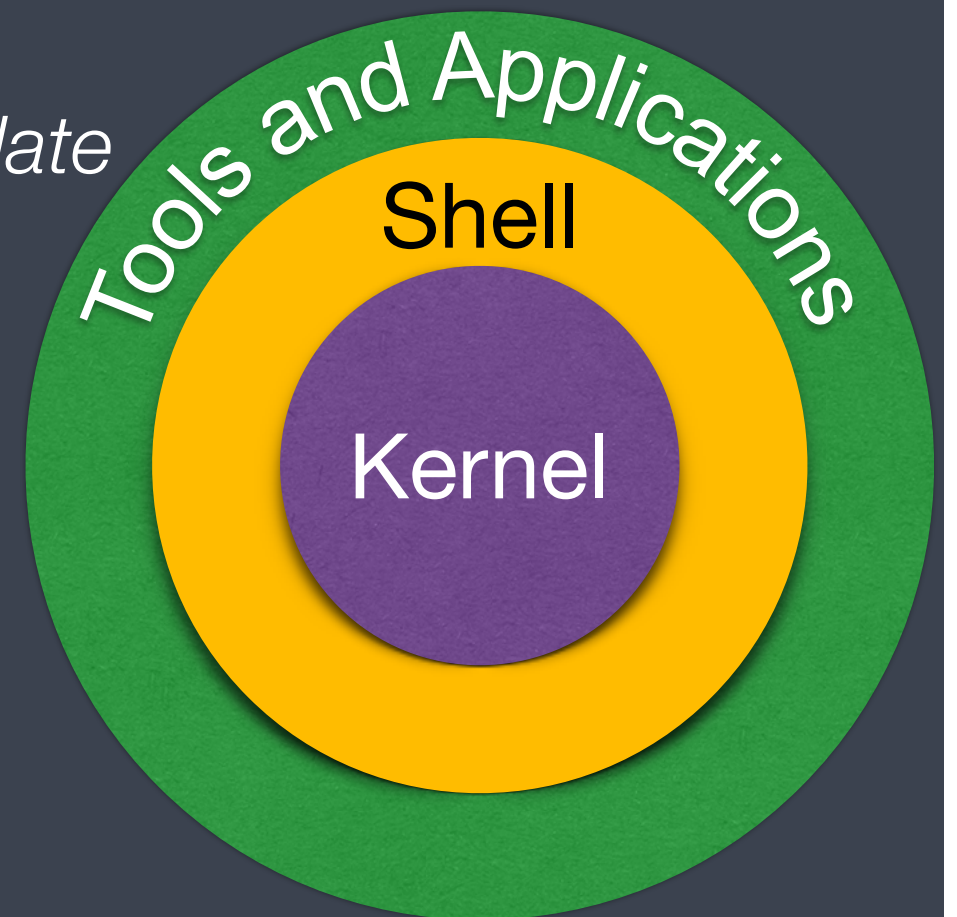
Bioinformatics:

- ✦ A large proportion of NGS-analysis tools are created for Unix
- ✦ Computational resources that can handle large datasets require a working knowledge of Unix

Components

The Unix system is functionally organized at three levels:

- ♦ **The kernel**, which schedules tasks and manages storage: the brain of the system
- ♦ **The shell**, *an interpreter that helps translate our input into computer language*
- ♦ **Utilities, tools and applications**



The “shell”

- ✦ A shell is **an interpreter**
- ✦ It is independent of the operating system, but essential
- ✦ Dozens of shells have been developed throughout UNIX history
- ✦ “Bourne shell,” named for its inventor, Steven Bourne, was the first major shell
- ✦ The most commonly used shell is **bash**; **bash** stands for “**b**ourne **a**gain **s**hell”

Linux

- ✦ Linux is a free, open-source operating system based on Unix
- ✦ It has the same components as the original, but the open source community is involved in active development of various distinct distributions of Linux



