Assigned in: Lesson 9

Due before: Lesson 10

Upload your finished lab to the Learning Hub (Activities / Lab 8) before the start of lesson 10.

Create a **Novel** class with private instance variables, constructor parameters, and accessor methods for “title”, “author name”, and “year published”

Create a **BookStore** class that contains an instance variable for the BookStore’s name. The BookStore class has a **main()** method which creates a BookStore object. The BookStore contains a second instance variable that is an ArrayList of Novel references; the BookStore constructor populates the ArrayList with the following data:

|  |  |  |
| --- | --- | --- |
| **Title** | **Author** | **Year Published** |
| The Adventures of Augie March | Saul Bellow | 1953 |
| All the King’s Men | Robert Penn Warren | 1946 |
| American Pastoral | Philip Roth | 1997 |
| An American Tragedy | Theodore Dreiser | 1925 |
| Animal Farm | George Orwell | 1946 |
| Appointment in Samarra | John O'Hara | 1934 |
| Are You There God? It's Me, Margaret. | Judy Blume | 1970 |
| The Assistant | Bernard Malamud | 1957 |
| At Swim-Two-Birds | Flann O'Brien | 1938 |
| Atonement | Ian McEwan | 2002 |
| Beloved | Toni Morrison | 1987 |
| The Berlin Stories | Christopher Isherwood | 1946 |
| The Big Sleep | Raymond Chandler | 1939 |
| The Blind Assassin | Margaret Atwood | 2000 |
| Blood Meridian | Cormac McCarthy | 1986 |
| Brideshead Revisited | Evelyn Waugh | 1946 |
| The Bridge of San Luis Rey | Thornton Wilder | 1927 |
| Call It Sleep | Henry Roth | 1935 |
| Catch-22 | Joseph Heller | 1961 |
| The Catcher in the Rye | J.D. Salinger | 1951 |
| A Clockwork Orange | Anthony Burgess | 1963 |
| The Confessions of Nat Turner | William Styron | 1967 |
| The Corrections | Jonathan Franzen | 2001 |
| The Crying of Lot 49 | Thomas Pynchon | 1966 |
| A Dance to the Music of Time | Anthony Powell | 1951 |
| The Day of the Locust | Nathanael West | 1939 |
| Death Comes for the Archbishop | Willa Cather | 1927 |
| A Death in the Family | James Agee | 1958 |
| The Death of the Heart | Elizabeth Bowen | 1958 |
| Deliverance | James Dickey | 1970 |
| Dog Soldiers | Robert Stone | 1974 |
| Falconer | John Cheever | 1977 |
| The French Lieutenant's Woman | John Fowles | 1969 |
| The Golden Notebook | Doris Lessing | 1962 |
| Go Tell It on the Mountain | James Baldwin | 1953 |
| Gone with the Wind | Margaret Mitchell | 1936 |
| The Grapes of Wrath | John Steinbeck | 1939 |
| Gravity's Rainbow | Thomas Pynchon | 1973 |
| The Great Gatsby | F. Scott Fitzgerald | 1925 |
| A Handful of Dust | Evelyn Waugh | 1934 |
| The Heart Is a Lonely Hunter | Carson McCullers | 1940 |
| The Heart of the Matter | Graham Greene | 1948 |
| Herzog | Saul Bellow | 1964 |
| Housekeeping | Marilynne Robinson | 1981 |
| A House for Mr. Biswas | V.S. Naipaul | 1962 |
| I, Claudius | Robert Graves | 1934 |
| Infinite Jest | David Foster Wallace | 1996 |
| Invisible Man | Ralph Ellison | 1952 |
| Light in August | William Faulkner | 1932 |
| The Lion, The Witch and the Wardrobe | C.S. Lewis | 1950 |
| Lolita | Vladimir Nabokov | 1955 |
| Lord of the Flies | William Golding | 1954 |
| The Lord of the Rings | J.R.R. Tolkien | 1954 |
| Loving | Henry Green | 1945 |
| Lucky Jim | Kingsley Amis | 1954 |
| The Man Who Loved Children | Christina Stead | 1940 |
| Midnight's Children | Salman Rushdie | 1981 |
| Money | Martin Amis | 1984 |
| The Moviegoer | Walker Percy | 1961 |
| Mrs. Dalloway | Virginia Woolf | 1925 |
| Naked Lunch | William Burroughs | 1959 |
| Native Son | Richard Wright | 1940 |
| Neuromancer | William Gibson | 1984 |
| Never Let Me Go | Kazuo Ishiguro | 2005 |
| 1984 | George Orwell | 1948 |
| On the Road | Jack Kerouac | 1957 |
| One Flew Over the Cuckoo's Nest | Ken Kesey | 1962 |
| The Painted Bird | Jerzy Kosinski | 1965 |
| Pale Fire | Vladimir Nabokov | 1962 |
| A Passage to India | E.M. Forster | 1924 |
| Play It as It Lays | Joan Didion | 1970 |
| Portnoy's Complaint | Philip Roth | 1969 |
| Possession | A.S. Byatt | 1990 |
| The Power and the Glory | Graham Greene | 1939 |
| The Prime of Miss Jean Brodie | Muriel Spark | 1961 |
| Rabbit, Run | John Updike | 1960 |
| Ragtime | E.L. Doctorow | 1975 |
| The Recognitions | William Gaddis | 1955 |
| Red Harvest | Dashiell Hammett | 1929 |
| Revolutionary Road | Richard Yates | 1961 |
| The Sheltering Sky | Paul Bowles | 1949 |
| Slaughterhouse-Five | Kurt Vonnegut | 1969 |
| Snow Crash | Neal Stephenson | 1992 |
| The Sot-Weed Factor | John Barth | 1960 |
| The Sound and the Fury | William Faulkner | 1929 |
| The Sportswriter | Richard Ford | 1986 |
| The Spy Who Came in from the Cold | John le Carré | 1964 |
| The Sun Also Rises | Ernest Hemingway | 1926 |
| Their Eyes Were Watching God | Zora Neale Hurston | 1937 |
| Things Fall Apart | Chinua Achebe | 1959 |
| To Kill a Mockingbird | Harper Lee | 1960 |
| To the Lighthouse | Virginia Woolf | 1929 |
| Tropic of Cancer | Henry Miller | 1934 |
| Ubik | Philip K. Dick | 1969 |
| Under the Net | Iris Murdoch | 1954 |
| Under the Volcano | Malcolm Lowry | 1947 |
| Watchmen | Alan Moore and Dave Gibbons | 1986 |
| White Noise | Don DeLillo | 1985 |
| White Teeth | Zadie Smith | 2000 |
| Wide Sargasso Sea | Jean Rhys | 1966 |

