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Subject: Object Oriented Programming Lab

Practical-5

- **Problem Definition:**

Consider a class professor having method perform_hr() which is the Abstract method class 'Assistant' and 'Associate' inherit the class professor implement the method perform_hr() in both these classes according to following rules institution.

- Assistant :- TL hours 10/week, Research 3/week
- Associate :- TL hours 3/week Research 5/week
- perform_hr() will calculate total teaching and research hours for month February 2020

- **Program:**

```
abstract class Professor{
    //Abstract method
    abstract void perform_hr(int week);
}

class Assistant extends Professor{
    //Implementation of abstract method
    void perform_hr(int week){
        System.out.println("Total teaching hours of Assistant: "+ 10*week);
        System.out.println("Total research hours of Assistant: "+ 3*week);
        System.out.println();
    }
}

class Associate extends Professor{
    //Implementation of abstract method
    void perform_hr(int week){
        System.out.println("Total teaching hours of Associate: "+ 8*week);
        System.out.println("Total research hours of Associate: "+ 5*week);
        System.out.println();
    }
}
```

```

class Practical5{
    public static void main(String [] args){
        Assistant assistant1 = new Assistant();
        Associate associate1 = new Associate();
        assistant1.perform_hr(4);
        associate1.perform_hr(4);
    }
}
//Note February 2020 has 4weeks. Thus, we pass 4 as parameter in abstract method

```

- Output:**

Total teaching hours of Assistant: 40
 Total research hours of Assistant: 12

Total teaching hours of Associate: 32
 Total research hours of Associate: 20

- Screenshot:**

The screenshot displays the Visual Studio Code editor with the file 'Practical5.java' open. The code defines two classes, `Assistant` and `Associate`, both extending an abstract class `Professor`. Each class implements the `perform_hr(int week)` method, which prints the total teaching and research hours. The `Practical5` class contains a `main` method that creates instances of `Assistant` and `Associate` and calls `perform_hr(4)` on each. The output window shows the results of the execution: 'Total teaching hours of Assistant: 40' and 'Total research hours of Assistant: 12' for the first class, and 'Total teaching hours of Associate: 32' and 'Total research hours of Associate: 20' for the second class.

```

class Assistant extends Professor{
    //implementaion of abstract method
    void perform_hr(int week){
        System.out.println("Total teaching hours of Assistant: "+ 1);
        System.out.println("Total research hours of Assistant: "+ 3);
        System.out.println();
    }
}

class Associate extends Professor{
    //implementaion of abstract method
    void perform_hr(int week){
        System.out.println("Total teaching hours of Associate: "+ 8);
        System.out.println("Total research hours of Associate: "+ 5);
        System.out.println();
    }
}

class Practical5{
    Run | Debug
    public static void main(String [] args){
        Assistant assistant1 = new Assistant();
        Associate associate1 = new Associate();
        assistant1.perform_hr(4);
        associate1.perform_hr(4);
    }
}

```

PS C:\Users\Admin\Desktop\Notes\OOP-Lab> c::; cd 'c:\Users\Admin\Desktop\Notes\OOP-Lab'; & 'C:\Program Files\Java\jdk-17\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\fedf0e99ece5c7fd26293de0f17288b8\redhat.java\jdt_ws\OOP-Lab_8b3c0010\bin' 'Practical5'

Total teaching hours of Assistant: 40
 Total research hours of Assistant: 12

Total teaching hours of Associate: 32
 Total research hours of Associate: 20

PS C:\Users\Admin\Desktop\Notes\OOP-Lab> |

- **Result:**

By studying implementation of concept of Abstraction in Java, I have successfully completed Practical-5.