University of Washington
Department of Computer Science and Engineering
March 29, 2001
CSE 521, Spring 2001

Course Project: The traveling tourist problem

The class project is to design and implement algorithms for solving the traveling tourist problem, and to evaluate the performance of your algorithms using common data sets. A detailed description of the Traveling Tourist Problem is given on the class web site.

The basic requirement for the project is to implement algorithms for finding good tours. Your goal should be to have an algorithm which performs better than any other groups on at least one problem instances. The problem instances differ in size and type of graph, so it is unlikely that a single approach will be best on the entire range.

At the end of the project you will submit a written report describing your algorithms and results. When you identify tours that improve on posted bounds, you should submit them to be posted on the web page of best known tours.

Working in groups You may work in groups of size at most three. Each group will turn in a single final report.

Deadlines This project is to be working on *during* the course, as opposed to at the *end* of the course, so there are milestones to encourage progress. Begin with an implementation that finds a basic solution and gets the program structure in place, then implement more sophisticated algorithmic ideas to get better results.

Apr. 4 Decisions on groups. Send mail to the instructor identifying who is in the group.

Apr. 18 First results due. Each group should have a working program which finds solutions to the instances. (The quality of the solution is not important at this stage). Submit tours for specified problem instances. A goal for this stage is to be able to find an optimal solution to instance Tri-3, and a solution to Uk-100 which takes fewer that 60 days.

Apr. 23-27 Group meetings with the instructor.

May 17 Progress report due.

June 1 Deadline for the report.

May 30-June 4 Group meetings with the instructor.

Collaboration Collaboration between groups is okay, as long as it is fully documented. This project was used in CSE 521 in 1996. You should not use solutions developed by students who previously took the course.

Computing and software You are on your own - use whatever software and hardware you want. The solutions that you implement should be relatively efficient - say running in about five minutes.

You do not need to acquire massive computing resources for this. You should program in the language that you feel most comfortable using, as opposed to the language that will give the best performance.

Group meetings Each group will have two meetings with the instructor, one early in the quarter to discuss ideas for the project, and a second at the end to discuss results. A progress report will also be required.

Grading The grade will be based on the quality of solutions, the write up, the algorithmic ideas, and participation in the project. The grade will also take into account the amount of work that was completed by each of the check points.

Report The final report should consist of a summary of the algorithms used and a discussion of the results. A justification of why your algorithms work and a run time analysis might be useful - so be prepared to throw in a few theorems or lemmas.