

Inheritance Worksheet (Wednesday)

A. Design Problem

The following is a description of two classes associated with this design problem.

1. DVDPlayer

a. Data Members

offOn - tells whether the DVD is on or off
trackNum - number of current track

b. Methods

- stop - stops playing
- play - continues playing at current track
- pause - stop playing staying at current track
- eject - eject the DVD
- nextTrack - moves forward by one track
- prevTrack - moves backward by one track
- selectSubMenu - selects a menu from the screen
- turnOnOff - turns DVD on or off

2. VCR

a. Data Members

offOn - tells whether the VCR is on or off

b. Methods

- stop - stops playing
- play - continues playing at current tape location
- pause - stop playing staying at current tape location
- eject - eject the tape
- rewind - rewinds the tape
- record - starts recording
- SpEpMode - switches between SP and EP mode.
- medium - returns the recording medium
- capacity - returns the recording capacity (in hours)
- turnOnOff - turns VCR on or off

3. What you must implement

You must define a set of classes and an interface which satisfy the following requirements:

- a. You must avoid code duplication in your hierarchy.
- b. You must define a base class that allow us to pass to a method either a DVDPlayer or a VCR. Pick a name for the base class that reflects the appropriate functionality.
- c. We consider the VCR a recording device. Define an interface (named RecordingDevice) which allow us to treat a VCR as a recording device.
- d. You just need to provide a diagram showing the classes you define, the interface and the relationship between them.

B. Using your design write the code implementing the classes/interface you defined above. Feel free to define parameters and return types for methods as you understand are necessary.

C. Write a class that illustrates how to define and use polymorphic references using the previously defined class(es) and interface(s).