# CS 1901 at the U of M

- Taught by Chris Dovolis

- TAs do labs and assignments

- Textbook is Structure and Interpretation of Computer Programs

- Programming language is MIT Scheme / Dr Scheme

- 2 weeks of Python at the end of the term

Minnesota vs other schools

- Compared to 7 other midwest research universities:
  - Minnesota and Indiana are only two Scheme users
  - Scheme schools cover 10 of 21 possible topics: avg 7.25, range 2-11
    - (Roughly the same ratio after adjusting for course length)
- Scheme schools cover topics like: recursion, higher-order functions, closures
- Java schools cover topics like: hash tables, exceptions, sorting algorithms
- C++ schools cover ~2 topics

Example assignment 1

- Given map of downtown Minneapolis with skyway connections

- What is the shortest route between two buildings?

- Possible answers using DFS and BFS
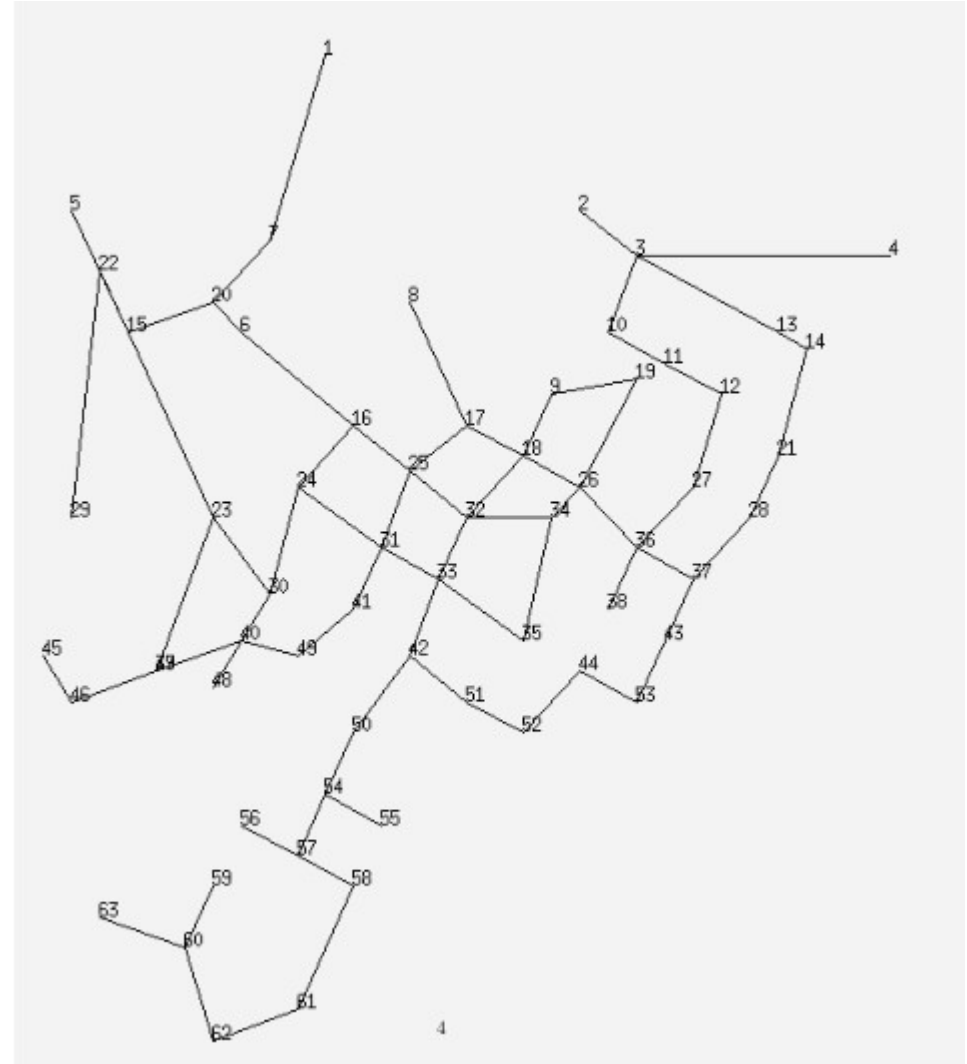
Example assignment 2

- Unit converting calculator using SI units (inspired by Google Calc)

- Students figure out rules for addition, multiplication, exponentiation, derivatives of numbers with units

- Example question: An average person consumes 2,000 calories (kc) per day. How many horsepower (hp) is this? Run `(in hp (pq/ (pq 2000 kc) day))` to get the answer.

Final project

- Write a Gomoku (5x5 tic-tac-toe) AI

- Programs compete in a tournament at the end of the term

- Winner gets extra credit points (no points lost for poorly-performing AI)

- Does anyone know who invented this?

Questions

- Will we have to switch from Scheme?
  - Number of schools using Scheme seems to be declining
  - R6RS is a disaster
- Will we have to switch textbooks?
  - Berkeley is no longer using SICP
  - 2/5ths of SICP is about lazy programming, which we pretty much don't even mention
  - U is moving away from grad TAs for lower division classes