1. Interfaces
   a. Microwave
      i. Microwaves are in nearly all modern day home and office kitchens. Because a microwave is meant for common use, its design needs to be very easy to learn. Unfortunately, there are hundreds of different microwave interfaces, so you have to learn each one and not confuse functions between units.
      ii. Strengths
          1. The large time display is good for not only microwave use, but also as a general clock or timer.
          2. The buttons are large and protected by lamination, so they are easy to find and press. Plus, kids or adults with dirty hands can use the microwave without fear of damaging the electronics.
          3. The door opening mechanism is simple: push and it’s open. This makes one-handed operation simpler (good for cooking).
      iii. Weaknesses
          1. The functions are confusing unless you read the instruction manual. It’d be nice to have a microwave that could recognize food contents and automatically choose these settings. Otherwise, the microwave should have slightly more detailed instructions inside, on the door, or some place more accessible than a manual that is lost in most cases.
          2. Pressing a number will trigger different actions on different microwaves. Sometimes, it will do nothing, other times it will start microwaving, and other times it will be entered as part of a sequence in the display. The buttons/directions are usually do not show the series of buttons to press to heat for X minutes. There needs to at least be directions or standardization.
          3. Some buttons can be pressed multiple times in succession and others only once. This is not explained on the microwave itself and needs to be indicated somehow.
   b. Wallet
      i. A wallet is carried by most people in the world, but in different forms. It is used to carry money, credit cards, identification, and other personal (flat) items. Since it needs to be accessed quickly, there are a number of pockets for organization and easy searching.
      ii. Strengths
          1. The clear ID pocket in the middle saves time by skipping the steps of removing a driver’s license and replacing it. This also reduces lost ID’s since they stay in the wallet.
          2. The multiple pockets help keep different cards organized. Using a bit of memory, it’s simple to pull out the appropriate card.
          3. The cash pocket is larger than standard bills, so reaching in for paper money is very quick.
iii. Weaknesses
   1. Some of the pockets are too small. I have to keep infrequently accessed items in these spots because they are hard to use. Increasing the size would alleviate this problem.
   2. Business cards tend to get crushed or faded when stored in the pockets because there's not enough protection. Having an inside pocket with fabric could protect them.
   3. The hole in the ID card pocket is useless because the card tends to stick to the back, so sliding out the card has to be done in the usual manner. Getting rid of the slide-slot or decreasing the amount of friction between the card and the wallet (maybe a top-loading pocket?) could improve this feature.

c. Cell Phone
   i. Cell phones have become recent necessities for everyone from kids to retirees. With the disappearance of pay phones, people need access to a cell phone to communicate and there are thousands of varieties. Cell phones need to be functional for power users and simple for children and the elderly.

ii. Strengths
   1. Making calls is very easy. You can directly dial the number without additional button-pressing, hold a number for speed dial, or choose from the contacts menu.
   2. Adding contacts can be done in a context-sensitive manner. When you view the calls list, you can choose to add or edit a contact with the highlighted number.
   3. Changing the ring level can be done with an external button, which helps switching from loud ring tones to vibrate or silent quick.

iii. Weaknesses
   1. The camera interface is a little clunky. Viewing the gallery and looking at options is done using different buttons, which makes navigation difficult. To improve the interface would be to use similar buttons for similar functions.
   2. Seldom-used options are available through one button whereas often-used functions take several menus to access. If these menus were tested or customizable, it would make everyday tasks much simpler.
   3. The speakerphone and message recording buttons are mislabeled. Though it may be a hardware mistake, it should be fixed because it is confusing when trying to first use the phone.

2.
   a. Person 1
      i. Unable to find what he's looking for
         1. Microsoft Word’s (and Office 2007) re-design is confusing for users because the file menu has been replaced and it is not obvious to click on the office jewel in
the corner. Also, the major change in navigation makes other options hard-to-find.

ii. Too busy for eyes
   1. Text is not arranged in a useful manner. This makes things really difficult to find. It is hard to concentrate on finding the right information.

iii. Hard to navigate
   1. Sometimes, navigation is not consistent. Going back a page may require re-visiting the home page and re-navigating.

iv. It is really frustrating when things take longer than they should to figure out. Spending a good amount of time doing this detracts from doing actual work.

v. Doing additional testing with users to find exactly what they want would help in these cases. Customizable menus would help users put the options they want within quick access.

b. Person 2

i. Lag (Unresponsiveness)
   1. It is frustrating when trying to accomplish tasks because it disrupts the flow of work.

ii. Bad Resolution
   1. Some things are hard to read because of poor resolution.

iii. Crashing
    1. When the computer crashes, it really messes with the ability to get work done.

iv. Having more program testing would help alleviate these concerns. It is sometimes a hardware problem for lag, but usually bad resolution and crashing are due to poor interface design and coding errors.

c. Person 3

i. Hard to find things
   1. Things aren’t intuitive and menu options are not helpful if you are unfamiliar with the system.

ii. Bad contrast
    1. Things are hard to distinguish between. Programs are poorly designed and are not appropriate for efficient use.

iii. Unresponsiveness of the system
    1. Lag is really annoying.

iv. These concerns have been addressed with the previous two interviews. Spending more time on the design phase with user feedback will help. Making sure programmers are in-sync with the designers can lead to better running code.
### Time vs. Trials

#### Trial Data

<table>
<thead>
<tr>
<th>Trial</th>
<th>Time (ms)</th>
<th>Correct Input</th>
</tr>
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<td>no</td>
</tr>
<tr>
<td>2</td>
<td>6125</td>
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<tr>
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<td>yes</td>
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<tr>
<td>6</td>
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<td>yes</td>
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<tr>
<td>7</td>
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<tr>
<td>8</td>
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<tr>
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</tbody>
</table>

Regression: \( T_n = T_1 \times n^a \)

\[ 2701 = 6765 \times 20^a \]

\(.39926 = 20^a \)  \( a = .307 \) = learning constant

The learning constant is usually about .5, but was .307 in this test. This means that the user learned at
a faster rate than usual. This may be due to an initial unfamiliarity with the system turning into a higher level of comfort. The subject seemed to employ more efficient keystrokes and didn’t have to think about what to type near the end.

4. Reaction Time

   *a & b are determined empirically*

   a. \[ RT = a + b \log_2(n) \]

   b. \[ RT = a + b \log_2(12) \]
      \[ RT = .5a + .5b \log_2(12) \]
      \[ RT = .75a + .25b \log_2(12) \]
      \[ RT = .90a + .1b \log_2(12) \]

   c. In the real world, more items may not be as confusing. If the list is in alphabetical order or uses categories and is significantly lengthened, then the rule may not apply. This is true for very long website sidebars.