End of Semester Report
Fall 2004

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I began this semester by making an overhaul of all the software I have written up to this point. The structure of the program prevented any communication between the distinct parts. The change was to create a structure that would hold all of the data, and separate all the pieces that calculate any of the statistics that we are interested in. This allows the program to be more modular and use less memory. It also allows features to be added more easily.

My main task this semester was to convert the data I received from the Department of Budget and Analysis into a form readable by my software and then calculate characteristic path length, clustering coefficients, and google weights (elements of the adjacency matrixes dominant eigenvector). Once the data was arranged and fed into the software, it had to be separated into connected components. The results were quite interesting, if not completely surprising. It turns out that, if we make some broad assumptions about the student body, the University of Utah is a small world. When we connect two students if they are in at least one class together, then students are typically only three degrees of separation apart. And for any given student, the chance that two students he/she is in class with are also in a class together is about 55%, quite high for this kind of graph. The Google Weights also show us who is most important on campus based on how many connections are made and the relative importance of those connections. Not surprisingly, this turns out to be students who are taking classes with high enrollment numbers, typically general education courses.

I also spent a large part of the semester preparing to give a talk in the Undergraduate Colloquium. Peter and I agreed that these findings are interesting and that it would be a good experience for me to prepare and give a talk on this subject. I had to condense all the things I have learned over the last few semesters, and prepare the results so that they could be

presented clearly. I ended up talking for about thirty minutes on basic definitions from graph theory and another fifteen demonstrating my results. I also prepared a few transparency slides for use during the demonstration. About a week before the presentation, Peter Rosen from Channel 2 News called because he was interested in doing a story on small world graphs. He interviewed me at my apartment and also attended the talk. The piece has not aired yet.