

# Unix Shell

Technical Tuesdays

Bala

# Technical Tuesdays

## Objectives

Introduction but **not a tutorial**

Tell people what is already there and **what is possible**

Give some **examples** for inspiration

Provide a **minimum viable environment** for  
further learning and exploration

# Technical Tuesdays

Introduction  
15 Oct

R Scripting  
29 Oct

JavaScript  
19 Nov

Version Control  
03 Dec

\*nix Shell  
22 Oct

Python  
12 Nov

Databases  
26 Nov

Mapping  
10 Dec

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# Overview

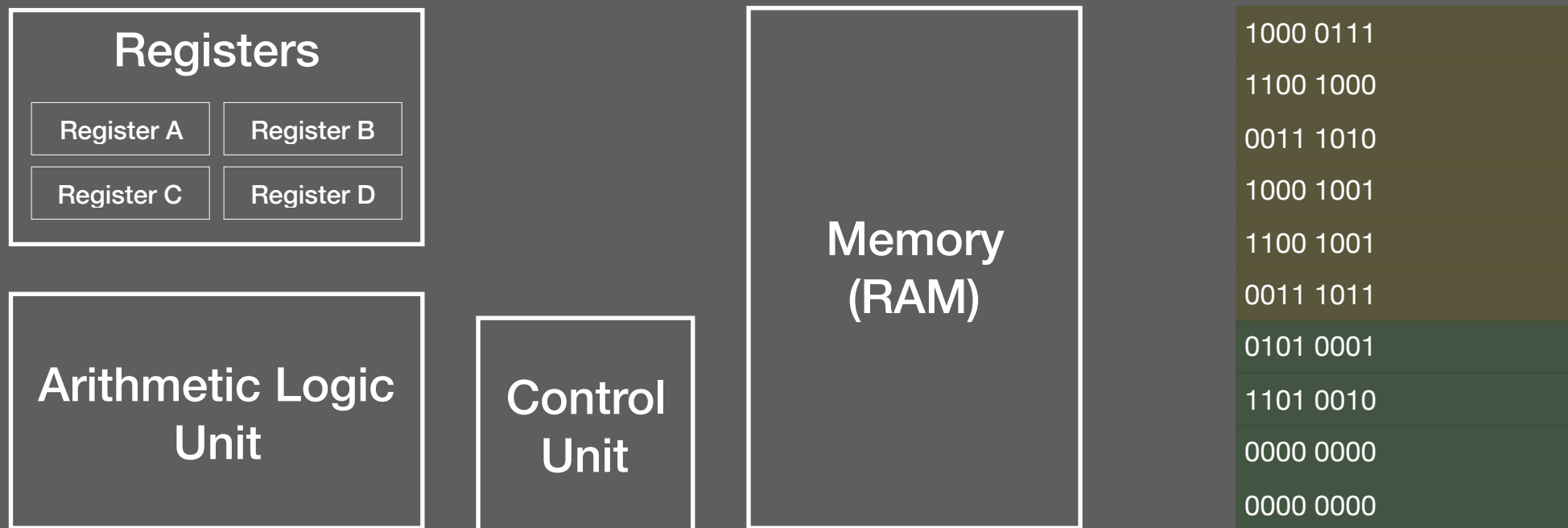
Context - Where does all of this come from?

Utility - For what these things are used?

