The Blind Watchmaker and Weasel Assignment

Due: Thursday 25th October
Worth: 50 pts.

Rationale:

The Blind Watchmaker is a software program written to support Richard Dawkins book of the same title. The intent of the program is to demonstrate the ease with which complex 'biomorphs' can be generated by iterative application of simple rules, under the influence of (in this case) artificial selection. Obviously, it helps if you have read the relevant sections of Dawkin's book first!

The Exercise:

A simplified version can be found as an applet (i.e. you can run it directly from your web-browser) at:

http://www.rennard.org/alife/english/biomgb.html

The Weasel applet demonstrates the same general concept - the ability of evolutionary processes to solve very complex problems - in a different way. It can be accessed at:

http://home.pacbell.net/s-max/scott/weasel.html

The Assignment:

(a) Your assignment is very simple. Familiarize yourself with the Blind Watchmaker applet, and produce a biomorph of animal-like appearance by selecting a "parent" and breeding from it, then selecting the most animal-like offspring and repeating the procedure.. How many generations did it take to reach something that you judge suitably animal-like (you have seen Dawkins examples)? Next, reset the applet and try direct "God-like" intervention; i.e. adjust the genes directly to see what they do. Reset the applet, and proceed again by random selection. Does complexity continually increase from generation to generation? In what ways does the simulation provide a realistic approximation to organic evolution on Earth? In what ways does the simulation differ from real-World evolution? (Note: To print your biomorphs, maximize the display, and use your "Print Screen" key to save to the clipboard, then paste into an open Windows document. Mac users - you are on your own!).

(b) Run the Weasel applet. Start with a short phrase or single word. How many tries does it take the applet to find the solution? Repeat the exercise with the same word or phrase. Does it take the same number of tries to find the solution? If not, repeat the exercise enough times to determine the mean and range of the number of tries.
Now run the applet with progressively longer phrases. What is the relationship between length of the phrase and the mean number of tries?