

Stat 330

Homework 1

Sean Gordon

January 17, 2020

1)

(a) $\{T\ T\ T\}, \{T\ T\ H\}, \{T\ H\ T\}, \{T\ H\ H\},$
 $\{H\ T\ T\}, \{H\ T\ H\}, \{H\ H\ T\}, \{H\ H\ H\}$

(b) $A = \{T\ T\ H\}, \{T\ H\ T\}, \{H\ T\ T\}$
 $B = \{\}$
 $C = \{\}$

(c) ω

2a)

fib(0, 0).
fib(1, 1).

fib(N, Res) :-
 N > 1,
 N1 is N-1,
 N2 is N-2,

 fib(N1, R1),
 fib(N2, R2),

 Res is R1+R2.

2b)

rev(L, Res) :-
 revHelper(L, [], Res).

 revHelper([], Accum, Accum).
 revHelper([H|T], Accum, Res) :-
 number(H),
 revHelper(T, [H|Accum], Res);

 revHelper(H, [], Temp),
 revHelper(T, [Temp|Accum], Res).

3a)

sentence([]).

sentence(S) :- s(S, []).

s(L1, L2) :- f(L1, L2).

s(L1, L4) :- t(L1, L2), n(L2, L3), t(L3, L4).

f(L1, L5) :- if(L1, L2), b(L2, L3), then(L3, L4), s(L4, L5).

f(L1, L7) :- if(L1, L2), b(L2, L3), then(L3, L4), s(L4, L5), else(L5, L6), s(L6, L7).

b(L1, L4) :- t(L1, L2), e(L2, L3), t(L3, L4).

if([if|Tail], Tail).

then([then|Tail], Tail).

else([else|Tail], Tail).

t([x|Tail], Tail).

t([y|Tail], Tail).

t([z|Tail], Tail).

t([1|Tail], Tail).

t([0|Tail], Tail).

e([<|Tail], Tail).

e([>|Tail], Tail).

n([+|Tail], Tail).

n([-|Tail], Tail).

n([=|Tail], Tail).