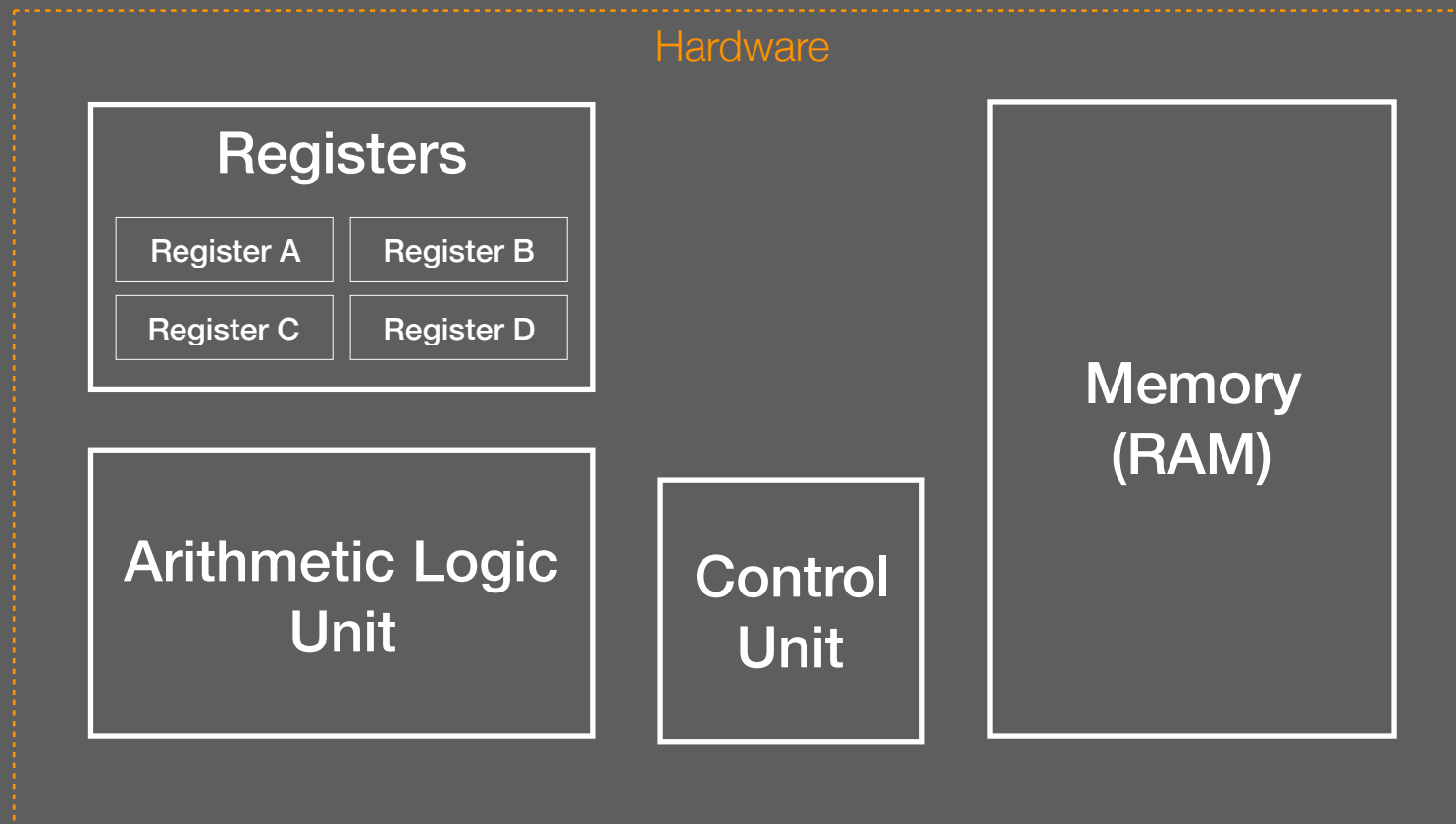
Relevance - How can I use these for my purposes

Resources - Where can I learn more?

