DATA.STAT.770

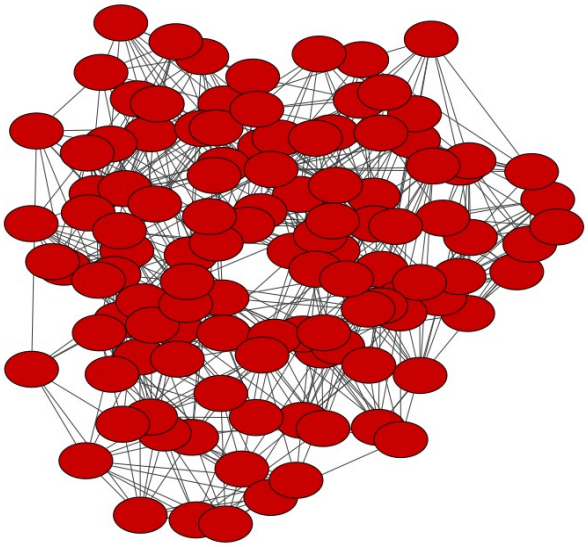
Exercise set 13.

H1.

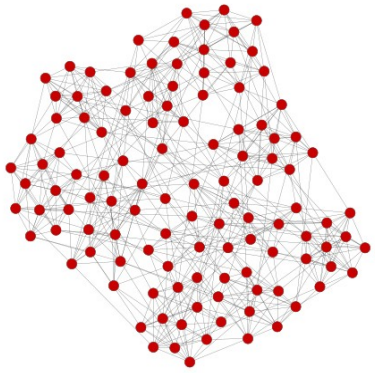
From the list of graph visualization algorithms, I used Cytoscape. Cytoscape implements multiple graph layout algorithms, for example

- Attribute circle layout
  - Locates all nodes in the network around a circle by user defined order.
- Circular layout
  - Produces layouts that emphasize group and tree structures within a network. It partitions the network by analyzing its connectivity structure, and arranges the partitions as separate circles. The circles themselves are arranged in a radial tree layout fashion.
- Compound Spring Embedder (CoSe)
  - Traditional force-directed layout algorithm with extensions to handle multi-level nesting.
- Degree sorted circle layout
- Edge-weighted force directed (BioLayout)
- Edge-weighted spring Embedded
  - Variation of Kamada-Kawai method.
- Grid Layout
  - Arranges all of the nodes in a square grid.
- Group Attributes Layout
  - Similar to the Attribute circle layout, but nodes with same values are laid out in a separate circle.
- Hierarchical Layout
  - Nodes are placed in hierarchically arranged layers and the ordering of the nodes within each layer is chosen in such a way that minimizes the number of edge crossings.
- Inverted Self-Organizing Map Layout
- Prefuse Force Directed Layout (default)
  - Default force directed algorithm that also lets user to define the weights & lengths of the springs.
- Stacked Node Layout

The default layout algorithm (Prefuse Force Directed Layout) produced a following visualization for the graph



This output still isn’t that informative, but that is most likely due to the parameters of the layout algorithm. The algorithm let user to define e.g. default spring coefficients and lengths. I mainly down weighted these coefficients and get following improvisation to the layout that is pretty close to the example graph in terms of informativity, since a light clustering effect can be seen between nodes:



I got another pleasant visualization by Radial Layout in yFiles package. I think that this algorithm is not force-directed, but it shows nicely e.g. that which teams have not played against each other.