Discrete Optimization

Assignments: Introduction

Goal of the Lecture

- Assessment Architecture

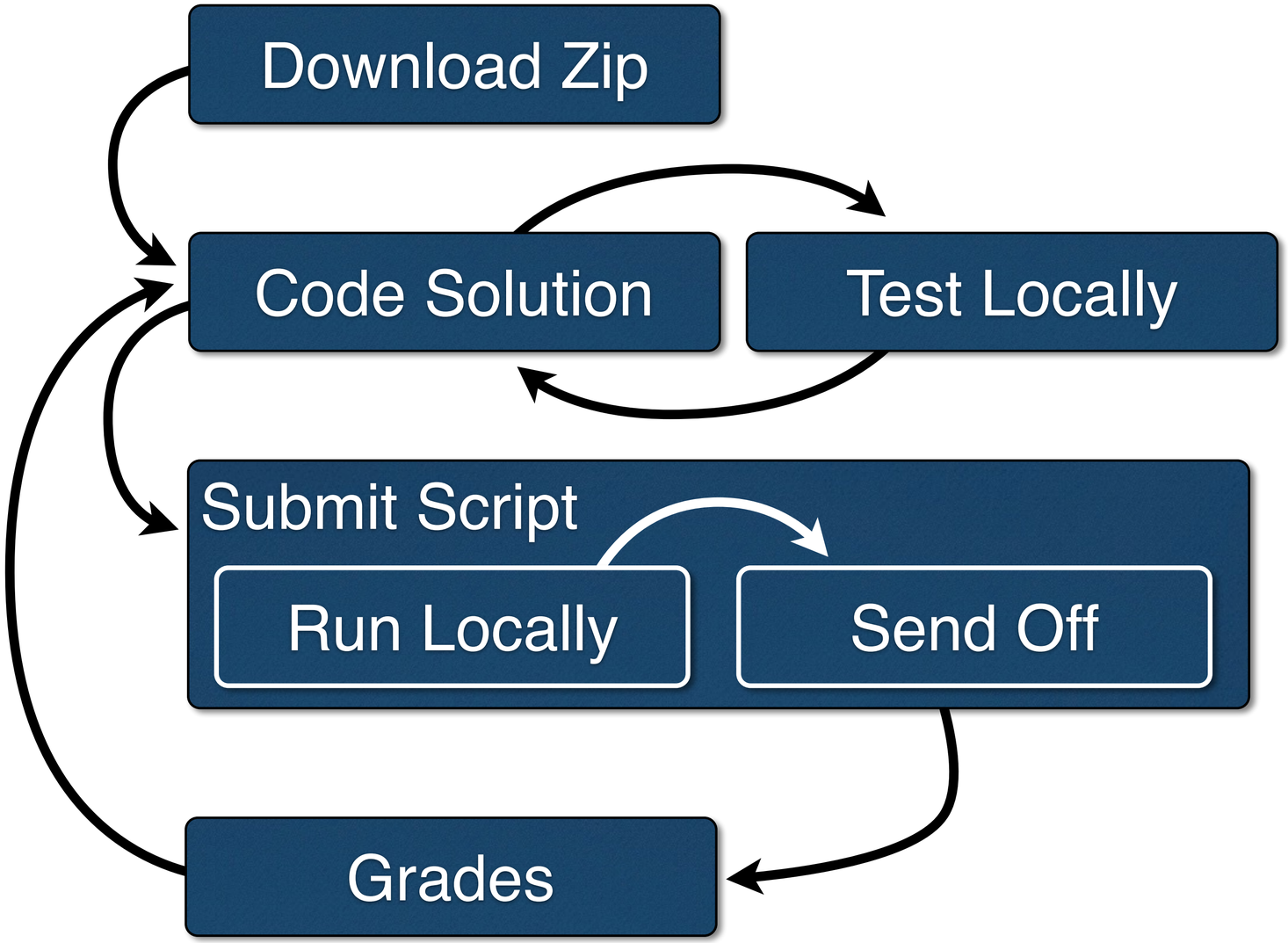
- A Simple Example
  - Not even optimization
  - Just an integer

