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//Jenet Baribeau
//CIS200-01
//Prog 1B
//LINQ queries

// File: Program.cs
// This file creates a small application that tests the LibraryItem hierarchy

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using LibraryItems;

public class Program
{
    // Precondition: None
    // Postcondition: The LibraryItem hierarchy has been tested using LINQ,
demonstrating polymorphism
    public static void Main(string[] args)
    {
        const int DAYSLATE = 14; // Number of days late to test each object's CalcLateFee
method

        List<LibraryItem> items = new List<LibraryItem>(); // List of library items
        List<LibraryPatron> patrons = new List<LibraryPatron>(); // List of patrons

        int p; // Patron index

        // Test data - Magic numbers allowed here
        items.Add(new LibraryBook("The Wright Guide to C#", "UofL Press", 2010, 14,
            "ZZ25 3G", "Andrew Wright"));
        items.Add(new LibraryBook("Harriet Pooter", "Stealer Books", 2000, 21,
            "AB73 ZF", "IP Thief"));
        items.Add(new LibraryMovie("Andrew's Super-Duper Movie", "UofL Movies", 2011, 7,
            "MM33 2D", 92.5, "Andrew L. Wright", LibraryMediaItem.MediaType.BLURAY,
            LibraryMovie.MPAARatings.PG));
        items.Add(new LibraryMovie("Pirates of the Carribean: The Curse of C#", "Disney
Programming", 2011, 10,
            "M093 4S", 122.5, "Steven Stealberg", LibraryMediaItem.MediaType.DVD,
LibraryMovie.MPAARatings.G));
        items.Add(new LibraryMusic("C# - The Album", "UofL Music", 2011, 14,
            "CD44 4Z", 84.3, "Dr. A", LibraryMediaItem.MediaType.CD, 10));
        items.Add(new LibraryMusic("The Sounds of Programming", "Soundproof Music", 1996,
21,
            "VI64 1Z", 65.0, "Cee Sharpe", LibraryMediaItem.MediaType.VINYL, 12));
        items.Add(new LibraryJournal("Journal of C# Goodness", "UofL Journals", 2011, 14,
            "JJ12 7M", 1, 2, "Information Systems", "Andrew Wright"));
        items.Add(new LibraryJournal("Journal of VB Goodness", "UofL Journals", 2007, 14,
            "JJ34 3F", 8, 4, "Information Systems", "Alexander Williams"));
        items.Add(new LibraryMagazine("C# Monthly", "UofL Mags", 2010, 14,
            "MA53 9A", 16, 7));
        items.Add(new LibraryMagazine("C# Monthly", "UofL Mags", 2010, 14,
            "MA53 9B", 16, 8));
        items.Add(new LibraryMagazine("C# Monthly", "UofL Mags", 2010, 14,
            "MA53 9C", 16, 9));
        items.Add(new LibraryMagazine("VB Magazine", "UofL Mags", 2011, 14,

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        "MA21 5V", 1, 1));

// Add patrons
patrons.Add(new LibraryPatron("Ima Reader", "12345"));
patrons.Add(new LibraryPatron("Jane Doe", "11223"));
patrons.Add(new LibraryPatron("John Smith", "54321"));
patrons.Add(new LibraryPatron("James T. Kirk", "98765"));
patrons.Add(new LibraryPatron("Jean-Luc Picard", "33456"));

Console.WriteLine("List of items at start:\n");
foreach (LibraryItem item in items)
    Console.WriteLine("{0}\n", item);
Pause();

// Check out some items
items[0].CheckOut(patrons[0]);
items[2].CheckOut(patrons[2]);
items[5].CheckOut(patrons[1]);
items[4].CheckOut(patrons[3]);
items[1].CheckOut(patrons[4]);

Console.WriteLine("List of items after checking some out:\n");
foreach (LibraryItem item in items)
    Console.WriteLine("{0}\n", item);
Pause();

//Select all the items from the list that are checked out
var checkedOut =
    from item in items
    where item.IsCheckedOut()
    select item;

foreach (var item in checkedOut)
    Console.WriteLine("{0}{1}", item, Environment.NewLine);
Console.WriteLine("----- ");
Console.WriteLine("Number of items checked out: {0}", checkedOut.Count(),
Environment.NewLine);
Pause();

//Filtered results for LibraryMediaItem
foreach (var item in checkedOut)
{
    if (item is LibraryMediaItem)
        Console.WriteLine("Media items Checked out: {1}{0}{1}", item,
Environment.NewLine);
}
Pause();

//Filtered LibraryMagazine objects.
var magazine =
    from mag in items
    where (mag is LibraryMagazine)
    select mag.Title;

foreach (var mag in magazine.Distinct())
    Console.WriteLine("Magazine List: {0}{1}", mag, Environment.NewLine);
Pause();

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//Calculate late fee for any item 14 days late.
Console.WriteLine("Calculated late fees after {0} days late:\n", DAYSLATE);
Console.WriteLine("{0,42} {1,11} {2,8:C}", "Title", "Call Number", "Late Fee");
Console.WriteLine("-----");
-");

