Problem 1

You have a map showing communication links in a network.

- Each link has a known bandwidth.
- Find a path from A to B that **maximizes** the **minimum** bandwidth along the path, using each link at most once.

Problem 2

You have a map showing rooms and connecting passages in a castle.

- Each room contains some known amount of gold.
- Find a path from A to B that maximizes the amount of gold you collect, visiting each room at most once.

Problem 3

You have a map showing all upcoming inter-city flights within North America.

- Each flight has a departure time and an arrival time.
- Find a path from A to B that minimizes the total time from now until arrival.

CISC-365*
Algorithms 1

Today

- Boring details
- Outline
- Actual content!

Administrivia:

Me: Robin Dawes, dawes@cs.queensu.ca

Marking scheme:

5 tests: 4 @ 22.5%

1 @ 10%

- no midterm, no final
- no marked assignments
- no make-up tests for missed tests
- first test will be on … TBD

Course URL: http:sites.cs.queensu.ca/courses/cisc365

Course Outline:

The calendar says …

Principles of design, analysis and implementation of efficient algorithms. Case studies from a variety of areas illustrate divide and conquer methods, the greedy approach, branch and bound algorithms and dynamic programming.

Billy Mays says …

For the next 160 callers, we'll include an introduction to NP-Completeness too – at no extra charge!

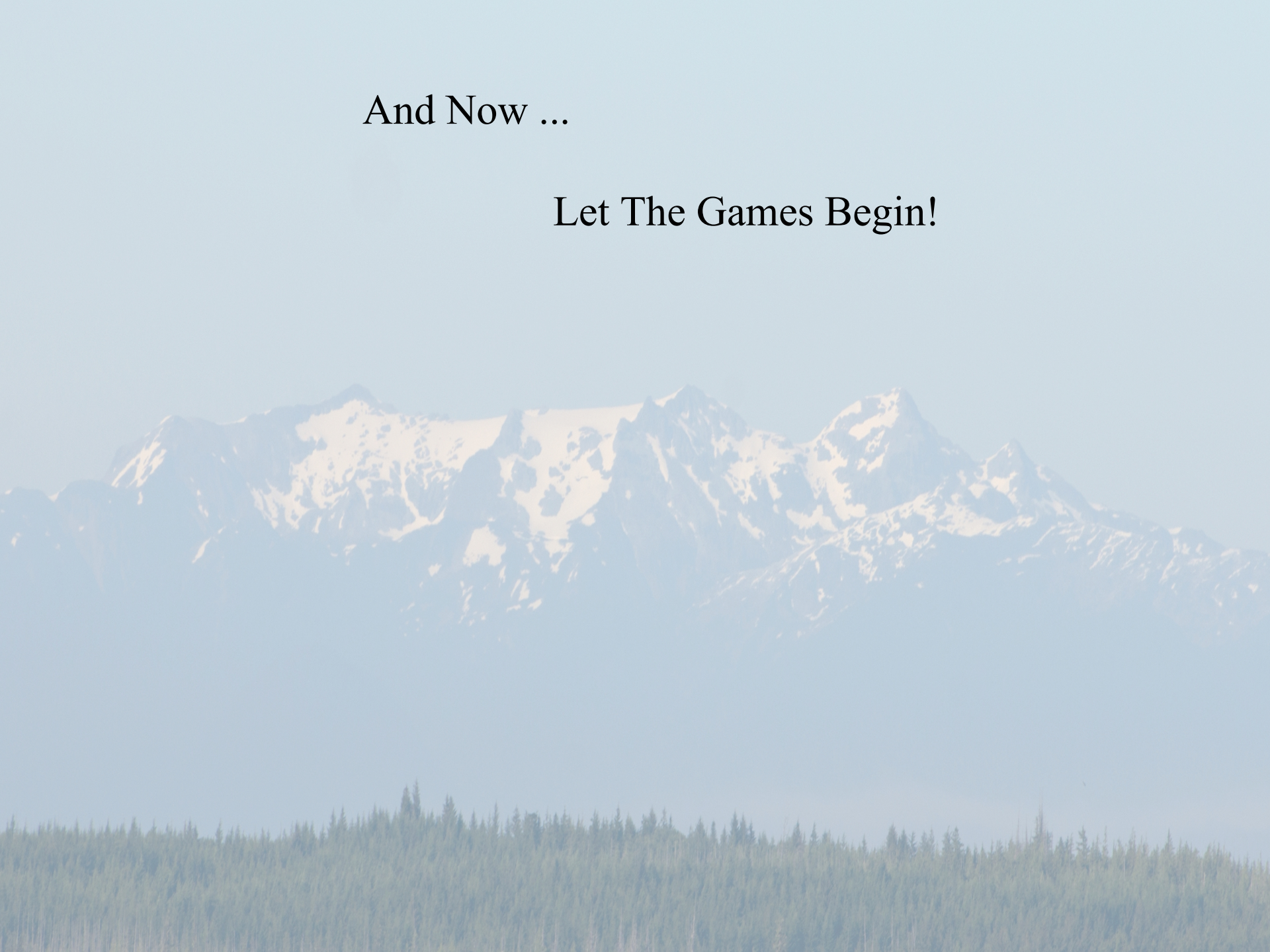
!!! ACADEMIC INTEGRITY !!!

Don’t be evil.

Course Syllabus:

Topics will be covered in the following sequence:

- *Complexity and NP-Completeness*
- *Divide and Conquer Algorithms*
- *Greedy Algorithms*
- *Dynamic Programming Algorithms*
- *Branch and Bound Algorithms*
- *Class Choice*


And Now ...
Let The Games Begin!

Problem 1: find a path that permits maximum data flow

Problem 2: find a path that collects the most gold

Problem 3: find a flight sequence (path) to minimize total travel time