The Beauty of NP-Hard Problems

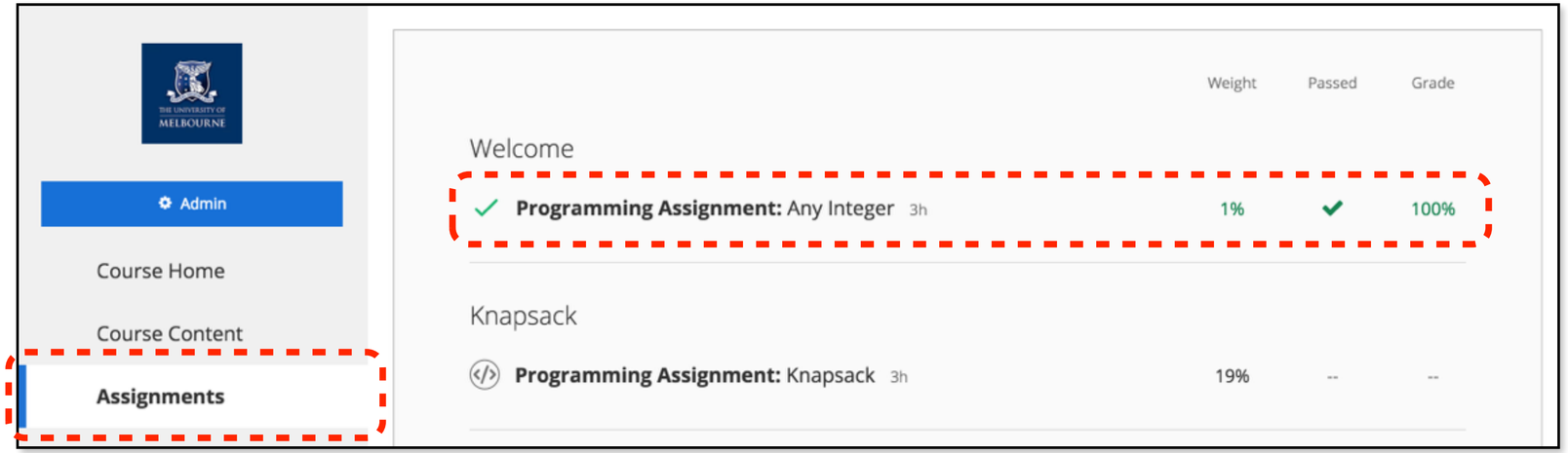
- Work forever to find a good solution.

- Check that its a solution in seconds.

