

COSC 2P93 Study Sheet

Note: The final exam is substantially longer than this, and includes additional types of tasks, such as DFG, mystery programs, and much larger programs.

The following is presented to be better prepared for variable unification and list manipulation.

Give the final results of the following attempts at variable unification (if it fails, say why):

a) $H=3+9$.

b) Tallgeese is mobilesuit(0).

c) $[1,2,3]=[H,M,N|T]$.

d) $[1,2,3]=[H,M,N,T]$.

e) `assert(match(stick),retract(match(X))`.

f) `assert(match(stick),retract(match(X)),retract(match(X))`.

Programming Task:

Swap first and last elements in a list.

eg.

?- `transfer([a,b,c,d,e,f],X)`.

`X = [f,b,c,d,e,a]`.

Programming Task:

Write a predicate that, when given a list of numbers, raises each successive element to a higher power.

eg.

?- `multiplaction([1,2,3,4],X)`.

`X = [1,4,9,256]`.

Constraint Logic Programming:

(Note: V is a unification of domains. Thus, $1..3V5..7$ means "1 to 3, or 5 to 7")

List the possible values for X , Y , and Z for the following:

$[X,Y,Z]$ ins $1..3V5V7..9$,

$Y\# = X+1$,

$Z\# = Y+2$.

X : _____

Y : _____

Z : _____

$[X,Y,Z]$ ins $1..3V5V7..9$,

$Y\# = X+1$,

$Z\# > Y$.

X : _____

Y : _____

Z : _____

Hints:

For programming tasks, remember to create additional predicates whenever it may be useful.

For CLP, start by looking at the domain of one variable, and then try to figure out what the constraints would mean for the other variables. Then, once the new variables have updated (more limited) domains, propagate those changes back to the original variable (repeat if necessary).

For the final exam, for mystery programs, consider relabelling all of the variables so the descriptions do not distract you, and so the same relative positions in argument lists are always treated as being the same arguments. Then, consider working out concrete examples to see if you can spot a pattern.