# Recap



# Recap



1000 0111

1100 1000

0011 1010

1000 1001

1100 1001

0011 1011

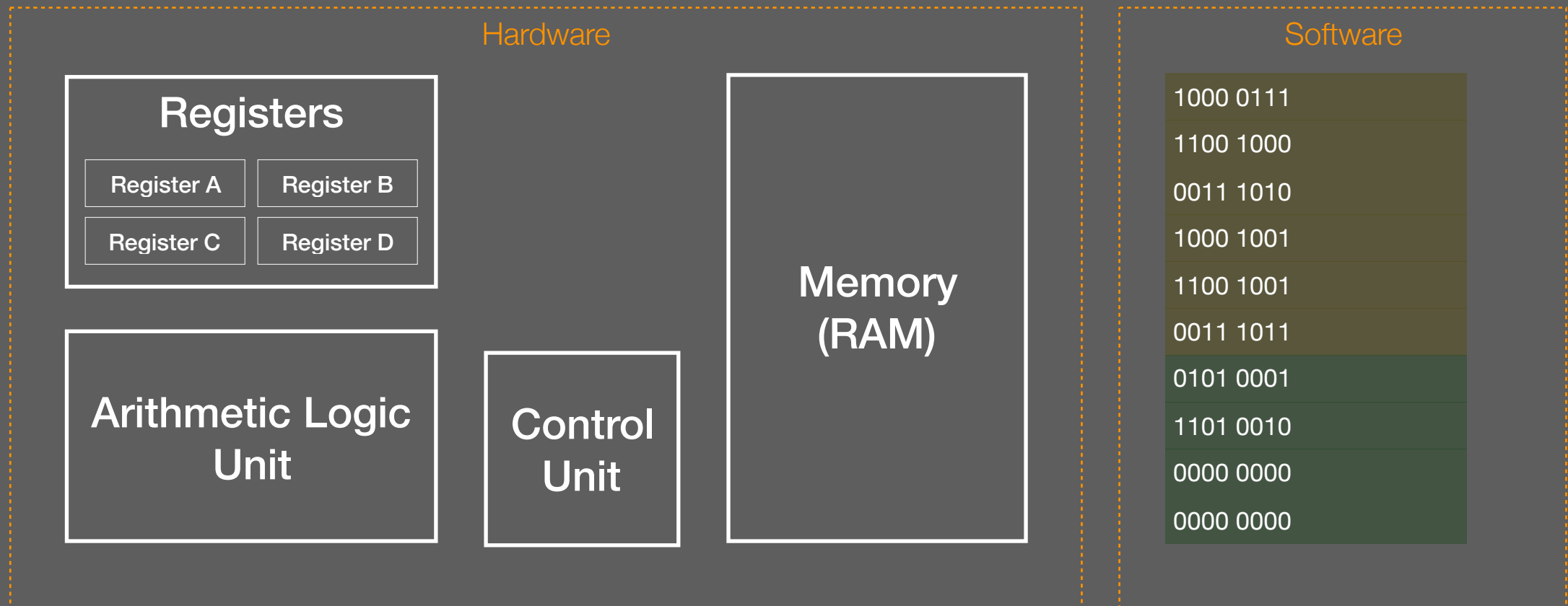
0101 0001

1101 0010

0000 0000

0000 0000

# Recap

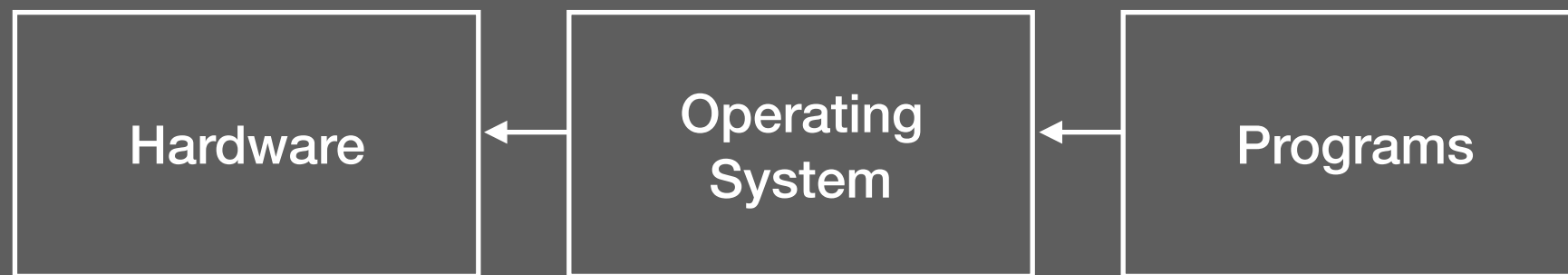


