# PA 303.10.3 - Practice Assignment - Polymorphism and Interface

### Lab Objective

After completing the hands-on practice assignment, you will be able to:

* Implement interfaces in your program.
* Apply polymorphism concept using the interface.

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| RequirementsScenario: A library needs to develop an online application for two types of users/roles: adults and children. Both of these users should be able to register an account. Any user under 12 years of age will be registered as a child, and they can borrow a “Kids” category book for 10 days, whereas an adult can borrow “Fiction” category books, which need to be returned within 7 days.Note: In the future, more users/roles might be added to the library where similar rules will be enforced. Develop interfaces and classes for the categories mentioned above. Problem Statement 1:  1. Create an interface ***LibraryUser*** with the following methods declared,  |  | | --- | | **Method Name** | | registerAccount | | requestBook |  1. Create 2 classes “***KidUser***” and “***AdultUser***” which implement the ***LibraryUser*** interface.      1. Both the classes should have two instance variables as specified below.  |  |  | | --- | --- | | **Instance variables** | **Data type** | | age | int | | bookType | String |  1. The methods in the ***KidUser*** class should perform the following logic. 2. **registerAccount**: If age <= 11, a message displaying “You have successfully registered under a Kids Account” should be displayed in the console.   If (age > 11), a message displaying, **“Sorry, age must be less than 12 to register as a kid.**” should be displayed in the console.   1. **requestBook**: If bookType is “**Kids,**” a message displaying “Book issued successfully, please return the book within 10 days” should be displayed in the console.   Else, a message displaying, “**Oops, you are allowed to take only kids books.**” should be displayed in the console.   1. The methods in the ***AdultUser*** class should perform the following logic. 2. **registerAccount** : If age >= 12, a message displaying “**You have** **successfully registered under an Adult Account.**” should be displayed in the console.   If age <= 11, a message displaying, “**Sorry, age must be greater than 12 to register as an adult.**” should be displayed in the console.   1. **requestBook** : If bookType is “**Fiction,**” a message displaying “**Book Issued successfully, please return the book within 7 days.**” should be displayed in the console.   Else, a message displaying, “**Oops, you are allowed to take only adult Fiction books.**” should be displayed in the console.   1. Create a class “***LibraryInterfaceDemo.java***” with a **main()** method that performs the below functions,   **Test case #1:**   * Create an instance of the ***KidUser*** class. * Set the age as specified in the below table and invoke the **registerAccount()** method of the KidUser object.  |  | | --- | | **Age** | | 10 | | 18 |  * Set the bookType as specified in the below table and invoke the **requestBook()** method of the KidUser object.  |  | | --- | | **BookType** | | “Kids” | | “Fiction” |   **Test case #2:**   * Create an instance of the **AdultUser** class. * Set the age as specified in the below table and invoke the **registerAccount()** method of the AdultUser object.  |  | | --- | | **Age** | | 5 | | 23 |  * Set the bookType as specified in the below table and invoke the **requestBook()** method of the AdultUser object.  |  | | --- | | **BookType** | | “Kids” | | “Fiction” | |

**Submission Instructions:**

Include the following deliverables in your submission -

* + Submit your source code using the Start Assignment button in the top-right corner of the assignment page in Canvas.

**CANVAS STAFF USE ONLY: Canvas Submission Guideline:**

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| **Instructions for Canvas Assignment Creation** |
| **Assignment Name: PA 303.10.3 - Practice Assignment - Polymorphism and Interface**  **Points:** **100**  **Assignment Group: Module 303: Java SE Review (Not Graded)**  **Display Grade As: Complete/Incomplete**  **Do not count this assignment towards the final grade: Checked**  **Submission Types: File uploads**  **Everything else is the default.** |