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# Unix Shell - Introduction

# Background

- ▷ Human - Computer Interaction
- ▷ Graphical User Interface - *GUI*
  - (Personal Computers);
  - Heavy use of the Mouse;
  - "Menu-driven interactions";
  - Very intuitive to learn;
  - **Scales very poorly;**

## Background (continued)

Imagine the following task:

For a literature search, you have to:

1. copy the third line
2. of one thousand text files
3. in one thousand different directories and
4. paste it into a single file

# Background (continued)

One thing we know for sure:



# The Shell

- ▷ Both a **command-line interface** (CLI) and a **scripting language**;
- ▷ Allowing repetitive tasks to be done **automatically**... and **fast**;
- ▷ Bourne Again SHell - BASH
  - **Default shell** on most modern implementations of Unix;
- ▷ Maybe not as easy as the GUI 🙄;
- ▷ Easiest way to interact with **supercomputers**

# The Shell (continued)

- ▷ Essential to use a variety of specialized tools and resources including **high-performance computing systems**;
  - Clusters, clouds, etc.
- ▷ Need to learn a few commands;
  - Like a vocabulary of a new language;
  - A small number of “words” gets you a long way;
- ▷ Let's get started!

# Nelle's Pipeline: A Typical Problem

- ▷ Example that we will use throughout the lessons;
- ▷ Six-month survey data containing samples of gelatinous marine life in the [Great Pacific Garbage Patch](#);

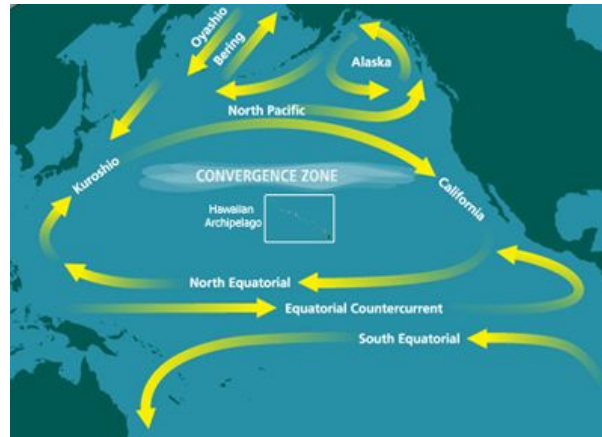


Image from [Wikipedia](#)

# Nelle's Pipeline: A Typical Problem (continued)

- ▷ 1520 samples;
- ▷ Measure the relative abundance of 300 proteins;
- ▷ Perform the analysis using imaginary program called [goostats.sh](#) (GUI);
  - Select and open a file **1520 times**;
  - 30 seconds to run each file;
    - **More than 12 hours** of Nelle's attention
- ▷ [Assign a computer](#) this task while she focuses on writing a paper about this results;