# Recap





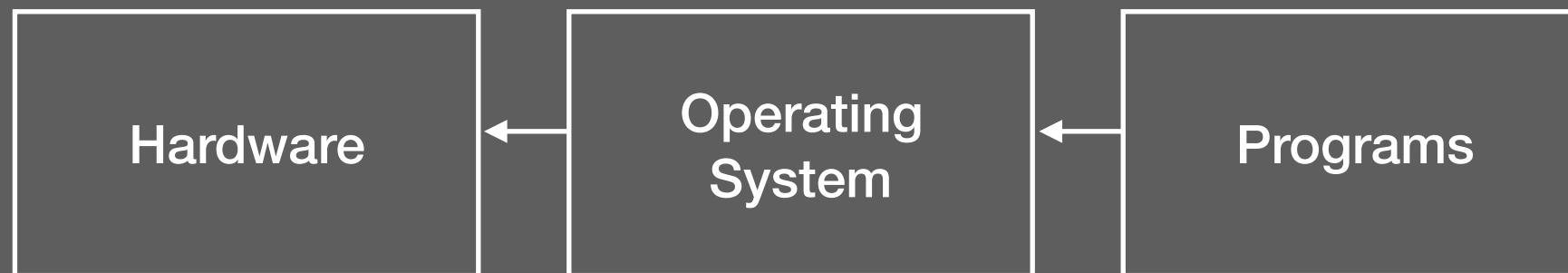
# Operating System



Operating systems abstract away the hardware for programs.

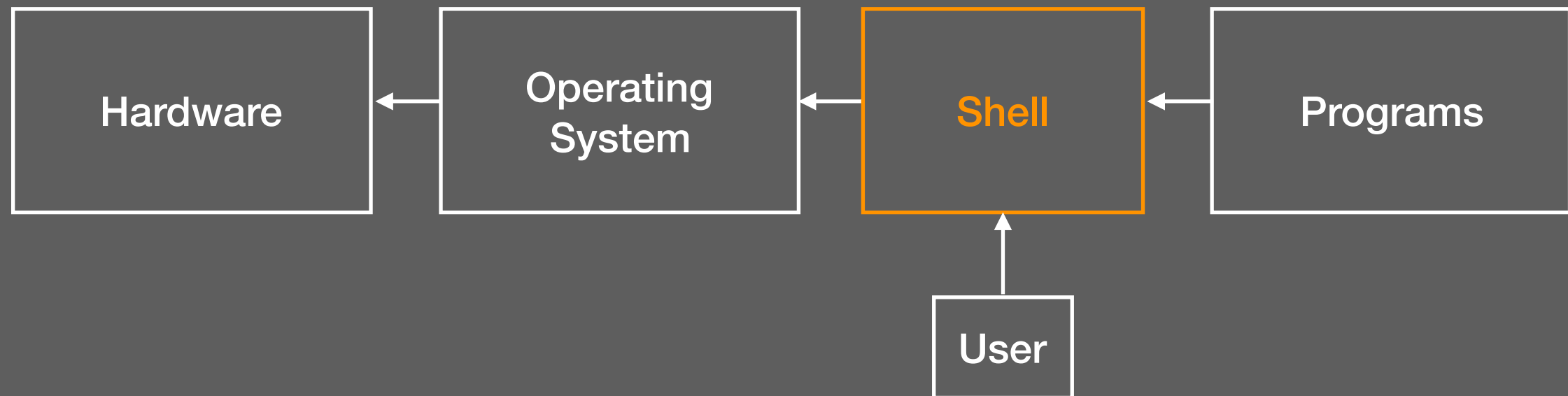
The **way** they abstract is the key!

