

Lab 9 Inheritance and Polymorphism:

For this project, we'll create an abstract Publication class as the generic base class or parent of two specialized, more specific derived or child classes, Book and Periodical. Publication will define the attributes and their related setter and getter methods common to any type of publication:

- Title
- Publisher
- Publication Date
- Subject

We don't publish and read publications. We publish and read books, magazines, and newsletters. They are more tangible, concrete entities, as opposed to publications which are somewhat vague and meaningless. Publication is a concept that has no reason to exist other than to serve as the general category to which books and periodicals belong. Therefore, we wouldn't create instances of it. Java enables us to prevent such classes from being instantiated by marking them as "abstract", as in public abstract class Publication.

Book will extend Publication and add some additional specialized attributes and their related setter and getter methods:

- ISBN
- Library of Congress number
- Author
- Number of pages
- Copyright year
- Edition

Magazine will extend Publication and add some additional specialized attributes and their related setter and getter methods:

- Publication frequency (daily, weekly, bi-weekly, monthly, quarterly, etc.)
- Editor

Newsletter will extend Publication and add some additional specialized attributes and their related setter and getter methods:

- Publication frequency (daily, weekly, bi-weekly, monthly, quarterly, etc.)
- Editor
- Owner

In addition to the setter and getter methods for their attributes, all of the classes will have a toString method and, for the sake of brevity, one constructor that accepts parameters for all their attributes. The toString methods of the derived classes will invoke the toString method of the base class to display values for the base class attributes they inherit.

After creating the Java file for class section, you need to create an application that uses it. We call these applications driver programs. The driver program will instantiate 3 objects of the Book, Magazine, and Newsletter classes then add all of them to an ArrayList of the Publication class. Next the driver will pass the ArrayList to a method that uses the Java for each or enhanced for loop statement to iterate through the ArrayList and invoke the toString method of each object it encounters. When a Book object is encountered, it should invoke the Book toString() method. When a Periodical object is encountered, it

should invoke the Periodical toString() method.

Provide your Java source code for the Publication, Book , Magazine, and Newsletter classes and the driver program. Since we have multiple files, compress them together into a file such as CIS131-DFreitag-Lab9.zip and then upload it to D2L.