

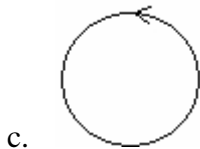
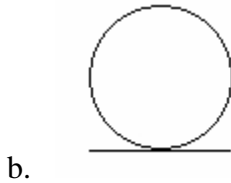
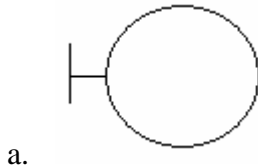
CS4233-A03 Midterm Exam

Name:

Answer the following questions as best as you possibly can. Use your time wisely. Remember that there is an Academic Honesty Policy in effect at WPI.

Part I: Short Answers

1. In a sentence or two, describe the Open-Closed principle.
2. What is the Liskov Substitution Principle?
3. In an analysis model, what do the following three symbols signify? Describe briefly what each is used for.



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9. You are writing a program that must represent a symphony orchestra. The orchestra consists of a conductor and some number of musicians. Each musician plays at least one instrument, and only plays one instrument at a given time. If you want to be able to represent the orchestra's full capabilities (that is, all of the musicians, their instruments played, and specialty pieces [most musicians have some musical pieces that they are especially known for] for each instrument), as well as the orchestra configuration for any specific performance, how would you structure your design? You have classes (as a minimum) for Orchestra, Musician, Instrument, and Conductor. Draw a UML class diagram showing the important relationships. Show multiplicity where appropriate. Remember, the purpose of the diagram is to communicate your intended design.

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10. You are designing software for a handheld device that requires the user to enter commands that direct the device's operations. You have identified the Device class that will receive the input. There are several type of input peripherals that may be used to enter commands, including a mini-keyboard, and a voice recognition input tool. Show how you would design this using the Adapter pattern. Which classes are the Adapter and Adaptees?