# What is a shell



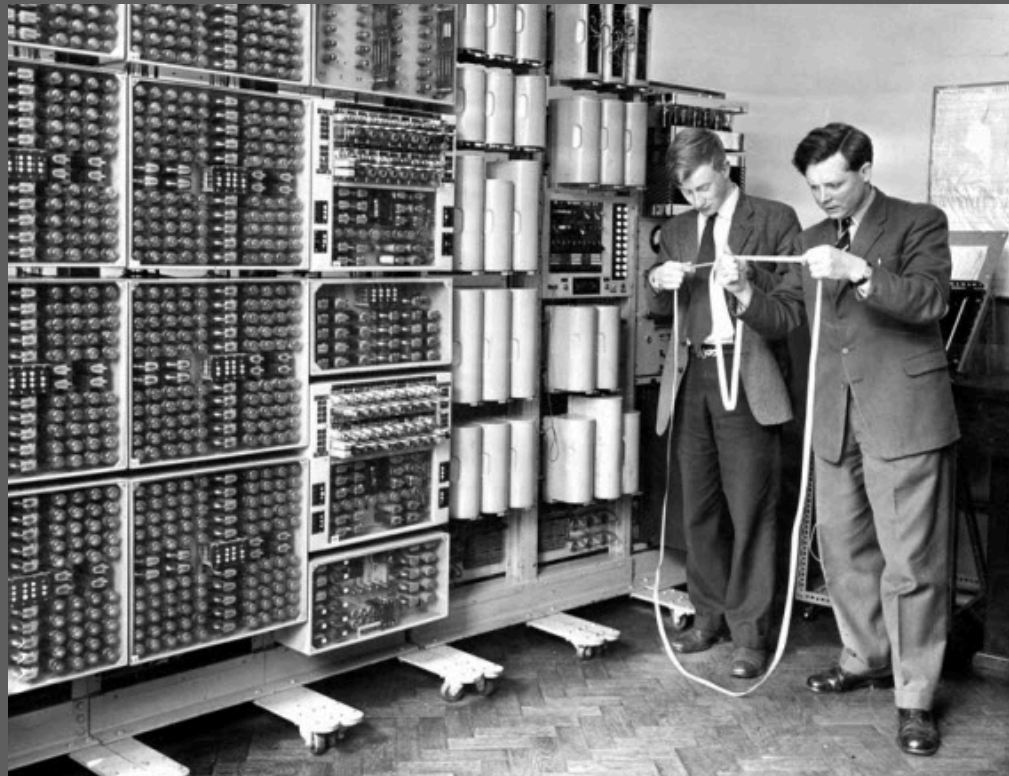
Shell is the program which the user uses to communicate to the operating system.

# What is a shell



Shell is the program which the user uses to communicate to the operating system.

# How do they Abstract?



Central mainframe



Command line  
(unix)



Typical Workspace



Graphical User Interface  
(apple, windows)

# GUI vs Command line

# GUI vs Command line

Capturing complex instruction with language is much easier than with skeuomorphism.

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Bandwidth is much smaller between user and shell.

