Problem #1:

- **CD/DVD Case Packaging:** This interface, comprising of a tight plastic wrap and sticker, is designed to protect the assets of the industry issuing the media and the artist producing it from petty theft of their material. However, the confusion and fear of piracy in the early days of compact disc manufacturing, as well as the mass market adoption of the medium, has resulted in a cheap and consumer-unfriendly method of protecting these assets that has become almost as much of a staple as the formats themselves
  - Strengths: Deters most simple theft because of its clumsiness to remove, keeps most of the original packaging visible, cheap to produce
  - Weaknesses: Can be broken for those determined to do so, frustrating for the consumer to remove which may result in damaged or worn product, excess plastic is bad for the environment
  - Suggested redesign: A new type of case that allows a small plastic “stick” to seal the case, which can only be removed by a special tool at the checkout. This is already in place at most movie and video-game rental outlets, and the plastic “sticks” can be sent back to the manufacturing plant to save on environmental damage

- **Clear2O Water Pitcher:** The interface to the Clear2O water pitcher consists of a small hose that connects directly to an attachment for most standard faucets. The water then flows through this hose to enter the filtration system, instead of ebbing through it as on other water pitcher designs (see [www.clear2o.com](http://www.clear2o.com) for more info)
  - Strengths: Higher water pressure fills the pitcher faster, filtered water is cleaner (possibly also a side-effect of the higher water pressure), hose fits neatly into the side handle
  - Weaknesses: Hose is very short and stiff making it difficult to keep the pitcher upright while filling in most sinks, faucet attachment is required so not all faucets can support the Clear2O, flimsy hatch on the top gives assurance that water will not slosh around and spill, even though in most cases the hatch readily gives way
  - Suggested redesign: A hose made of more flexible material, or a hose that faces the same orientation as the pitcher and/or is retractable

- **The stairs in my apartment:** My apartment has two floors, and they are connected by a spiral staircase that sits in the corner of the living room.
  - Strengths: The spiral takes up less space than a linear staircase would, the handle spirals up the left-hand side conveniently for the two right-handed people that live on the top floor, the top landing leads right into the bedroom entrances.
  - Weaknesses: A large amount of living room space must be cleared to provide a clean access to the staircase, this space unfortunately goes where the couches and chairs are supposed to, putting chairs underneath is an option, although taller sitters may hit their head on the metal stairs
  - Suggested redesign: Rotate the staircase 90 degrees and invert it about its vertical axis, thereby letting it open up near the hallway area which is much more likely to remain clear, also pad the sharp edges of the metal stairs so people who bump their head don't ache as much
Problem #2:

Mike's examples:
- **One instance crashes all**: Mike described an issue he's noticed that whenever he uses Firefox and has multiple windows open, one window crashing will bring down all the work he has, even in the separate instances. His suggestion is something similar to what I believe the Google Chrome browser is trying to do, and that is have each window/tab run as a separate instance of the browser.
- **No Wi-fi**: Another issue Mike has with his laptop is the Wireless ZeroConfig tool that ships with it; occasionally it will shut down his wireless hardware prematurely, with no feasible interface option to bring it back, requiring a reboot of the whole machine. A simple tray icon, he says, with options to manually start the hardware again, would be sufficient for his use.
- **Touchpads**: Again with his laptop, another problem Mike has (and one I also have on a large scale) is that of using the TouchPad and accidentally double-clicking when drifting the mouse across the screen. We discussed that it would be nice if the Touchpad itself gave some sort of haptic feedback when you were clicking as opposed to scrolling.

Tommy's examples:
- **Crazy iPhone menus**: Whenever Tommy has to turn on or off the wifi or perform some other system task on his iPhone, he complains about traversing a multitude of random and seemingly unconnected menus to do something very simple. He suggested a type of bookmarking system where he could map a system menu to a button on the home screen, allowing him easy access to the features he most frequently used.

Eric's examples:
- **Article sorting**: Eric hates his new MP3 player for many reasons, but one of the most prominent is that when sorting artist/album/song name alphabetically, it will group any names with 'The', 'An', or 'A' together. He thinks this is counter-intuitive to what the user expects and is trivial to implement anyway.
- **Home button**: Another problem with Eric's MP3 player? Poor navigation buttons. He wishes there could simply be at least a home button, so he didn't have to sit through and click 'Back' constantly through an ever-expanding menu tree to reach the beginning of it all.
- **Compass**: Eric has trouble using Compass as well. He states that minor little bugs, such as hitting the back button twice to return to the previous page, as well as inconsistent layouts between classes, contribute to his frustration with the system.

It seems that most of the complaint I found about software interfaces dealt mostly with quick and easy access to a particular feature beneath a large menu tree. I was also surprised to find at how many of the complaints that were brought up were seemingly easy to implement in the finished product, given the already broad scope of the projects themselves.

Problem #3:

While observing the subject attempt the trials, I noticed how he would attempt to make a pronunciation out of the sequence of characters in order to type it faster. (see the included excel file for the trial data,
as well as the included Python script used to obtain and record the data

Problem #4:

(a) In a twelve-item static menu, the user must scan each item until the target item is found, so the time it takes to find any particular item is \( \log(12) \approx 3.585 \), using Hick’s Law

(b) Assuming \( b \) is the time to scroll to the first available menu item, the time to find a menu item that has a probability of being in either range is:

- \( 0.5b + 0.5\log(8) \) (for 50/50) \( \approx 0.5b + 1.5 \) (maximum time)
- \( 0.75b + 0.25\log(8) \) (for 75/25) \( \approx 0.75b + 0.75 \)
- \( 0.9b + 0.1\log(8) \) (for 90/10) \( \approx 0.9b + 0.3 \) (shortest time)

(c) Hick’s Law cannot be applied to situations with a randomness to them, as the user must look at each available item to determine the proper location