

CS 100 - Homework 3

Deadline:

Due by 11:59 pm on Friday, September 14

How to submit:

- Go to the course Moodle site.
 - (either log into myHumboldt and click the Moodle button in the upper right corner,
 - or get to it via learn.humboldt.edu,
 - ...and then click the "my moodle" button in the upper right under the big yellow moodle logo to get your list Moodle course sites,
 - or follow the link from the public course web site, users.humboldt.edu/smtuttle/f12cs100)
- Once you are at the course Moodle site, find the section titled "Submit your HOMEWORK FILES here",
 - and click on the link "Click HERE to submit Homework 3".
- You should see, in the middle of the page, a place where you can upload your homework file.
 - Note that I believe I set this up to permit multiple submissions. I couldn't set it to "unlimited", because the largest number available was 20, but that seems like it should be ample.
 - Also note that I will grade the latest file submitted before the deadline unless you e-mail and tell me otherwise.

Purpose:

To practice some more of the Prolog concepts discussed in class, as well as to practice distinguishing between natural language sentences that are and are not statements (in a logical sense).

Important notes:

- You do not have to run or execute any of these answers in Prolog (although you may if you wish).
- Type:
 - your name, then
 - the problem number and your answer for each of the following questions,
 - into a file named `cs100hw3` (optionally followed by your name, including only letters and underscores -- NO blanks or other unusual characters)
 - Its format may be `.txt`, `.odt`, `.pdf`, `.doc`, `.docx`, or `.jpg`. (Please ask me before submitting files of other formats.)

- It is possible that your answers may be compiled and posted to the course Moodle site.

The Problems:

Problem 1:

You've seen examples of Prolog rules and facts in class.

Write a Prolog rule of your choice, different from any given in class, involving predicates that are different than any given in class or in this homework, whose right hand side includes at least two predicates.

Also include a list of at least 6 Prolog facts such that your rule could be proven true if your rule and these facts were loaded into the Prolog interpreter as the current knowledge base.

(While you do not have to actually try these in `swipl`, your rule and facts do have to follow Prolog's syntax rules, for full credit.)

Problem 2:

For each of the following statements, restate it as an appropriate, syntactically-correct Prolog fact. (Some of these are adapted from the course textbook's instructor's materials.)

2 part a

Harrisburg is the capitol of Pennsylvania.

2 part b

Banana splits are scrumptious.

2 part c

Salt Lake City is a city in Mexico.

2 part d

Thomas is Terry's brother.

2 part e

Cream of broccoli soup contains broccoli and milk.

Problem 3:

For each of the following Prolog facts, restate it as an appropriate natural-language logical statement.

3 part a

```
area(united_states, 9826630).    % in square kilometers
```

3 part b

```
builder(market_square, rousseau_and_company).
```

3 part c

```
retail_space(market_square).
```

3 part d

```
book_overdue(tom_jones, hitchhikers_guide).
```

3 part e

```
handedness(sharon, left).
```

Problem 4:

For each of the following from Exercise 2.1, part I, on p. 32 of the course textbook, determine whether it is a logical statement or not. Put the sentence number, and if it is a logical statement, answer "Statement"; if it is not a logical statement, answer "Nonstatement". Assume typical contexts for each.

sentences 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, 20, 21