

Object Oriented Design and Programming

3rd Tutorial

Lemmings

Consider the following simplified version of an adventure game in which lemmings move from room to room:

Each room is connected to another room to its West, and to a further room to its East. The connections are symmetric, i.e. if room A is connected to its East to room B, then room B is connected to its West to room A.

Lemmings share the same DLM, Direction of Lemming Movement, which may be East or West. The DLM is initially West, but it may be changed.

When a lemming is woken up, it moves to the room which is in the direction of the DLM from the room it is currently in.

- a Draw an UML object model class diagram outlining the adventure game as described in the previous paragraphs.
- b Write C++ class declarations (i.e. no function bodies) that support the adventure game.
- c Write a main program that
 - i) creates three rooms r1, r2, r3,
 - ii) connects r2 to the West of r1, r3 to the West of r2, and r1 to the West of r3,
 - iii) creates lemming Lala in room r1, and lemming Lilo in room r3,
 - iv) wakes up Lilo, then wakes up Lilo again, and then wakes up Lala,
 - v) sets the DLM to East,
 - vi) wakes up Lilo.
- d Write the bodies of all constructors and functions from part b.