Lab class: Mind Maps using Freeplane

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The key to Intelligent Knowledge Based Systems (IKBSs) is the way knowledge is represented. This tutorial will introduce you to a mind-mapping tool, *Freeplane*, that will help externalise expert knowledge and generate an accurate representation of its structure.

1 Freeplane

Freeplane can be found at

`https://www.freeplane.org/wiki/index.php/Main_Page`

and it works under both Unix and MS Windows.

2 Access in the labs

1. Move to the directory where you want to create your mind map.
2. Type `freeplane &` to start Freeplane.
3. Note that the & character runs Freeplane in the background, which means you can still use the terminal for typing other commands. If you had left out the ampersand (&), Freeplane would have taken over the terminal and any commands you typed in would be ignored.
4. You should also get to Freeplane by the applications drop-down menu, although you might have to search the categories because it is not always obvious where it will be placed.

3 Creating a mind map for accommodation

The first exercise is to get used to how Freeplane works and to produce a relatively straightforward mind map. You should explore the functionality and look at the help documentation when attempting to produce a mind map that exploits all the properties discussed in the lecture (images, colours, different print size, different line lengths, etc). But the main objective is to produce a sensible structure that accurately reflects the issues influencing your decision on which accommodation to choose.

TASK Create a new mind map called "accommodation", which will also be the name of the central node. This mind map will represent knowledge about the factors influencing your choice of accommodation whilst at University. Imagine you are trying to find somewhere to live: what are the main factors influencing your choice? Think of at least 4 and make them nodes coming directly off the central accommodation node of the mind map.

TASK Select one of the new nodes you have created and try to break it down further. What are the underlying factors that affect the influence of that node on whether or not a particular property is suitable? For example, if the node you are working on is "location", it might have several subcomponents affecting it such as the distance from University, the distance of local shops, and the proximity of transport links.

TASK Keep breaking down your nodes in a similar fashion until you have got some components that are at least 4 parent nodes away from the central accommodation node. That is, you have to travel through 4 other concepts before reaching the central one.

TASK Try using pictures in place of node names.

TASK Add icons to the nodes and think about how they can help organise your mind map.

TASK Add links to the nodes and explore how they can enhance the mind map?

TASK Try experimenting with naming and creating nodes, using the commands on the window. Note that there are also shortcut keys that might make your life easier as you become more familiar with the software.

TASK Click on the help button and navigate around the help mind map.

TASK Try exporting your mind map in the different formats and see what they look like. Some of them provide very useful and more conventional hierarchical or nested list formats. Others provide mechanisms for machine processing the file for input to alternative programs.

TASK View the mind map file itself (i.e. the one with the .mm extension) in the Emacs text editor. What does this tell you about the form of knowledge representation used by Freeplane?

TASK Compare the Freeplane .mm source file you viewed in Emacs with the source code for the HTML display of the same mind map.

TASK (if you have time) You should know something about XSLT so try writing a simple XSLT program that will output the `.mm` file as an XML file that can be opened in a browser. If you can't do it in XSLT, try editing it in Emacs: the alteration required is very simple.

4 A more difficult mind map that elicits your own expertise

Now that you are familiar with Freeplane, try creating a mind map that represents an area of expertise of your own, where the knowledge is more tacit or hidden because of your familiarity with it. Choose a hobby or interest you may have that has specialised knowledge and requires making choices between different decision categories. For example, you may be interested in a sport and want to predict the winnner of a competition or league. Or you know about clothes and need an expert system that suggests the most successful type of fashion outfits for the next season. Maybe your expertise is in travel and you want to set up an agency for gap-year students: what governs the choices students make about where to go and how could this be exploited by a decision support system? And finally, suppose you want to provide a careers service: how do you match the best jobs to a particular persons aptitude, interests, and experience? Whatever you choose, create a mind map that would help construct the intelligent knowledge-based system.