```
/*
  1.  You are required to create a virtual library management system that
allows users to
  borrow and return books. The system should keep track of the available books,
  borrowed books, and user information.

  Features:
  ●  The system should have a Book class with attributes such as bookId, title,
author, and
  isAvailable.
  ●  The system should have a User class with attributes such as userId, name,
and
  booksBorrowed.
  ●  Implement a constructor in the Book class to initialize its attributes.
  ●  Implement a constructor in the User class to initialize its attributes.
  ●  Use a static method to display the menu options for users to choose from.
  ●  Implement a switch statement to handle user inputs and perform
corresponding actions.
  ●  Use loops to continuously display the menu until the user chooses to exit.
  ●  Allow users to borrow a book by entering the book ID and check if the book
is available.
  ●  Allow users to return a book by entering the book ID and update the
availability status.
  ●  Display appropriate messages for successful and unsuccessful operations.

  Expected Input/Output:
  Welcome to the Virtual Library Management System!
  1. Borrow a Book
  2. Return a Book
  3. Display Available Books
  4. Display Borrowed Books
  5. Exit
  Enter your choice: 1
  Enter your user ID: 101
  Enter the book ID you want to borrow: 201
  Book borrowed successfully!

  Enter your choice: 3

  Available Books:
  CDAC Mumbai
  Book ID: 201, Title: "Java Programming", Author: "John Doe"

  Enter your choice: 2
```

```
  Enter your user ID: 101
  Enter the book ID you want to return: 201
  Book returned successfully!
  Enter your choice: 5
  Exiting Virtual Library Management System. Thank you!

*/

//Book.java

import java.util.Scanner;
public class Book
{
  private int bookId;
  private String title;
  private String author;
  private boolean isAvailable;

  static Scanner sc = new Scanner(System.in);

  public Book()
  {
   this.bookId = 201;
   this.title = "Java Programming";
   this.author = "John Doe";
   this.isAvailable = true;
  }


  public void borrowBook()
  {
    System.out.println("Enter the book ID you want to borrow:"+this.bookId);
    System.out.println("Book borrowed successfully!!!!");
    System.out.println();
  }

  public void returnBook()
  {
    System.out.println("Enter the book ID you want to return:"+this.bookId);
    System.out.println("Book returned successfully!!!!");
    System.out.println();
  }

  public void dispAvailableBook()
  {
   {
```

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```java
        System.out.println("Available Books :");
        System.out.println("CDAC Mumbai");
        System.out.println("Book ID: "+this.bookId+"\nTitle: "+this.title+"\nAuthor: "+this.author);
        System.out.println();

    }

    public void dispBorrowBook()
    {
        System.out.println("Book ID: "+this.bookId+"Title: "+this.title+" Author: "+this.author);
        System.out.println();
    }

    boolean isAvailable()
    {
        return true;
    }

}


//User.java
import java.util.Scanner;

public class User
{
    private int userId;
    private String name;
    private boolean isbooksBorrowed;

    static Scanner sc = new Scanner(System.in);

    public User()
    {
        this.userId = 201;
        this.name = "Java Programming";
        this.isbooksBorrowed = true;
    }

    public void acceptUserId()
    {
        System.out.println("Enter your user ID:");
        int userId = sc.nextInt();
```

```java
        }

    public boolean isbooksBorrowed()
    {
        return true;
    }

}

//Main.java
import java.util.Scanner;

public class Day6_01
{
  public static void main(String[] args)
  {
    System.out.println("Welcome to the Virtual Library Management System!");

    Scanner sc = new Scanner(System.in);

    Book bk = new Book();
    User us = new User();

