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PROBLEM SET 1 – Week 1

In the following, please include an image in your assignment where you see the (*I*). Otherwise there is no need to do so.

1. Variety in networks

Go to the site <http://www.visualcomplexity.com>. Select and list two projects describing a network. Answer the following about them (this may require going into the source webpage for the project, linked to from the visualcomplexity site).

- What do the nodes represent?
- What do the edges represent?
- Is the graph directed? Weighted?
- Can the data be represented as a bipartite graph? If so, what are the 'actors' and what are the 'events'?

2. A planar graph and layouts in Pajek

Download the file 'planarnet.net'.

- Open it in Pajek by either clicking on the yellow folder icon under the word "Network" or by selecting File>Network>Read from the main menu panel
- A report window should pop up confirming that the graph has been read and the filename and location will be displayed in the 'active' position of the network dropdown list.
- Visualize the network using Pajek's Draw>Draw command from the main menu panel.
- This will bring up the 'draw' window with its own menu bar at the top
- Reposition the vertices by clicking on them and holding down the mouse button while dragging them to a new location. Continue doing this until you have shown that the graph is planar (no edges cross have to cross) (*I*)
- (If you think this is really fun to do in your spare time, go to <http://www.planarity.net>
- Now let Pajek do the work for you by selecting from the draw toolbar several layout algorithms under 'Layout>Energy'. (*I*)
- Why did you select the layout algorithm you did?
- Did the layout leave any lines crossed? If you were to do this assignment over, what order would you do it in?