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# GUI vs Command line

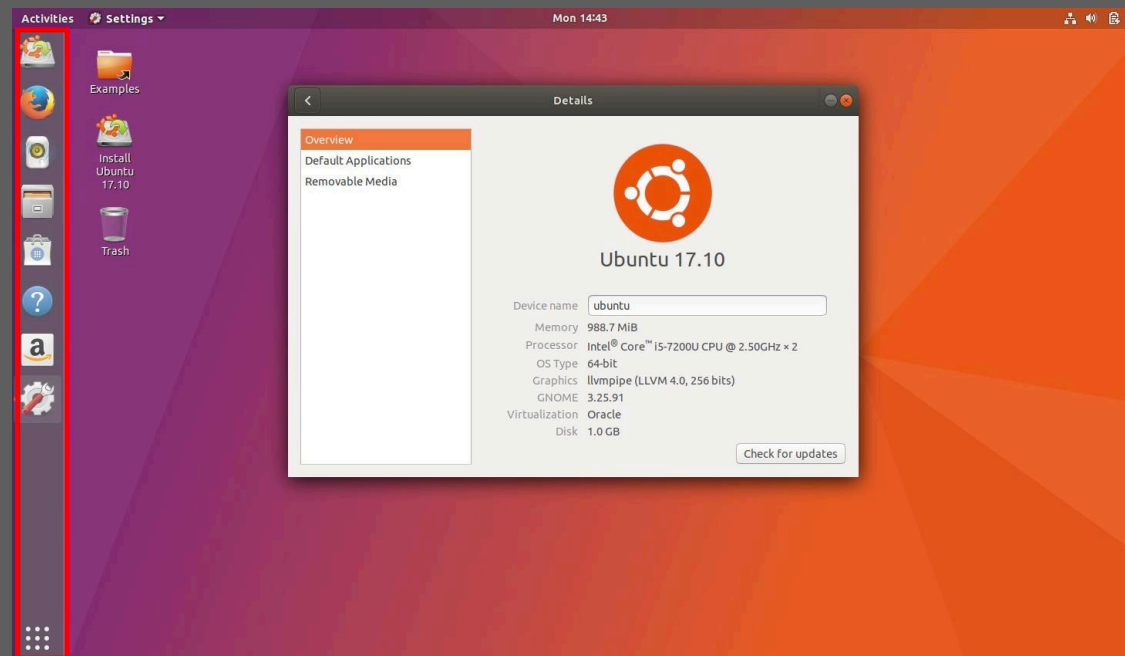
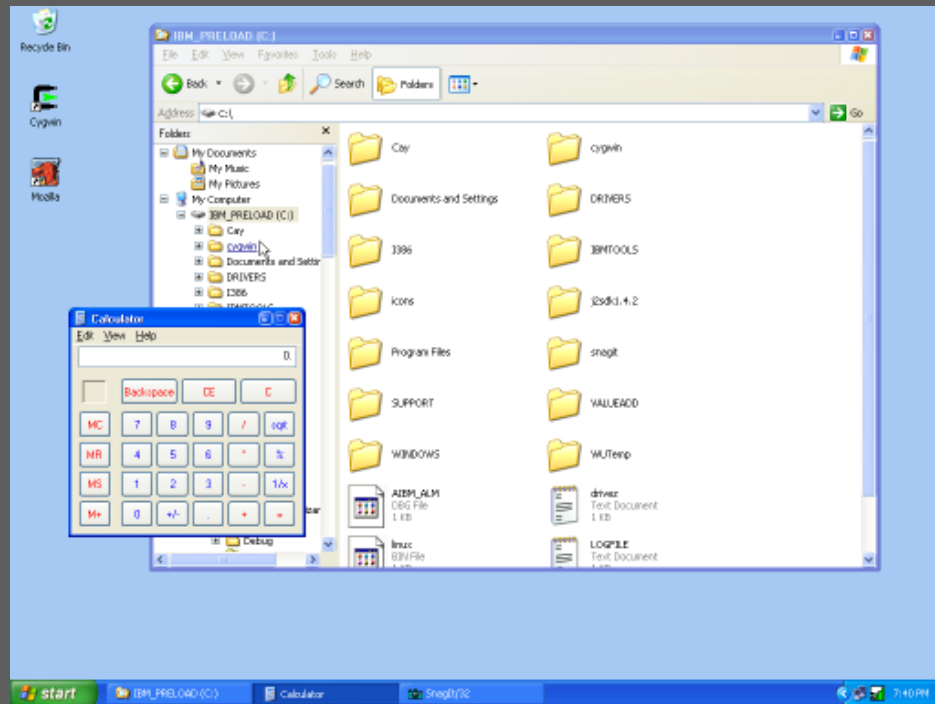
Capturing complex instruction with language is much easier than with skeuomorphism.

Bandwidth is much smaller between user and shell.

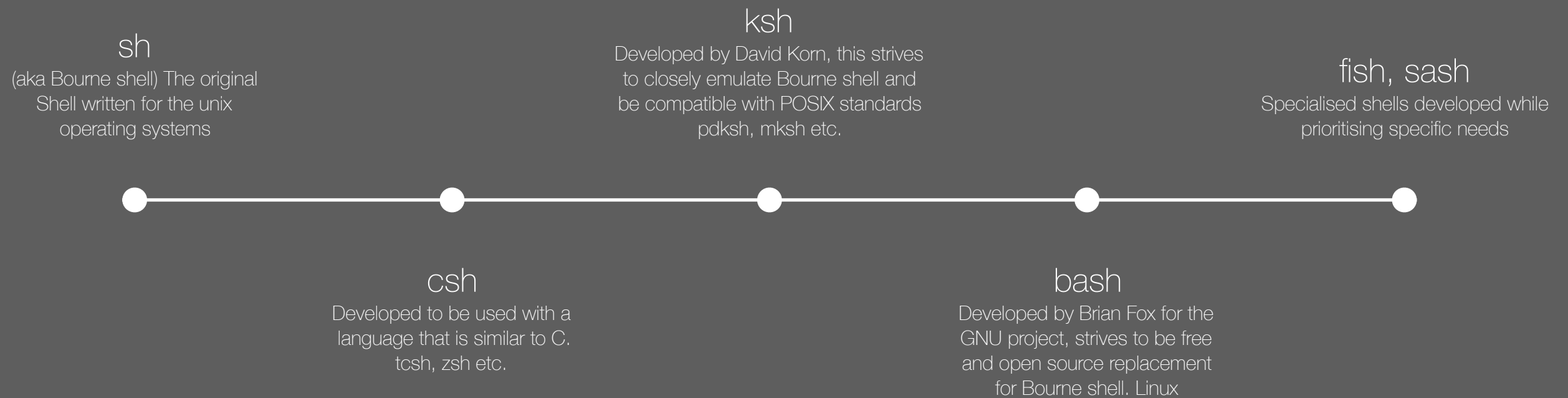
Repeating stuff is easy.