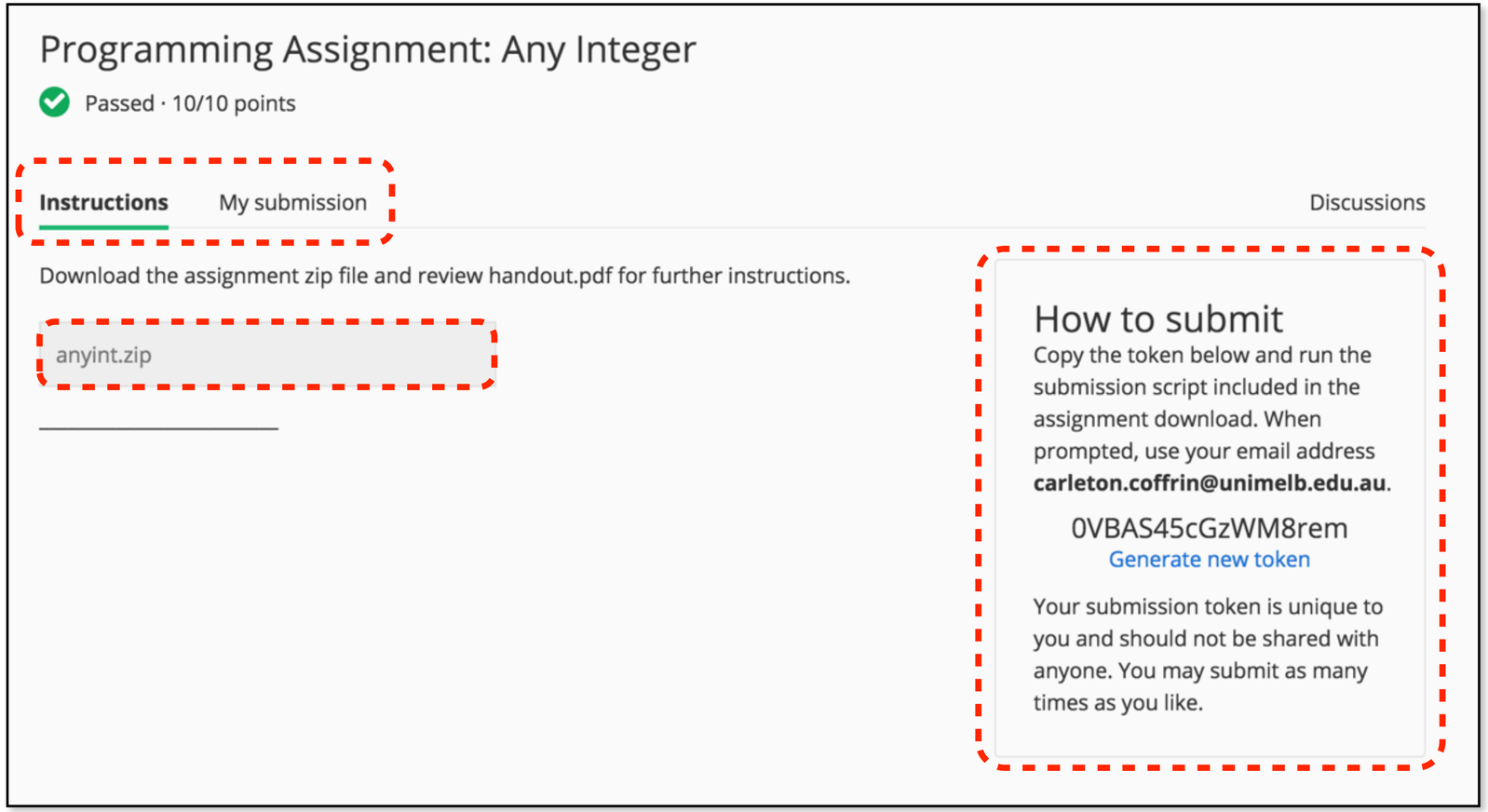
Assignment Work Flow



The First Assignment - Any Integer



The First Assignment - Any Integer



The First Assignment - Any Integer

- handout.pdf
  - detailed instructions about each assignment
- solver.py
  - your solver implementation goes here
  - you can call external binaries
  - always includes a trivial solution to the assignment
- submit.py
  - handles running your solver on a few inputs and submits the results for grading
- data
  - input data for testing

Any Integer - handout.pdf

Discrete Optimization Assignment:

Any Integer

1 Problem Statement

This assignment is designed to familiarize you with the programming assignment infrastructure. All of the assignments in this class involve writing an optimization algorithm (i.e. a program) and submitting your results with the provided submission script. In this assignment, you will write a very simple program to submit a *positive integer* of your choice to the course. Your grade on this assignment will be determined by the size of the integer you submit to the grader.

2 Assignment

Write an algorithm to submit a positive integer to the course. Try submitting different integers in the range from -10 to 10 to see how the grader feedback changes based on the number you submit.

3 Data Format Specification

The output is one line containing your integer, i.

```
[Output Format]
i
```

Examples

```
[Output Example]
-3
```

Any Integer - solver.py

```
def solve_it(input_data):
  # return a positive integer
  return '0'

if __name__ == '__main__':
  print('This script submits the integer: %s\n' % solve_it(''))
```

```
def solve_it(input_data):
  # return a positive integer
  return '7'

if __name__ == '__main__':
  print('This script submits the integer: %s\n' % solve_it(''))
```

```
> python solver.py
This script submits the integer: 7

>
```