// Caluclate and display late fees for each item
foreach (LibraryItem item in items)
    Console.WriteLine("{0,42} {1,11} {2,8:C}", item.Title, item.CallNumber,
        item.CalcLateFee(DAYSLATE));
Pause();

// Return each item that is checked out
foreach (LibraryItem item in items)
{
    if (item.IsCheckedOut())
        item.ReturnToShelf();
}

Console.WriteLine("After returning all items:\n");
foreach (LibraryItem item in items)
    Console.WriteLine("{0}\n", item);
Pause();

foreach (var i in items)
    Console.WriteLine("{0}{1}", i, Environment.NewLine);
Console.WriteLine("-----");
Console.WriteLine("Count of items checked out: {0}", checkedOut.Count(),
Environment.NewLine);
Pause();

//Library Book list displaying current loan period
var books =
    from b in items
    where b is LibraryBook
    select b;

foreach (var b in books)
    Console.WriteLine("Book Title: {0}{2}Current Loan Period: {1}{2}", b.Title,
b.LoanPeriod, Environment.NewLine);
Pause();

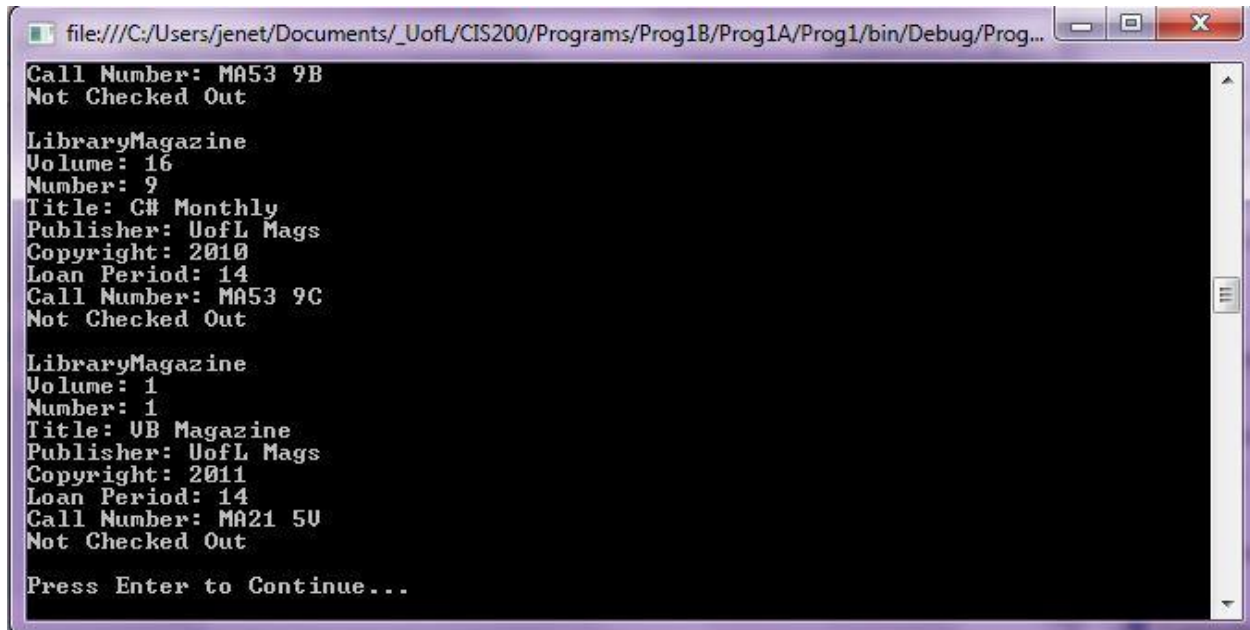
//Modified LibraryBooks that add 7 more days
foreach (var book in books)
{
    if (book is LibraryBook)
        book.LoanPeriod += 7;
    Console.WriteLine("Book Title: {0}{2}Extended Loan Period: {1}{2}",
book.Title, book.LoanPeriod, Environment.NewLine);
}
Pause();

//Entire list of items available in Library
Console.WriteLine("List of items at end:\n");
foreach (LibraryItem item in items)
    Console.WriteLine("{0}\n", item);
}

```

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// Precondition: None
// Postcondition: Pauses program execution until user presses Enter and
//                then clears the screen
public static void Pause()
{
    Console.WriteLine("Press Enter to Continue...");
    Console.ReadLine();

    Console.Clear(); // Clear screen
}
}
```



The screenshot shows a Windows console window with a title bar indicating the file path: file:///C:/Users/jenet/Documents/_UofL/CIS200/Programs/Prog1B/Prog1A/Prog1/bin/Debug/Prog... The console output is as follows:

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Call Number: MA53 9B
Not Checked Out

LibraryMagazine
Volume: 16
Number: 9
Title: C# Monthly
Publisher: UofL Mags
Copyright: 2010
Loan Period: 14
Call Number: MA53 9C
Not Checked Out

LibraryMagazine
Volume: 1
Number: 1
Title: VB Magazine
Publisher: UofL Mags
Copyright: 2011
Loan Period: 14
Call Number: MA21 5U
Not Checked Out

Press Enter to Continue...
```