Much harder learning curve.

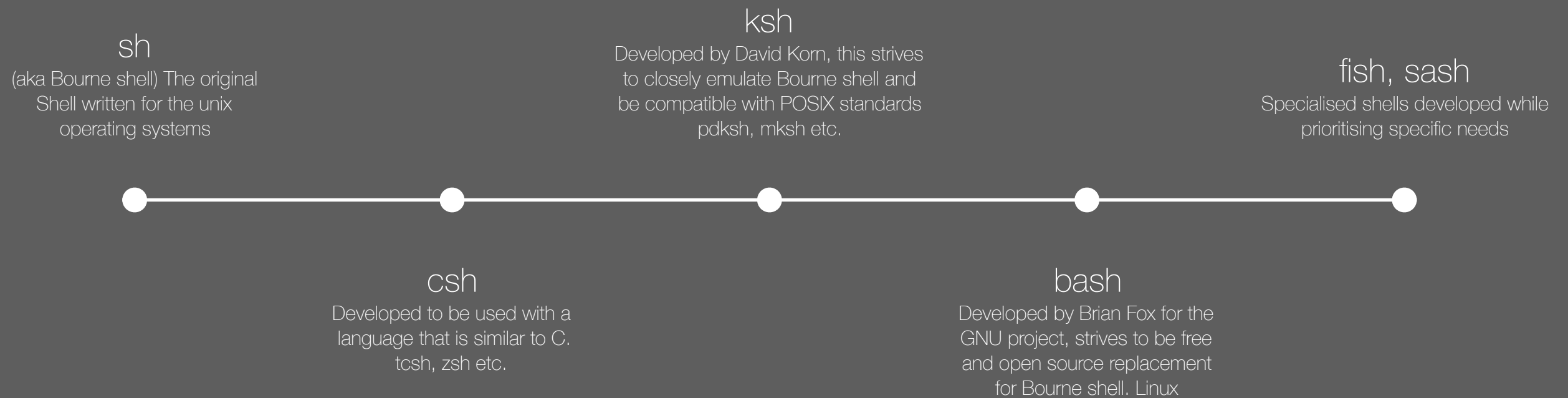
# GUI Shells



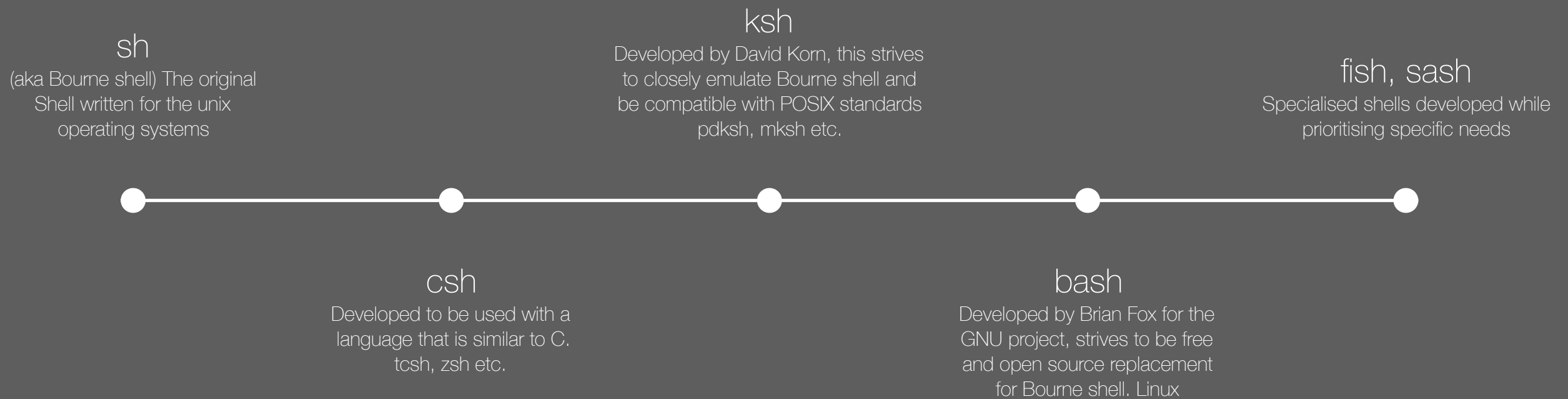
# History of Unix Shell



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# History of Unix Shell



Though there is a lot of history and evolution all of them remained backward compatible and POSIX compliant

bash is synonymous with a command line shell for unix and unix-like (linux) systems.

# Major functions of Shell

Managing Input and Output

Managing Filesystem

Executing Programs

# Basic concepts

How to talk to the shell

file system, reading and writing from file system

Installing and Executing Programs

Passing data through programs

Doing things multiple times

Automating things

Demo!



# Remote access

ssh - **s**ecure **sh**ell

| Purpose         | Geography servers   |
|-----------------|---|
| Gateway Servers | archibald.geog.ucl.ac.uk<br>roundabout.geog.ucl.ac.uk<br>squarepeg.geog.ucl.ac.uk<br>triangleting.geog.ucl.ac.uk  |
| General Purpose | ankara.geog.ucl.ac.uk<br>bangkok.geog.ucl.ac.uk<br>caracas.geog.ucl.ac.uk<br>dakar.geog.ucl.ac.uk<br>edinburgh.geog.ucl.ac.uk<br>freetown.geog.ucl.ac.uk<br>gaborone.geog.ucl.ac.uk<br>hanoi.geog.ucl.ac.uk<br>islamabad.geog.ucl.