

## User Interfaces

- Further reading
  - Richie
    - chapter 3
  - Tanenbaum Operating Systems
    - 1.3.3 The Shell
    - 1.4 System calls

## Overview

- classes of user
- types of user interface
  - system calls
  - command languages
    - also called command line interface (CLI)
  - graphical user interfaces (GUI)

## Classes of User

- programmer
- operator (administrator, or root)
- end user
- *notice that these classes define roles not individuals*

## System Call Interface

- application programmers interface (API)
  - a programming interface via system calls
- Unix System calls via C functions (Ritchie 3.2), (Tanenbaum 1.4)
  - GNU/Linux manual pages section 2
- Windows
  - C++ library (MFC - Microsoft Foundation classes) which sit on top of Win 32 API (C libraries)

## CLI

- allows more direct interaction with OS
- useful to operators and programmers
- importance of automation of activities
- Unix
  - shell programming and commands
  - [UnixHelp](http://unixhelp.ed.ac.uk) (<http://unixhelp.ed.ac.uk>)

## CLI

- MS Windows
  - eg. Windows Scripting

## GUI

- historical developments
- evolution of MS Windows
- X Windows
- MacOS X