CS 354: Programming Languages

Instructor

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Meetings

Lectures:	MoWe 4:30–5:45	CCP-260
Office hours:	TuTh 4:20–5:20	CCP-359
	by appointment	CCP-359

Our Teaching Assistant / Grader is Joey Kitzhaber:

> josephkitzhaber@u.boisestate.edu

I am happy to answer questions by email:

> http://cs.boisestate.edu/~buff/files/EmailQuestions.pdf

Catalog Description

Principles of programming languages: design, syntax, semantics, information binding, strings, arithmetic, input/output, recursion and extensibility.

PREREQ: CS 321.

In addition, familiarity with Unix, C, and Java is assumed.

Goals

At the end of the course, the student will be able to do the following:

- identify characteristics of procedural, object-oriented, functional, and scripting languages

- describe the phases of program translation

- explain different forms of binding, visibility, scoping, and lifetime management

- demonstrate the differences between various parameter passing methods

- explain the concepts of encapsulation, abstraction, inheritance, and polymorphism

- write programs in languages based on several different programming paradigms

- evaluate a language on the basis of the various features which it supports

Students also experience working on a team, developing a website, and giving an oral presentation.

Textbook

- *Programming Language Pragmatics*, Michael L. Scott, Fourth edition, Elsevier: Morgan Kaufmann, 2015, ISBN: 9780124104099.

Other Course Material

This syllabus, lecture slides, assignments, and other material is available in what we'll called our "pub" directory. On our Computer Science Lab (CCP-240, CCP-241, and CCP-242) computers, served by onyx.boisestate.edu and its nodes, this directory is mounted at:

        ~jbuffenb/classes/354/pub

This directory is read-only. So, you might want to copy it, perhaps to your local computer. Since onyx services Secure Shell (SSH) requests, you can use SSH clients (e.g., scp and sftp) to do so. However, beware: It contains symbolic links to parent directories, and scp -r will unconditionally follow them, thereby looping forever. To avoid this, use sftp or tar/ssh, as needed.

On our Canvas website, a copy of this directory can be accessed via the "Files" tab on the left sidebar. This copy is updated less frequently, since bulk upload is slow. Furthermore, although lecture slides can be viewed, the Canvas PDF viewer will not follow links to other files.

Office hours for our Teaching Assistants are at:

```
onyx:~jbuffenb/classes/354/pub/TutorOfficeHours
```

You may also find the following local guide useful:

```
onyx:~jbuffenb/classes/354/pub/etc/cs-linux.pdf
```

In particular, it explains how to use SSH.

Grading

At the end of the course, a letter grade is assigned to each student according to rank among classmates, which is determined from numerical scores assigned for performance of these activities:

Activity	Weight
Textbook Assignments	10%
Language Assignments	30%
Interpreter Assignments	20%
Language Website	20%
Exam	10%
Final	10%

Homework is due at 11:59PM, Mountain Time, on the day it is due. Late work is not accepted. To submit your solution to an assignment, login to a lab computer, change to the directory containing the files you want to submit, and execute:

```
submit jbuffenb class assignment
```

For example:

```
submit jbuffenb cs101 hw1
```

The `submit` program has a nice `man` page.

When you submit a program, include: the source code, sample input data, and its corresponding results.

Scores are posted near my office, as they become available. You are encouraged to check your scores to ensure they are recorded properly. If you feel that a grading mistake has been made, contact me within two weeks of the date that work is returned.

Textbook Assignments (TA)

Several problem sets are assigned, from the exercises at the end of each chapter of the textbook. Students work on these individually, not as teams.

Language Assignments (LA)

Several programs are assigned, to be developed in what are expected to be unfamiliar programming languages (e.g., Scheme). Translators for these languages are available on the Linux computers in the Computer Science lab. Students work on these individually, not as teams.

Interpreter Assignments (IA)

A couple of programs are assigned, to extend a provided Java implementation of a simple programming-language interpreter. A Java development environment is available on the Linux computers in the Computer Science lab. Students work on these individually, not as teams.

Language Website (LW)

Each team of students develops a website dedicated to a particular, unfamiliar, programming language. Teams are formed, and languages are assigned, randomly. Several milestones are assigned. Open-source translators for these languages are available on the Linux computers in the Computer Science lab. Results are shared in an team-delivered oral presentation. Of course, students work in teams.

Exam and Final

An exam and a final are administered. These are in-class, open-note, and open-textbook (but no other books) tests. Of course, students work on these individually.

Makeup examinations are not normally administered.

Source-Code Documentation

Good documentation and programming style is very important. Your programs must demonstrate these qualities for full credit. Good documentation and programming style includes:

- heading comments giving: author, date, class, and description
- function/procedure comments giving description of: purpose, parameters, and return value
- other comments where clarification of source code is needed
- proper and consistent indentation
- proper structure and modularity

For more information, and examples, see:

> www.cs.swarthmore.edu/~newhall/unixhelp/c_codestyle.html

Academic Integrity

The University's goal is to foster an intellectual atmosphere that produces educated, literate people. Because cheating and plagiarism are at odds with that goal, those actions shall not be tolerated in any form. Academic dishonesty includes assisting a student to cheat, plagiarize, or commit any act of academic dishonesty. Plagiarism occurs when a person tries to represent another person's work as his or her own or borrows directly from another person's work without proper documentation.

If a student engages in academic dishonesty, the student may be dismissed from the class and may receive a failing grade. Other penalties may include suspension or expulsion from the University.

Much more information about academic integrity, including examples of academic dishonesty, is at:

> http://cs.boisestate.edu/~buff/files/www-integrity.pdf

If you are unsure about a particular behavior, ask your instructor.

Labs and Safety

Each student receives an account on the cluster of computers in the Computer Science Labs: CCP-240, CCP-241, and CCP-242. The cluster comprises a server named `onyx.boisestate.edu` and a set of nodes with shared home directories. It is remotely accessible, via SSH. The cluster runs the Linux and Windows operating systems, via VMware.

Physical access requires building and room access. After-hours building access, and all-hours room access, require an authenticated proximity-type student-identification card.

You are responsible for understanding and obeying lab rules:

> https://www.boisestate.edu/coen-its/labs/lab-rules/

Schedule

Week	Date	Topic	Assigned	Due	Reading
1	Aug 23 Mon				
	Aug 25 Wed				
2	Aug 30 Mon				
	Sep 01 Wed				
3	Sep 06 Mon	Labor Day			
	Sep 08 Wed				
4	Sep 13 Mon				
	Sep 15 Wed				
5	Sep 20 Mon				
	Sep 22 Wed				
6	Sep 27 Mon				
	Sep 29 Wed				
7	Oct 04 Mon				
	Oct 06 Wed				
8	Oct 11 Mon				
	Oct 13 Wed				
9	Oct 18 Mon	Exam			
	Oct 20 Wed				
10	Oct 25 Mon				
	Oct 27 Wed				
11	Nov 01 Mon				
	Nov 03 Wed				
12	Nov 08 Mon				
	Nov 10 Wed				
13	Nov 15 Mon				
	Nov 17 Wed				
14	Nov 22 Mon	Thanksgiving			
	Nov 24 Wed	Thanksgiving			
15	Nov 29 Mon	LW#2 Presentations			
	Dec 01 Wed	LW#2 Presentations			
16	Dec 06 Mon	LW#2 Presentations			
	Dec 08 Wed	LW#2 Presentations			
17	Dec 15 Wed	Final: 5:00-7:00			