## Coding

### 1.1 Scoring a Submission

The coding portions of the assignments will be autograded: as soon as the assignment due date passes, we will automatically run all submissions against our test suite. Your score will be computed according to a rubric that we will distribute to you with each assignment. Below is an excerpt from an example rubric:

- **bfs** [20]
  - produces correct outputs [10]
  - produces correct solution paths [5]
  - produces shortest-length solution paths [5]
  - states are expanded in a breadth-first order [10]

Each rubric contains categories (e.g., “bfs” and “produces correct outputs”) and atomic items (e.g., “produces correct solution paths” and “states are expanded in a breadth-first order”). You can recognize an item as having no subcategories and its score total aligned with the score totals of other items.

For each item, a submission will earn either full points, if it passes all of the tests associated with that item, or no points, if it fails any of the tests; however, there are few exceptions where partial credit will be assigned. Its total score is the sum of its scores on the items.

### 1.2 Resubmission Policy

To compensate for the black-and-white nature of autograding, we offer a generous resubmission policy. Each assignment is due on a Monday, and you have 3 full days, until the following Thursday under normal circumstances, to resubmit your assignment. Just after 11:59pm on Tuesday, Wednesday, and Thursday, we will automatically grade your most recent resubmission. Your final score will be determined according to the following equation:

\[ 0.2 \cdot \text{original} + \text{WEIGHT} \cdot \text{best} \]  

(1)
where \( \text{original} \) is the score of your original submission, \( \text{best} \) is the score of your best submission that we have graded, and \( \text{WEIGHT} \) depends on the number of resubmissions we have graded for you. If we have graded 0 or 1 resubmissions, \( \text{WEIGHT} = 0.8 \); if we have graded 2 resubmissions, \( \text{WEIGHT} = 0.7 \); and if we have graded 3 resubmissions, \( \text{WEIGHT} = 0.6 \). In addition, we guarantee that your final score will never decrease between submissions.

### 1.2.1 Examples

- You submit 2 times (1 resubmission) and earn 50 and 100, respectively. Your final score is \( 0.2 \cdot 50 + 0.8 \cdot 100 = 90 \).

- You submit 4 times (3 resubmissions) and earn 70, 40, 90, and 100, respectively. After your second submission, your score is \( 0.2 \cdot 70 + 0.8 \cdot 70 = 70 \). After your third submission, you score is \( 0.2 \cdot 70 + 0.7 \cdot 90 = 77 \). After your fourth submission, your score \textit{would} be \( 0.2 \cdot 70 + 0.6 \cdot 100 = 74 \), but since we guarantee that your final score will not decrease between submissions, your final score is 77.

### 1.2.2 Advice

- Be certain that you understand exactly what the code you write is supposed to do. The course staff is happy to answer clarification questions on Piazza or at TA hours.

- Be certain that your code works as you expect it to. Maintain a suite of tests that you run before each submission you make.

- Note that due to the grading policy, your second resubmission will never increase your final score if your best submission so far earned at least \( \frac{7}{8} \) of the points, and your third resubmission will never increase your final score if your best submission so far earned at least \( \frac{5}{6} \) of the points (see the second example above for an illustration of this).

### 1.2.3 Lateness

In addition to the resubmission policy, you are granted four late days. You can use at most two on a given assignment. Using a late day on an assignment pushes back the resubmission schedule by a day. This means if you use one late day, the original submission will be due at 11:59pm on a Tuesday and the writeup will be due at 11:59pm on a Friday. You can resubmit on Wednesday, Thursday, and Friday. You can never resubmit an assignment more than three days after your first submission. The late day policy will automatically be applied optimally at the end of the semester. This means you do not need to notify anyone that you are using a late day, and that initially when you use a late day your assignment report will show a zero for the original submission - do not worry as this will be adjusted later!
If you are seriously ill, experience a tragedy, or have another good reason for which you will not be able to complete your work on time despite the generous resubmission and late submission allowances, you can email Professor Konidaris to request a further extension. Only very serious cases will be considered.

1.3 Virtual Environment

For grading, your code will be run in a virtual environment. You should always test your code in this environment before submitting! On a CS department machine (or through ssh), you can activate this virtual environment with `source /course/cs1410/venv/bin/activate`. Once activated, you can run your code normally with `python <script.py>`. When done you can deactivate the environment with `deactivate`. While developing on department resources we recommend using this environment to avoid having to install extra dependencies. While developing locally, you can simulate the environment just by making sure you’re using python 3.7 and numpy 1.15.1. However, be sure to test your code in the actual environment before you submit.

1.4 Allowed Imports

Generally, the use of any library functionality that takes away the core of the assignment is disallowed. For example, you couldn’t use `networkx` to complete the search assignment for you. If you’d like to import something not already imported or explicitly allowed, we highly recommend getting permission on Piazza. If you use a disallowed import (even if not explicitly disallowed) you could get a zero for the entire assignment without a chance to resubmit.

1.5 Coding Grade Complaints

If you are suspicious that the autograder has not graded your code properly, follow this procedure:

1. Verify with a TA, either at hours or over Piazza, that you understand both the ostensible reason for which you lost points and the specifications of that part of the assignment if the reason is non-obvious.

2. Write unit tests that show your code achieves the desired functionality.

3. In an email to cs1410headtas@lists.brown.edu, indicate the TA with whom you completed step 1, and include Python files with only the code in question and its tests.

We will only acknowledge grade complaints by students who have followed this process. The process exists because we only have time to look into code-related grade complaints that are caused by legitimate bugs in our system, not by misunderstandings or sloppy testing. If you submit a complaint that does not follow this policy, it will be ignored. If you send multiple, you will be blocked. This includes emails that do not explicitly include
the word complaint but are effectively just complaints, such as “what is wrong with my code?”

1.6 Playing nice with the autograder

You should not modify the stencil code that we have provided you. Our autograder uses another copy of the stencil, so any changes that you make to the stencil will not persist and will cause an error. However, you are welcome to create and submit new files.

2 Written Work

The written work that you submit will be graded by hand. It is usually due at the same time as the last possible resubmission (Thursday at 11:59pm). Written work is collected through Gradescope, which you can read more about in the Gradescope guide available on the website.

2.1 Written Work Anonymity

We grade anonymously for the purpose of fairness. To that end, please do not put your name, CS login, or banner ID on your written work.

2.2 Written Work Resubmission and Lateness

Gradescope will allow you to resubmit written work up to the deadline. Only the latest submission of your written work will be scored. Submissions of written work after Thursday at 11:59pm will not be accepted in the absence of an extension.

2.3 Written Work Grade Complaints

To contest a grade, use the regrade request feature of Gradescope. If you’re having trouble receiving a regrade, contact the head TA.

2.4 Gradescope

You must clearly number or somehow label each problem and assign questions to pages. You can assign pages on Gradescope once you’ve uploaded your submission, before you hit "Submit." We will deduct 5 points from submissions that violate these directions.

3 Grade Breakdown

The following is a tentative breakdown of how your final course grade will be calculated. Note that this is subject to change at the discretion of the professor.
Core Assignments: 50%
  Search....................5%
  Adversarial Search......10%
  Deterministic KRR.......5%
  Probabalistic KRR.......10%
  Reinforcement Learning...10%
  Supervised Learning......10%
Exams: 30%
  Midterm..................15%
  Final.....................15%
Final Project: 20%