

Study questions for Lecture 12 - Answers

1. List the six different kinds of generalization or uses of inheritance, and for each indicate which satisfies the "is a" rule. Provide a brief explanation for your answers.

(As in class notes)

2. Suppose that there is an "on" and a matching "off" variation for each of a set of commands. This means that to undo an executed command you just execute the opposite of the one that was just performed. In the example in the book, the remote has an undo button. How is the book example designed so that when the undo button is pushed the correct opposite command is performed?

a) Each command is a subclass. Each subclass has an execute() method to perform that command, and an undo() method to do the opposite. The remote control class has an undoCommand class variable which holds the on or off command (object) just executed. It also has an undoButtonWasPushed() method that is executed if the Undo button is pushed. This method executes the undo() method for the last command that was executed.

b) More complex state management. In this case, when a command is executed, it is stored at the undo variable on the remote, just as before. When the undo button is pushed the command is retrieved and its undo() method is executed. This time, each command has a state variable that stores information about the previous command, which it gets from a state variable in the device object. It uses this to determine which "opposite" command to execute as part of the undo. It needs this because undo for a command does not correspond to a single opposite.