Create the following BookStore methods using appropriate Stream methods:

|  |  |  |
| --- | --- | --- |
| **Method name** | **Parameters** | **Resulting behavior** |
| printAllTitles | none | Prints all titles in UPPERCASE |
| printBookTitle | String title | Prints all titles that contain the specified parameter |
| printTitlesInAlphaOrder | none | Prints all titles in alphabetical order, A-Z |
| printGroupByDecade | int decade | Prints all books for the inputted decade IE 2000s -> print all book titles from 2000 - 2009 |
| getLongest | none | Find the longest title in the bookstore |
| isThereABookWrittenBetween | Int year | Returns true or false |
| howManyBooksContain | String word | Returns the amount of Books that contain this word in their title |
| whichPercentWrittenBetween | int first, int last | What percentage of the books were written between these two years (inclusive)? |
| getOldestBook | none | Returns the oldest book |
| getBooksThisLength | int titleLength | Returns a List of all books whose title is this length |
| **main** | String[] args | Calls all of the BookStore methods listed above, in this table |

Your main() method will look like this:

public static void main(final String[] args) {

BookStore bookstore = new BookStore("Classic Novels Collection");

System.out.println("All Titles in UPPERCASE:");

bookstore.printAllTitles();

System.out.println("\nBook Titles Containing 'the':");

bookstore.printBookTitle("the");

System.out.println("\nAll Titles in Alphabetical Order:");

bookstore.printTitlesInAlphaOrder();

System.out.println("\nBooks from the 2000s:");

bookstore.printGroupByDecade(2000);

System.out.println("\nLongest Book Title:");

bookstore.getLongest();

System.out.println("\nIs there a book written in 1950?");

System.out.println(bookstore.isThereABookWrittenBetween(1950));

System.out.println("\nHow many books contain 'heart'?");

System.out.println(bookstore.howManyBooksContain("heart"));

System.out.println("\nPercentage of books written between 1940 and 1950:");

System.out.println(bookstore.whichPercentWrittenBetween(1940, 1950) + "%");

System.out.println("\nOldest book:");

Novel oldest = bookstore.getOldestBook();

System.out.println(oldest.getTitle() + " by " + oldest.getAuthorName() + ", " + oldest.getYearPublished());

System.out.println("\nBooks with titles 15 characters long:");

List<Novel> fifteenCharTitles = bookstore.getBooksThisLength(15);

fifteenCharTitles.forEach(novel -> System.out.println(novel.getTitle()));

}

…and the output will look like this…

BookStore: Classic Novels Collection

All Titles in UPPERCASE:

THE ADVENTURES OF AUGIE MARCH

ALL THE KING’S MEN

AMERICAN PASTORAL

...

WHITE NOISE

WIDE SARGASSO SEA

Book Titles Containing 'the':

The Adventures of Augie March

The Assistant

...

The Sun Also Rises

Gone with the Wind

All Titles in Alphabetical Order:

1984

A Clockwork Orange

A Dance to the Music of Time

...

White Noise

White Teeth

Wide Sargasso Sea

Books from the 2000s:

Atonement

Never Let Me Go

The Blind Assassin

The Corrections

White Teeth

Longest Book Title:

Are You There God? It's Me, Margaret.

Is there a book written in 1950?

true

How many books contain 'heart'?

3

Percentage of books written between 1940 and 1950:

15%

Oldest book:

The Bridge of San Luis Rey by Thornton Wilder, 1927

Books with titles 15 characters long:

The Great Gatsby

Native Son

White Teeth