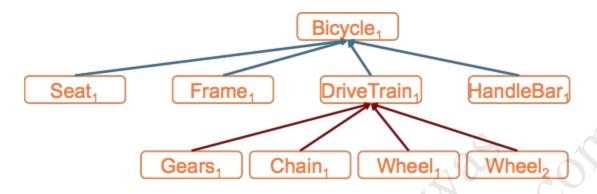CS561 Artificial Intelligence
Quiz 6a
Wednesday, March 12, 2014

Name:
Student ID:
Student email:

Given this PartOf relation hierarchy for Bicycle, answer the questions below:

1. [5 pts] The PartOf relationship is transitive, give an example using the bicycle hierarchy above.

PartOf(Wheel, DriveTrain) ∧ PartOf(DriveTrain, Bicycle) => PartOf(Wheel, Bicycle)

Ideally written in FOL, but can be in english. Gears or Chain can be used in place of Wheel.

2. [5pts] Define the structural relation among the parts of Bicycle, making sure that a bicycle must have 2 wheels.

∀ x Bicycle(x) => (
$\exists s, dt, f, h, g, c, w1, w2 \ (Seat(s) \land Frame(f) \land Drivetrain(dt) \land Handlebar(h) \land Gear(g) \land$
$Chain(c) \land Wheel(w1) \land Wheel(w2) \land$

$PartOf(s,x) \land PartOf(f,x) \land PartOf(dt,x) \land PartOf(h,x) \land$

$PartOf(g,dt) \land PartOf(g,dt) \land PartOf(w1,dt) \land PartOf(w2,dt) \ ) \ )$