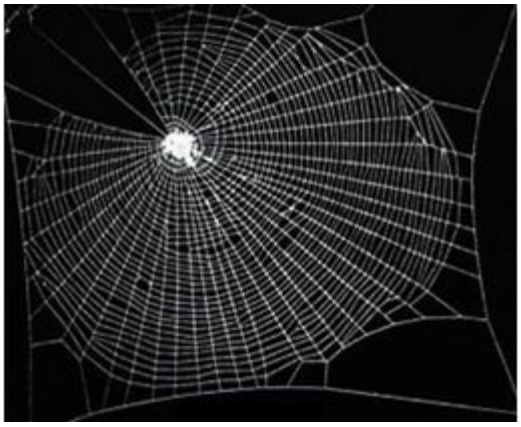
PLTW COMPUTER SCIENCE

Activity 3.2.3

Linked Data

Introduction

Ecosystems are known to be an intricate, interdependent web. We are all connected. People, plants, animals, and Earth itself.



The words of a language are connected in a web. Can you weave your way from one end of a language to another?

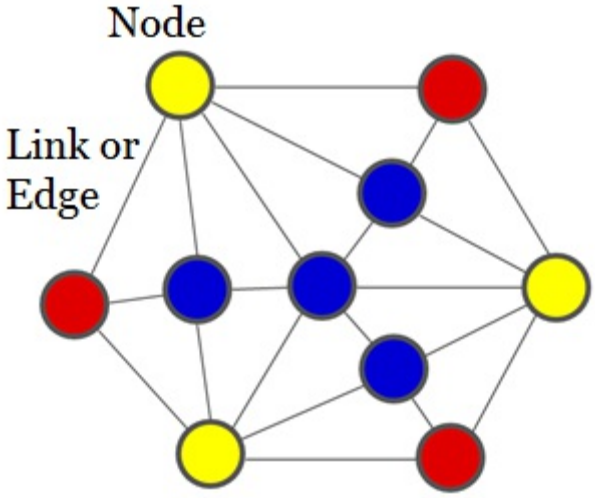
Materials

- Computer with access to Internet

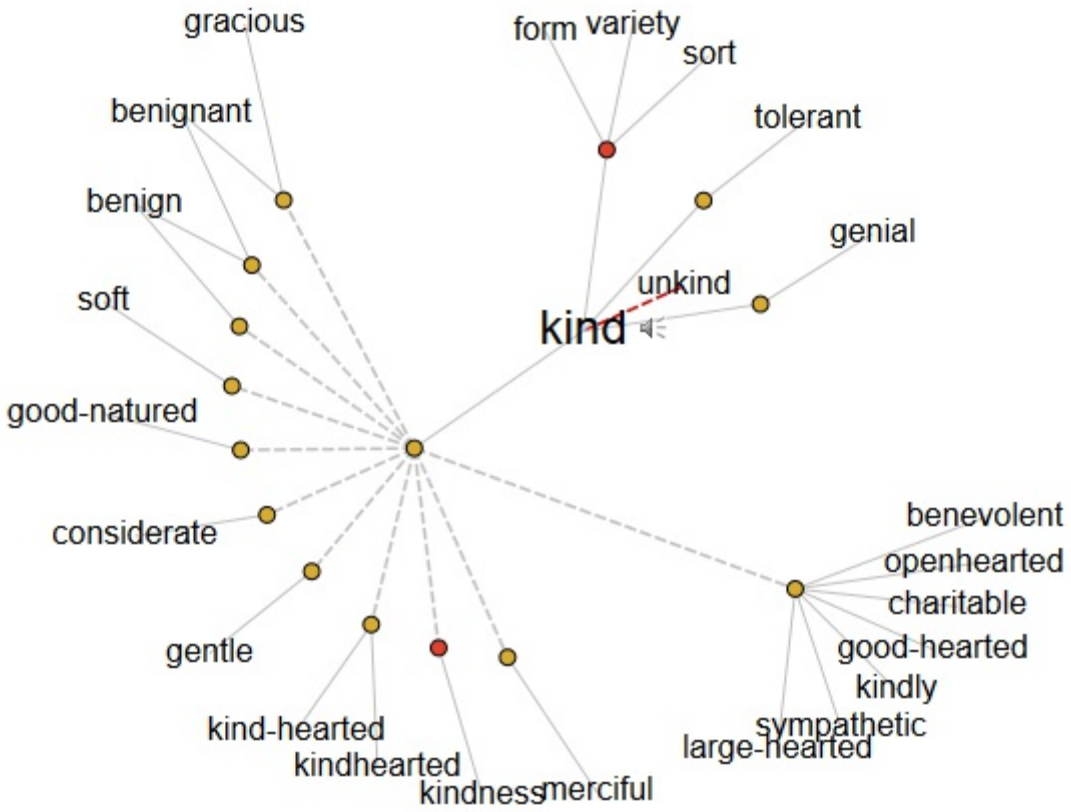
Procedure

In this activity you will explore an interactive visualization of linked data.

1. Form pairs as directed by your teacher and welcome each other.
2. A graph is a collection of nodes connected by links(also known as **edges**). The edges can be directional, or weighted.Which node has the lowest order? Which two nodes in this graph have the greatest distance from each other?



3. Visit the Visual Thesaurus at https://pltw.visualthesaurus.com/login/. For the credentials, use `pltw` as the username/email and `student123` as the password.
4. Search for a word.



5. Experiment with dragging around the words and the colored circles (which represent meanings). Try to untangle the links into a nicely laid out, spaced out graphic. Save a screen shot.
6. In any given view, there can be either a center word or a center meaning. When there is a center word, it is larger. Click on a word or meaning to make it the center word or meaning.
7. Pick one or more of the following challenges.

    - Create a poem made from eight sentences that use consecutive center words.

    - Pick two words and write them down. Try to get from one to the other. You could approach the task using a breadth-first (in which you come back to the starting point before going too far down one path) or depth-first (going deep before looking at other alternatives from the starting point) approach.

        - Starting word:
        - Target word:
        - Description of how much your effort was breadth-first search and how much it was depth-first search.
        - A visualization depicting your traversal through the graph, perhaps handwritten.

    - The word that you think is furthest along the shortest path from the starting word to the target word:

  - The order of a node is the number of links that connect to it. Try to find the word of the highest order. Record your record.

8. A graph links nodes. Data are linked if they refer to each other or share a common system for refering to meanings. Read an encyclopedic entry or watch a video about **linked data**. Describe what you learn.

Conclusion

1. How is linked data different than and similar to a relational database?
2. Describe one or more examples of linked data.
3. Linked data presents special challenges for visualizations. One researcher on linked data summarized, “We haven’t gotten far past the tangled mess of spaghetti.” Critique the visualization of the language offered by the Visual Thesaurus.