ac.uk<br>khartoum.geog.ucl.ac.uk<br>lima.geog.ucl.ac.uk<br>muscat.geog.ucl.ac.uk<br>nassau.geog.ucl.ac.uk<br>ottawa.geog.ucl.ac.uk<br>pyongyang.geog.ucl.ac.uk<br>quito.geog.ucl.ac.uk<br>rabat.geog.ucl.ac.uk<br>seoul.geog.ucl.ac.uk<br>tirana.geog.ucl.ac.uk<br>ulanbator.geog.ucl.ac.uk<br>valletta.geog.ucl.ac.uk<br>washington.geog.ucl.ac.uk |

| Purpose                  | CDRC servers   |
|--------------------------|--|
| Database                 | cdrc-db.geog.ucl.ac.uk   |
| High Memory (1TB of RAM) | cdrc-highmem.geog.ucl.ac.uk<br>cdrc-footfall.geog.ucl.ac.uk  |
| Storage                  | <u>cdrc-archive.geog.ucl.ac.uk</u>   |
| Computing                | cdrc-node01.geog.ucl.ac.uk<br>cdrc-node02.geog.ucl.ac.uk<br>cdrc-node03.geog.ucl.ac.uk<br>cdrc-node04.geog.ucl.ac.uk<br>cdrc-node05.geog.ucl.ac.uk<br>cdrc-node06.geog.ucl.ac.uk<br>cdrc-node07.geog.ucl.ac.uk<br>cdrc-node08.geog.ucl.ac.uk |

| Purpose        | UCL Server |
|----------------|------------|
| General HPC    | Legion     |
| Parallel Proc. | Grace      |
| Storage        | Myriad     |

<https://www.geog.ucl.ac.uk/resources/computer-support/linux-remote-access>

<https://www.ucl.ac.uk/research-it-services/services/research-computing-platforms>

Questions