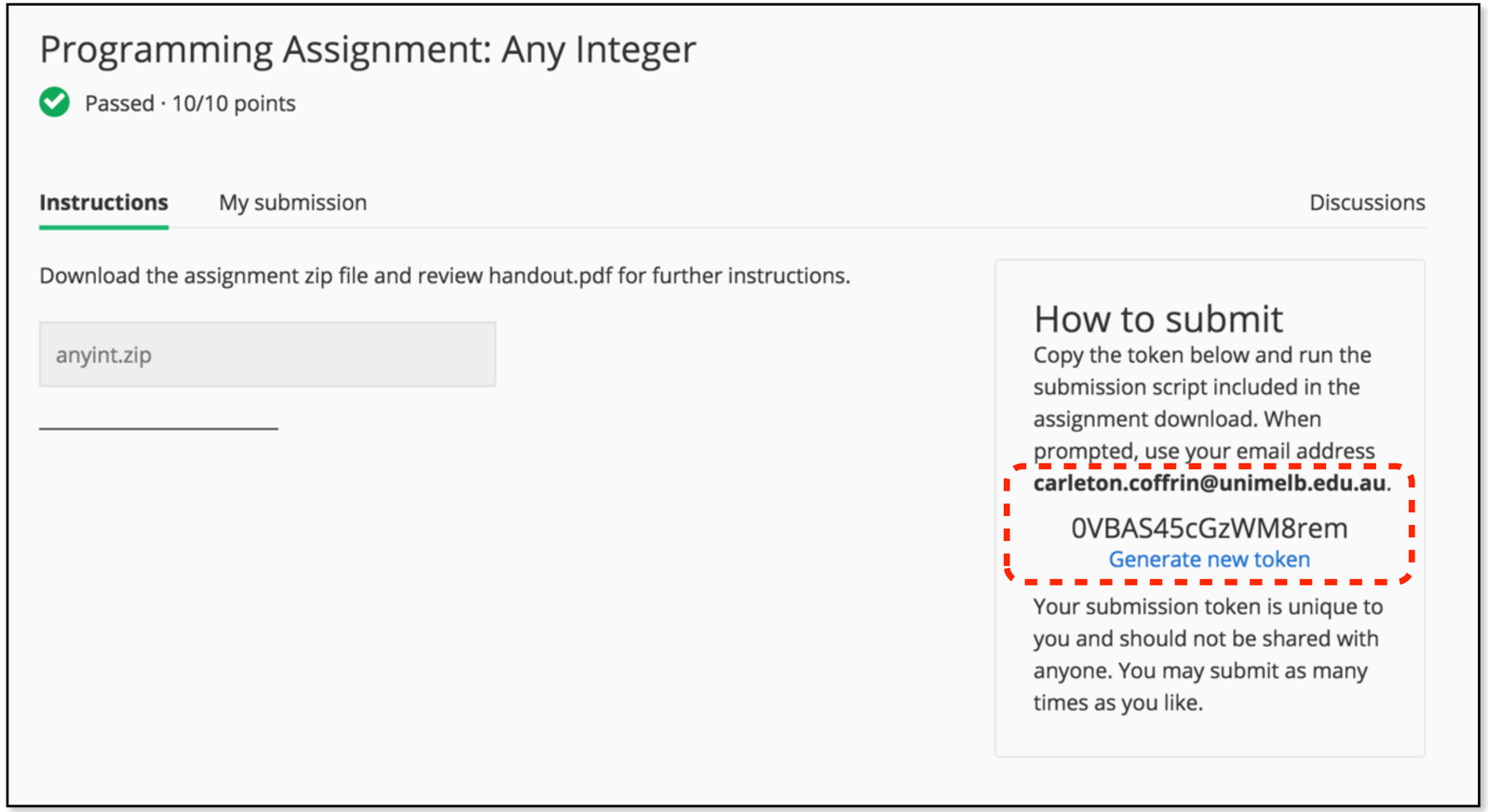
Any Integer - Using submit.py

```
> python solver.py
'This script submits the integer: 7

>
```

```
> python submit.py
==
== Any Integer Solution Submission
==
Hello! These are the assignment parts that you can submit:
1) Send an Integer
0) All
Please enter which part(s) you want to submit (0-1):
```

```
Please enter which part(s) you want to submit (0-1): 1
Submitting:
7

== Computations Complete ...
User Name (e-mail address):
```

