3 The components of an X system

- The X server — the business end

  This is the program that actually controls the pixels on the screen.

- The X clients — the user's programs

  These are the programs that the user interacts with.

- The X11 Protocol — the *lingua franca* of X

  This is how client and server communicate.

Example:
A program (called a client) such as `xterm` makes a connection to the X server. The client may ask the server for information such as screen geometry or font availability. The client then uses this information and information from the user to configure itself and then passes a request to the server to display its window(s). Assuming the server cooperates, the server is passed a description of what the client wants and the server then stores the information of which connection was responsible for that window. If the user moves the pointer into the the server looks up the connection corresponding to that window and then sends an event informing the relevant client that it has the pointer. If the user then presses the `c` key the server sends the corresponding keypress event to the appropriate client.

3.1 The X server

- Runs on the workstation the user sits in front of.
- *Very* machine-specific.
- Monitors keyboard & mouse.
- Converts their actions into X events.
- Passes events to relevant X client.
- Receives instructions from clients.
- Receives queries from clients.

3.2 The X clients

- Run on a different machine from the server
- Configuration information:
  - for the size, colours, fonts etc.
  - from the user, server, application's defaults

For a client to display it requires three things:

- knowledge of where to display
- permission to display there
- details of what it should look like

Most of this course will be dedicated to the configuration of X clients but first we need a brief description of displays and the permissions associated with them.

3.3 The X11 protocol

- The common language of client and server.
- Machine independent
- Graphics instructions.
- Mouse & keyboard events.
- Server information.
- Provided to C programmers via the Xlib.