Worksheet 17: Michael Collins

1. Assume you have the NAMED-OBJECT and THING classes defined as in OBJTYPES.SCM for the project. Define a new class PERSON which inherits from the THING class. It should have an additional state variable, AGE. When created, we should state the person's name, age and location, for example:

   (define mike (create-person 'mike 21 G484))

creates a mike object with his correct age, and location G484 (assuming that G484 has previously been defined as a location). The PERSON class should have additional methods age? and have-birthday. The method age? returns the age of the object, have-birthday increments the age by 1 year, and returns the new age.

2. Next, create a new BUILDING class, where:

   - The BUILDING class inherits directly from the NAMED-OBJECT class.
   - The internal state variables for the building are a name, an x-coordinate, a y-coordinate, and an architect variable which is of the PERSON type.
   - The class should contain methods for: X-COORD, Y-COORD, SET-X!, SET-Y!, ARCHITECT-NAME. In addition the class should have a method DESCRIBE which prints “I am the <name> building, located at (<x-coordinate>, <y-coordinate>)”. As a final point, SET-X! and SET-Y! should be implemented so that they change the coordinate, then make a call to DESCRIBE.
2. Now create a **GEHRY-BUILDING** class. It should have the **BUILDING** class as its superclass. These objects always have **gehry** (a previously defined person) as their architect. The new class should have a *z-coordinate* as an additional internal variable (Gehry buildings seem to have an additional piece of uncertainty concerning their location). Another internal variable, initially set to 0, is **num-fire-alarm-tests**. It has an additional method **TEST-FIRE-ALARM** which displays a message “Testing fire alarm” and increments the **num-fire-alarm-tests** variable. The **DESCRIBE** method should behave the same way as for the **BUILDING** class, but in addition it should report the z-coordinate, the number of fire alarm tests, followed by a line “I was designed by a famous architect.” What happens if the **SET-X!** or **SET-Y!** methods are used?