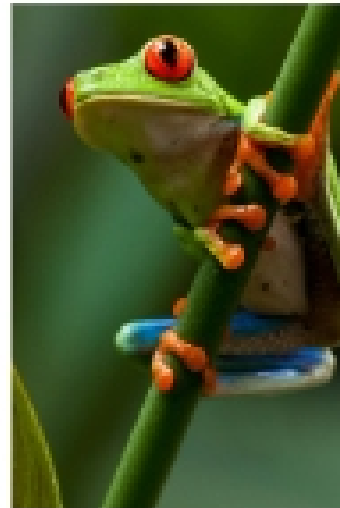


Fundamentals of Artificial Intelligence
COSC 4368
Solution Sketches Midterm1 Exam
Monday, March 4, 2019



Name:

Student id:

1. A* & Best-first Search (14 points)
 2. Evolutionary Computing (7 points)
 3. Reinforcement Learning (11 points)
 4. SA and Hill Climbing (9 points)
 5. Game Theory (6 points)
 6. Games and Adversarial Search (7 points)
- Point Total (out of 54):

Number Grade:

The exam is “open books and notes”, but no computers and cell phones allowed; you have 75 minutes to complete the exam. Write all your answers on this document (you can use back sides!).

1) Best-first Search and A* [10]

Consider the search space below, where *S* is the start node and *G1* and *G2* satisfy the goal test. Arcs are labeled with the cost of traversing them and the estimated cost to a goal (the *h* function itself) is reported inside nodes.

For each of the following search strategies, indicate which goal state is reached (if any) and list, *in order*, all the states *popped off of the OPEN list*. When all else is equal, nodes should be removed from OPEN in alphabetical order.

a) Best-First-Search (using function *h* only) [3]

Goal state reached: **G2**

States popped off OPEN: **(S, E, G2)**

b) A* (using $f=g+h$)[4]

Goal state reached: **G1**

States popped off OPEN: **(S, A, B, G1)** **1 error: 1 point**

