

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
Information and Computer Science Department
ICS202: Data Structures
HOMEWORK 1 (Term 062)
Due Date: Monday, March 5th, 2007

Program description:

A Book is described as follows

```
public class Book implements Comparable
{
    private String Title;
    private int Status;
    private String Author;
}
```

You must:

- (a) Create a **Book** class that implements Comparable interface. The class has:
 - (i) Three instance variables, **Title**, **Status** and **Author**
 - (ii) Two constructors with the following headers:

```
public Book ()
public Book (double Title, String Author)
```
 - (iii) **get** (accessor) methods for all the instance variables.
 - (iv) **void setStatus(int s)** method to set the status of the book
 - (v) A status value of 1 means the book has been borrowed (checkedout) and status of 0 means the book is present in the library.
 - (iv) An appropriate **toString** method that would print all instance variables on the same line.
 - (v) A **compareTo** method with the following header:

```
protected int compareTo(Object obj)
```

that does the comparison based on **Title** of the Book.
- (b) Write a visitor class, SortVisitor. This visitor will have a container in which it will put association objects such that if a book that is being visited is borrowed (Status = 1) then this book will be associated with a key of String "Borrowed". If the book's status is 0, then it will be associated with a key of String "Available". This association will be placed in a container that is inside the SortVisitor class. Provide a method called getCont() that will return this container.
- (c) Write a visitor class, AvailableVisitor, that visits a container of Associations created in the above visitor and prints all the books that are available.
- (d) Write a test class, TestApplication, to test your visitors. Your program should create at least 10 objects of Book class and then use the visitors to create a container of associations and print all the books that are available.

Submission Instructions:

- All the classes for this homework must be stored in a package **ics202.hw01**.
- You must import the necessary packages needed for your program.
- You need to submit two things:
 1. A printed copy of your report at the beginning of your class on the due date.
 2. Submit your entire **ics202** package into the webCT under the Assignments option.