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| Hands-on Exercise Objective |
| After completing the hands-on exercises, you will be able to:   * Implement Interfaces in your program. * Apply polymorphism concept using interface. |
| Scenario: 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 who is less than 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 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 “***KidUsers***” and “***AdultUser***” which implements 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 < 12, a message displaying “You have successfully registered under a Kids Account” should be displayed in the console.   If(age>12), 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<12, 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 which performs the below functions,   **Test case #1:**   * Create an instance of ***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 book Type 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 **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 book Type as specified in the below table and invoke the requestBook method of the AdultUser object  |  | | --- | | **BookType** | | “Kids” | | “Fiction” | |