UNIVERSITY OF LOUISVILLE
J.B. SPEED SCHOOL OF ENGINEERING

Computer Engineering and Computer Science Department

# CECS545-Artificial Intelligence: First Order Logic-Exercises

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# Ch 8 Exercises (from AIMA 2nd Ed.)

8.6 Represent the following sentences in first-order logic, using a consistent vocabulary (which you must define):

- a) Some students took French in spring 2001.
- b) Every student who takes French passes it.
- c) Only one student took Greek in spring 2001.
- d) The best score in Greek is always higher than the best score in French
- e) Every person who buys a policy is smart.
- f) No person buys an expensive policy.
- g) There is no agent who sells policies only to people who are not insured.
- h) There is a barber who shaves all men in town who do not shave themselves.

# 8.6 Cont.

- i) A person born in the UK, each of whose parents is a UK citizen or a UK resident, is a UK citizen by birth
- j) A person outside the UK, one of whose parents is a UK citizen by birth, is a UK citizen by descent.
- k) Politicians can fool some of the people all of the time, and they can fool all of the people some of the time, but they can't fool all of the people all of the time.

# Exercises Cont.

8.15 Explain what is wrong with the following proposed definition of adjacent squares in the wumpus world:

$$\forall x, y \; Adjacent([x,y],[x+1,y]) \wedge Adjacent([x,y],[x,y+1]).$$

# Exercises Cont.

8.16 Write out the axioms required for reasoning about the wumpus's location, using a constant symbol *Wumpus* and a binary predicate *In(Wumpus, Location)*. Remember that there is only one wumpus.

# The End!