1. a) What are the clusters present within a user’s Facebook network? It is expected that users may have distinct, perhaps unconnected, clusters of friends, and it is useful to understand the areas of overlap between clusters as well as the relative sizes of the clusters.

b) Related to (a) is the notion of betweenness centrality. In the case of Facebook, it may be useful to see which friends are links between clusters of other friends. Friends who are links between clusters may play an important role in mediating interactions between them, and friends who are members of many individual clusters are likely to be very important people in a user’s life.

c) It may be interesting to note the gender of a person’s friends, and see if certain clusters are heavily populated by members of one gender or another. Perhaps a person’s work network is heavily female, in which case it may be suggested that the person is a nurse, or heavily male, in which case the person may be in the military or law enforcement.

2. I tried to follow the example in the book and categorize my friends by gender and display different shapes for the different genders. However, I could not replicate the results in the book exactly; I sent an email message to our class mailing list detailing my troubles. So, my network is not like that in the book.

I wanted to discover the clusters in my Facebook network and understand the relationships between them. I also wanted to see the distribution of males and females within my network (and across the clusters).

My network graph, shown below, indicates clearly the unique clusters of friends in my network. Some of my clusters are rather large yet nearly or completely disconnected from others. This is due in part to the fact that I’ve lived overseas on two occasions and made many friends there that don’t know each other or my friends here. For instance, the green nodes are all friends I made in Germany, and they are connected to the rest of the network by a couple of US friends who came to visit during my time there. The pink network is composed of friends from a year abroad in the UK during college. The light blue cluster is made up of childhood friends, plus my siblings who also know many of the same people. The dark blue cluster is a combination of most of my friends and former coworkers from the many years I lived in San Diego after completing my undergraduate studies there; the yellow cluster is composed of friends from my undergraduate studies, who are loosely connected to the rest of the San Diego crew by a few common links.

I have set the vertex size to be related to betweenness centrality; larger vertices reflect a higher degree of betweenness centrality. The most important people in terms of connecting friends to each other are depicted with the largest vertices.

The opacity of each vertex reflects the vertex's degree. Friends with higher degree (meaning more connections to other friends) are more opaque.

I was shocked to see that my Eugene friends are represented by a single edge connecting two vertices. This is a reflection of the fact that many of my friends here have consciously avoided signing up with Facebook, and also due to the fact that I have been much less active on Facebook since moving to Eugene and I do not actively seek out my Eugene acquaintances online. If I were to search, I’m sure I would find some of them.

I also see two completely unconnected friends; one is a friend of my father, and the other is an artist I discovered somewhere online.
3. Visualization is very useful in helping to understand certain types of data. We are visual creatures, quite adept at perceiving relationships between objects in the world with a quick glance and at categorizing objects based on obvious physical attributes such as size, color, shape, etc. This is something we do naturally and without apparent mental effort; it just happens, and that is no surprise given the survival benefit of rapidly understanding and reacting to one’s world.

A Facebook network can be quite large, and the visualizations made possible by NodeXL are very helpful in presenting many facets of the network at once. It is difficult to get a feeling for the makeup of an entire network by simply looking at rows and columns of network connections and generated metrics. It can be a challenge to choose from the many visualization options available in the software, which is why it’s helpful to have a guide (like our textbook!). I personally had issues getting the software to work as described, and I wish I could have generated a visualization with as much visual power as that in the examples, but even without unique shapes for my nodes I think my network graph is very instructive. The clusters in particular are obvious.

In general, one has to be aware of potential usability issues when creating visualizations. The book mentioned that you may want to choose different strategies if your network image will be printed in grayscale rather than in color; even more significant, perhaps, is the need to accommodate people who are color-blind (or just plain blind!). For the color-blind, it would be better to stick with shapes and sizes and not make color a distinguishing factor at all.

4. As the text points out, Facebook has to walk a fine line between encouraging openness and protecting privacy. The usefulness of the site is based on the sharing of data between users (and to Facebook applications, in some cases), but there must also be mechanisms in place to allow user control over their data. It seems that Facebook has sometimes veered to the side of openness at the expense of privacy, by (for instance) changing their privacy policies to reveal much more user information and then forcing users to opt out of the relaxed policies rather than
opting in. They have also been slow to provide fine-grained access control tools for users, and to publicize the exact implications of policy changes. The founder, Mark Zuckerberg, has publicly stated that people are becoming more relaxed about privacy, and that in fact privacy is no longer a "social norm." [http://www.guardian.co.uk/technology/2010/jan/11/facebook-privacy] It seems clear that Facebook has learned some lessons about the actual privacy expectations and desires of their users, but only after huge public outcry in response to unpopular policy changes and data sharing revelations. In the age of identity theft and rampant cybercrime, it seems that the best strategy would be to err on the side of privacy, even if it hinders commercial growth of the company to some degree.