CSC 151 Spring 2020
Topic: Analyzing Procedures

April 13, 2020

Day 30

Self-Checks

Explain whether each of these it is a constant time or linear time algorithm:

- cdr
- cddr
- list-ref
- vector-ref
- map
- iota

Self-Checks

Explain whether each of these it is a constant time or linear time algorithm:

- cdr: constant
- cddr: constant
- list-ref: linear
- vector-ref: constant
- map: linear
- iota: linear

Self-Checks

Explain briefly what each of the following commands from the reading does, and how it works.

```
(define alphabetically-first-1-counter (counter-new "alphabetically-first-1"))
(define alphabetically-first-2-counter (counter-new "alphabetically-first-2"))
(define counters (list alphabetically-first-1-counter alphabetically-first-2-counter))
```

Self-Checks

Explain briefly what each of the following commands from the reading does, and how it works.

```
> (for-each counter-reset! counters)
> (alphabetically-first-1 animals)
> (alphabetically-first-2 animals)
> (for-each counter-print counters)
```

Analyzing Procedures

Think about these questions before moving on to the next slide.

1. What does it mean for a piece of code to “perform” well?
2. How can we measure the performance of code?

Analyzing Procedures

1. What does it mean for a piece of code to "perform" well?

Running the code uses minimal resources on the computer.
One piece of code performs better than another if the first uses fewer steps to produce its result given the same input.
The code should produce the right answer.

2. How can we measure the performance of code?

Count events that we care about (fewer would be better)
Display the execution of the program.
Use a timer.
Analyze the code to estimate its steps for an arbitrary input.

Lab Time

Upcoming Work

Please submit: All problems before the Extras by Monday 4/15 at 10:30 pm.
No documentation needed.

To: csc-151-02-grader@grinnell.edu
Subject: CSC 151-02 Lab 4/13

Exam 3 will is due Thursday at 10:30pm Central