Any Integer - Credentials

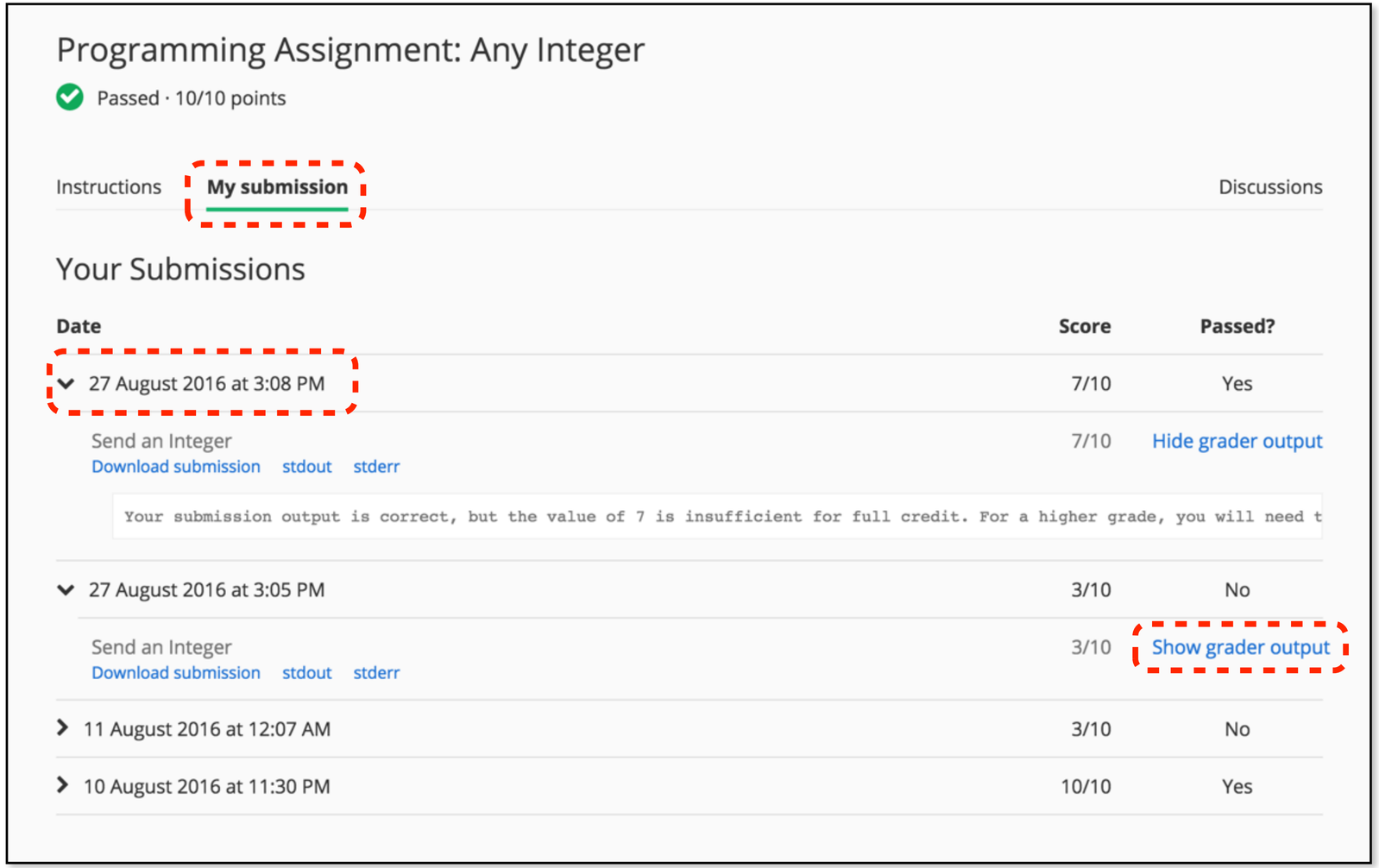


Any Integer - Using submit.py

```
Please enter which part(s) you want to submit (0-1): 1
Submitting:
7

== Computations Complete ...
User Name (e-mail address):
```

```
== Computations Complete ...
User Name (e-mail address): carleton.coffrin@unimelb.edu.au
Submission Token (from the assignment page): 0VBAS45cGzWM8rem

== Connecting to Coursera ...
Submitting 1 of 1 parts

== Coursera Responce ...
Your submission has been accepted and will be graded shortly.

>
```

Any Integer - Feedback



Final Remark

- Everything Provided in Source Code
  - Hack it!
- Contribute Your Hacks
  - github.com/discreteoptimization

Have Fun!

- This is the easy part :-)