    System.out.println("\n1. Borrow a Book\n2. Return a Book \n3. Display
Available Books\n4. Display Borrowed Books\n5. Exit\n");

    int choice;

    do
    {
      System.out.print("Enter the choice: ");
      choice = sc.nextInt();
        switch(choice)
        {
          case 1: if(bk.isAvailable())
                  {
                  us.acceptUserId();
                    bk.borrowBook();
                    break;
                  }

          case 2: us.acceptUserId();
                  bk.returnBook();
                  System.out.println("Books are Available!!!!");
                  break;

          case 3: bk.dispAvailableBook();
                  break;

          case 4: if(us.isbooksBorrowed())
                  {
```

```java
                    bk.dispBorrowBook();
                    break;
                }

            case 5: System.out.println("Exiting Virtual Library Management
System. Thank you!");
                    System.out.println();
                    break;

            default:
                    System.out.println("Invalid Choice....");
        }
    }while(choice != 0);
  }
}


public class Day6_02
{

  public static void main(String[] args)
  {
    //Problem A: error: Type mismatch: cannot convert from double to int

    int x = 5;
    int y = 25; //change return type of variable y
    int z = x + y;
    System.out.println("Sum: " + z);

    //problem B:

    for (int i = 1; i <= 5 ; i++)
    {
      System.out.println("Number: " + i);
    }

    //Problem C:

    int x = 10;
    if (x == 10) //The operator == is undefined for the argument type(s) int,
void
    {
      System.out.println("x is 10");
    }
```

```java
    else
    {
      System.out.println("x is not 10");
    }

    //Problem D: error: numbers[5]

    int[] numbers = {1, 2, 3, 4, 5};
    for (int i = 0; i < numbers.length; i++)
    {
      System.out.println("Number: " + numbers[i]);
    }

    //problem E:

    int[] numbers= {1, 2, 3, 4, 5};
    for (int i = 0; i < numbers.length ; i++)
    {
      System.out.println("Number: " + numbers[i]);
    }

    //problem F : error:Type casting
    float x = 20.0f;
    float y = 10.0f;
    float z = x + y;
    System.out.println("Sum:  "+ (int)z); //type casting z to int

  }

}


/*
  3.  Write a Java program that takes two integers as input and uses the
conditional
  operator (ternary operator) to determine and print the larger of the two
numbers.
  Instructions:
  ●  Create a Java class named ConditionalOperatorExample.
  ●  Inside the main method, prompt the user to enter two integers.
  ●  Use the conditional operator to compare the two numbers and assign the
larger
  number to a variable.
  ●  Print the larger number.
  Expected Output:
```

```java
  Enter the first number: 10
  Enter the second number: 20
  Larger number: 20

*/
import java.util.Scanner;
public class Day6_03
{

  public static void main(String[] args)
  {
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the first number");
    int num1 = sc.nextInt();
    System.out.println("Enter the Second number");
    int num2 = sc.nextInt();

    int max = num1 > num2 ? num1:num2;
    System.out.println("Larger number: "+max);

  }
}
/*
  Enter the first number
  10
  Enter the Second number
  20
  Larger number: 20
*/



/*
  4.  Write a Java program to reverse a given string without using any built-in
method.
  Implement a method reverseString that takes a string as input and returns the
  reversed string.
  Example:
  Input: "Hello"
  Output: "olleH"
*/
import java.util.Scanner;

public class Day6_04
{
  static void reverseString(String str,int n)
```

```java
    {
        //int rev = 0;
        for(int i=n-1;i>=0;i--)
        {
            char ele = str.charAt(i);
            System.out.print(ele);

        }
        //System.out.print();
    }

    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the string :");
        String str = sc.next();

        reverseString(str,str.length());

    }

}

/*
  5.  Write a Java program to check if a given string is a palindrome or not.
Implement a
  method isPalindrome that takes a string as input and returns true if the
string is a
  palindrome, otherwise returns false.
  Example:
  Input: "racecar"
  Output: true

*/

import java.util.Scanner;

public class Day6_05
{
    static boolean isPalindrom(String str)
    {
        int start = 0;
        int rev = str.length()-1;
```

```java
      while(start < rev)
      {
        if(str.charAt(start) != str.charAt(rev) )
          return false;

        start++;
        rev--;
      }
      return true;

    }

    public static void main(String[] args)
    {

      String str = "racecar";

      boolean flag = isPalindrom(str);
      if(flag == true)
        System.out.println("true");
      else
        System.out.println("false");


    }

}
```