Scorpling Flugs

Terms

- Scorple

- Flug

Axioms

1. GIven two distinct flugs, either the first scorples the second or the second scorples the first (the possibility of both is not excluded).

2. No flug scorples itself.

3. If A, B and C are flugs (not necessarily distinct), such that A scorples B and B scorples C, then A scorples C.

4. There are exactly four distinct flugs.

Definitions

1. A flug that scorples every other flug is called a **pushy** flug.

2. A flug that is scorpled by every other flug is called a **passive** flug.

3. Given two distinct flugs A, C. If there is a flug B distinct from both A and C for which A scorples B and B scorples C, we say A **indirectly** scorples C. If there is no such flug B we say A **directly** scorples C.

4. The **scorple number** of a flug A is the number of flugs that A scorples.

Theorems

1. If A indirectly scorples C, then A scorples C.

2. If A and B are distinct flugs and A scorples B, then B does not scorple A.

3. If A and B are distinct flugs, either A scorples B or B scorples A, but not both.

4. There cannot be two or more pushy flugs.

5. There is at least one pushy flug.

6. If A scorples B and C is distinct from A, then A scorples C or C scorples B (possibly both).

Models

- A model of an axiomatic system is:

  1. an Interpretation of the undefined terms of that system into some carefully specified context where

  2. each interpreted axiom "makes sense" in this carefully specified context.

- If any statement of an axiomatic system can be proven using just logic and the axioms of that system, then that statement must "make sense" in any model of that system.

- If a statement of an axiomatic system does not make sense in a particular model of that system, then . . ..

Homework 1

1. Develop a **model** of the axiomatic system of the Scorpling Flugs.

2. Prove the specific problem of the following form assigned to you in class.

   Develop an interpretation of the axiomatic system of the Scorpling Flugs in which three of the axioms "make sense" but the fourth does not.

3. Be sure you understand that your model from problem 1 and your interpretation from problem 2 tell you that neither the fourth axiom (the one in problem 2 where your interpretation does not make sense) or its logical opposite (negation) can be proven in the axiomatic system of the Scorpling Flugs.

4. Prove the theorem assigned to you in class.

5. Select an odd numbered conjecture and either prove it or show it cannot be proved in the axiomatic system of the Scorpling Flugs.

Conjectures:

1. There is at least one passive flug.

2. There cannot be two or more passive flugs.

3. There are two distinct flugs where the first indirectly scorples the second. (Indirect scorpling occurs.)

4. There are two distinct flugs where the first directly scorples the second. (Direct scorpling occurs.)

5. Every flug indirectly scorples some other flug.

6. Every flug directly scorples some other flug.

7. No two flugs have the same scorple number.