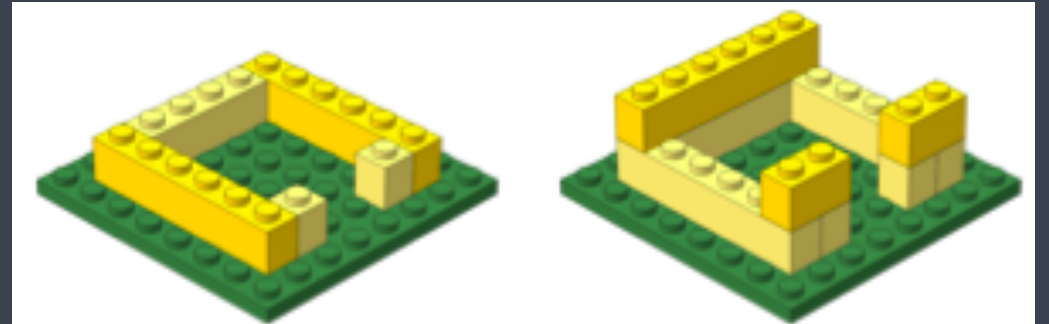
ubuntu[®]



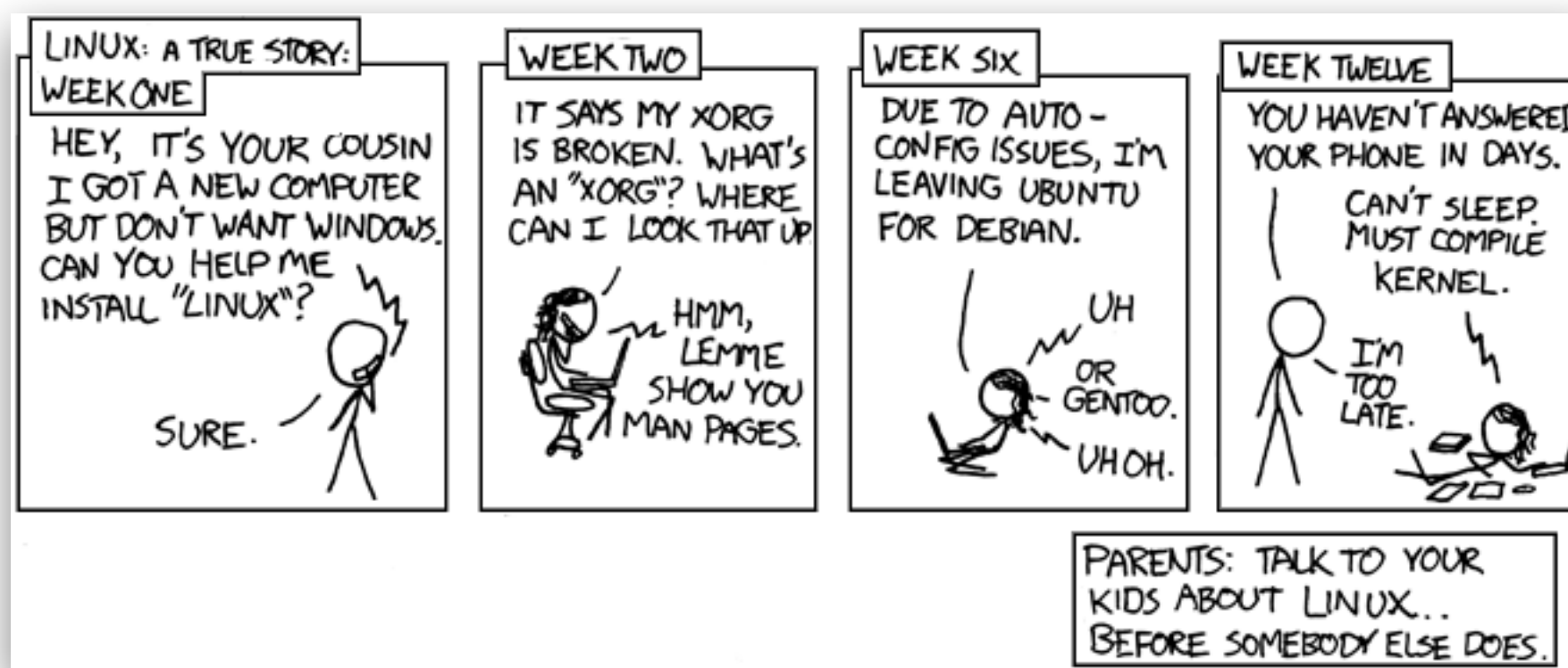
fedora^f



Learning Objectives



- ✓ Fluently use the command line interface (CLI) to work with small and large data files
- ✓ Find your way around the directory structure
- ✓ Perform repetitive tasks more efficiently



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