CSE 4/563 Knowledge Representation
Professor Shapiro
Homework 9
Maximum Points: 49
Due: 1:30 PM, Thursday, December 2, 2010

November 18, 2010

You must turn in the answers to this homework set in a submitted file by 1:30 PM on the date shown above.

The submitted file must be named hw9.*ext*, for an appropriate value of *ext*. **Include your name(s) and user name(s) at the top of the file.** Submit that file by executing the Unix command

`submit_cse463 hw9.ext`

or

`submit_cse563 hw9.ext`

whichever is appropriate for you. The file can be a text file, or produced by some word processing software, but it must be formatted so it is easy to read.

Make a copy of the file `/projects/shapiro/CSE563/Homeworks/hw9.snepslog`. Add comments to the top giving your name(s) and user name(s). Edit the file so that your SNePSLOG inputs come after each comment containing the exercise. Submit this file as `hw9.snepslog`.

Using `demo`, run your `hw9.snepslog` file. Copy or transcribe that run into your answer file, edit it for readability, but only for readability, and submit that file as `hw9.ext` for an appropriate value of `ext`.

A copy of the file `/projects/shapiro/CSE563/Homeworks/hw9.snepslog` follows, formatted to look like a standard homework exercise.

1. (1) Put SNePSLOG in mode 3

2. (3) Define a case frame for Before so that [Before(x,y)] = day [x] is before day [y]. Include an appropriate description string.

3. (3) Define a case frame for Bought so that [Bought(p,x,d)] = person [p] bought item [x] on day [t]. Include an appropriate description string.

4. (3) Define a case frame for Has so that [Has(p,x,d)] = person [p] has item [x] on day [t]. Make all but the last slot the same as for Bought. Include an appropriate description string.

5. (3) Assert of the seven days, day1, day2, day3, day4, day5, day6, and day7 that day1 is before day2, day2 is before day3, ..., and day6 is before day7.

6. (3) Assert that John bought car1 on day2, house1 on day4, and bed1 on day6.

7. (2) Ask what day is before what other day. [There should be 6 answers.]

8. (2) Ask what items John has on what days. [There should be no answer.]

9. (3) Give a path-based inference rule that will make Bought(p,x,d) imply Has(p,x,d).

10. (1) Again ask what items John has on what days. [There should now be three answers.]

11. (1) Use `describe-terms` to have SNePS describe all the terms in the KB in English.

12. (2) Ask what John has on day5. [There should be no answer.]

13. (3) Redefine your path-based inference rule so that if someone has something on one day, that person has that item on all subsequent days.

14. (1) Again ask what John has on day5. [car1 and house1]

15. (3) Using `&=>` give a rule that says on a day that's before a day when someone has bought something, that person doesn't have the item.

16. (3) Using `askifnot`, ask on what days John doesn't have things. [There might be no answer.]

17. (3) Redefine your path-based inference rule (if necessary), so that this `askifnot` gives some answers.

18. (1) Try the `askifnot` again. [There should be three answers.]

19. (2) Ask what John has on day1. [not car1]

20. (3) Redefine your path-based inference rule so that if someone doesn't have something on some day, that person doesn't have that item on any earlier day.

21. (1) Again ask what John has on day1. [neither car1, nor house1, nor bed1.]

22. (1) Ask what John has on day5. [car1 and house1, but not bed1.]

23. (1) Ask what John has on day7. [car1, house1, and bed1.]