

## Batch 1-Java Programming Lab

### Spot Question - 07-03-2024

Write an abstract class called **LendingLibrary** whose protected fields are: **title**(String), **acquisitionTime**(Time), **rentalFee**(double), **dueTime**(Time), bool **checkOut**. The methods are:

- i. **LendingLibrary(String, double)** that initialises the **title** and **rentalFee** with the arguments passed, **acquisitionTime** and **dueTime** with default values, **checkOut** as false.
- ii. **void issue(Time)** that sets the **acquisitionTime** and **checkOut** as true
- iii. **void return(Time)** - sets **checkOut** as false and calculates whether returned before **dueTime** and calculates the fine, if any and adds to the **rentalFee**.
- iv. **abstract void CalculateDueTime()**
- v. **toString()** that displays the details

Write a test application to invoke the functionalities of the each class.

Define class called **DVD** derives from **LendingLibrary** with member **playLength**(int) and overriding method **CalculateDueTime(int)** that sets the **dueTime** by adding 3 hours and 30 minutes to the **acquisitionTime** and **toString()**. Define class called **Magazine** derives from **LendingLibrary** with members: **volumeNo**(int), **issueNo**(int) and overriding method **CalculateDueTime(int)** that sets the **dueTime** by adding 2 days to the **acquisitionTime** and **toString()**. **fine** is charged for every extra 30 minutes. **calculateFine(Time)** which finds whether the Time returned matches with the **dueTime** if equal returns zero or else returns the **fineAmount** using the **fine**. Write a test application to invoke the functionalities of the each class.

Implement the following interface **Invoice** by class **LendingLibrary**:

```
public interface Invoice{  
  
    public static final double fine = 5;  
  
    abstract double calculateFine(Time);  
  
}
```

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**NOTE :**

```
Class Time{  
    int hours;  
    int min;  
    int sec;  
    Time(int,int,int);  
    set and get methods  
    toString()  
}
```