

ICS-202 Lab-01 Report

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Exercise 1: BOOKS

Code:

```
public class Textbook extends Book {
    String course;

    public Textbook(String title, int pages, String course) {
        super(title, pages);
        this.course = course;
    }

    public String getCourse() {return course;}

    @Override
    public String toString() {
        return ("Text Book: " + title + ", # Pages = " + pages + ", Course = " + getCourse())
    }
}
```

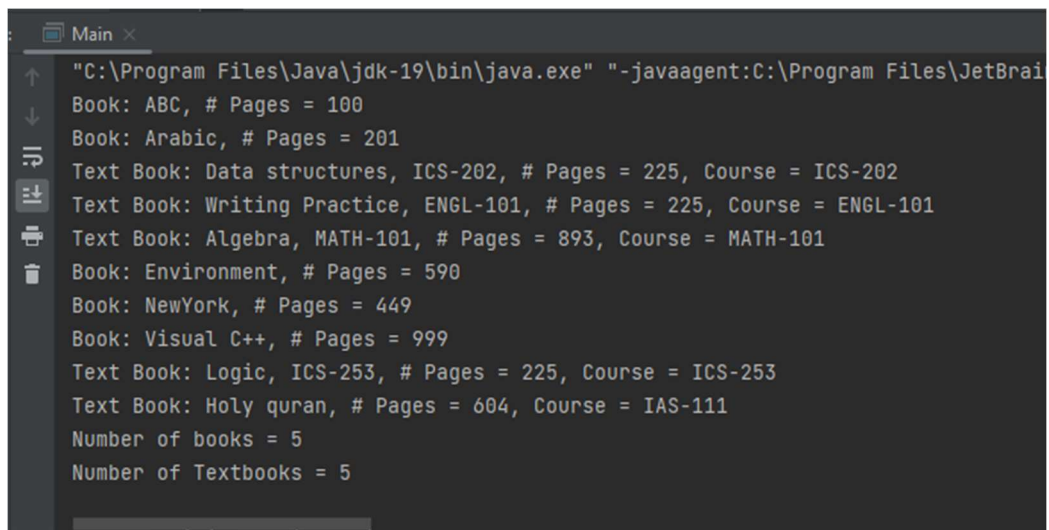
```
1 | Inheritor
public class Book {
    String title;
    int pages;

    public Book(String title, int pages){
        this.title = title;
        this.pages = pages;
    }

    public String getTitle() {return title;}
    public int getPages() {return pages;}

    1 | override
    @Override
    public String toString() { return ("Book: " + title + ", # Pages = " + pages); }
}
```

Output:

A screenshot of a Java IDE's console window. The window has a title bar that says "Main x". On the left side, there is a vertical toolbar with icons for running, stepping through, and other debugging actions. The main area of the console displays the output of a Java program. The output consists of several lines of text, each representing a book or a summary. The books listed are: ABC (100 pages), Arabic (201 pages), Data structures (225 pages, ICS-202 course), Writing Practice (225 pages, ENGL-101 course), Algebra (893 pages, MATH-101 course), Environment (590 pages), NewYork (449 pages), Visual C++ (999 pages), Logic (225 pages, ICS-253 course), and Holy quran (604 pages, IAS-111 course). At the end, it summarizes that there are 5 books and 5 textbooks in total.

```
"C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\JetBrai
Book: ABC, # Pages = 100
Book: Arabic, # Pages = 201
Text Book: Data structures, ICS-202, # Pages = 225, Course = ICS-202
Text Book: Writing Practice, ENGL-101, # Pages = 225, Course = ENGL-101
Text Book: Algebra, MATH-101, # Pages = 893, Course = MATH-101
Book: Environment, # Pages = 590
Book: NewYork, # Pages = 449
Book: Visual C++, # Pages = 999
Text Book: Logic, ICS-253, # Pages = 225, Course = ICS-253
Text Book: Holy quran, # Pages = 604, Course = IAS-111
Number of books = 5
Number of Textbooks = 5
```

Exercise 2: Students

Code:

```
2 inheritors
public abstract class Student {
    String ID;
    double GPA;

    public Student(String ID, double GPA){
        this.ID = ID;
        this.GPA = GPA;
    }

    public double getGPA() {return GPA;}
    public String getID() {return ID;}

    2 implementations
    abstract public String getStatus();

    final public String displayStudent(Student s){
        return(s.getClass() + " ID>> " + getID() + ", GPA>> " + getGPA() + ", Status>> " + getStatus())
    }
}
```

```
public class Undergraduate extends Student{
    String status;

    public Undergraduate(String ID, double GPA){
        super(ID, GPA);

        if(GPA >= 3.00){status = "honor";}
        else if(GPA >= 2.00){status = "good";}
        else{status = "probation";}
    }

    @Override
    public String getStatus() { return status; }
}
```

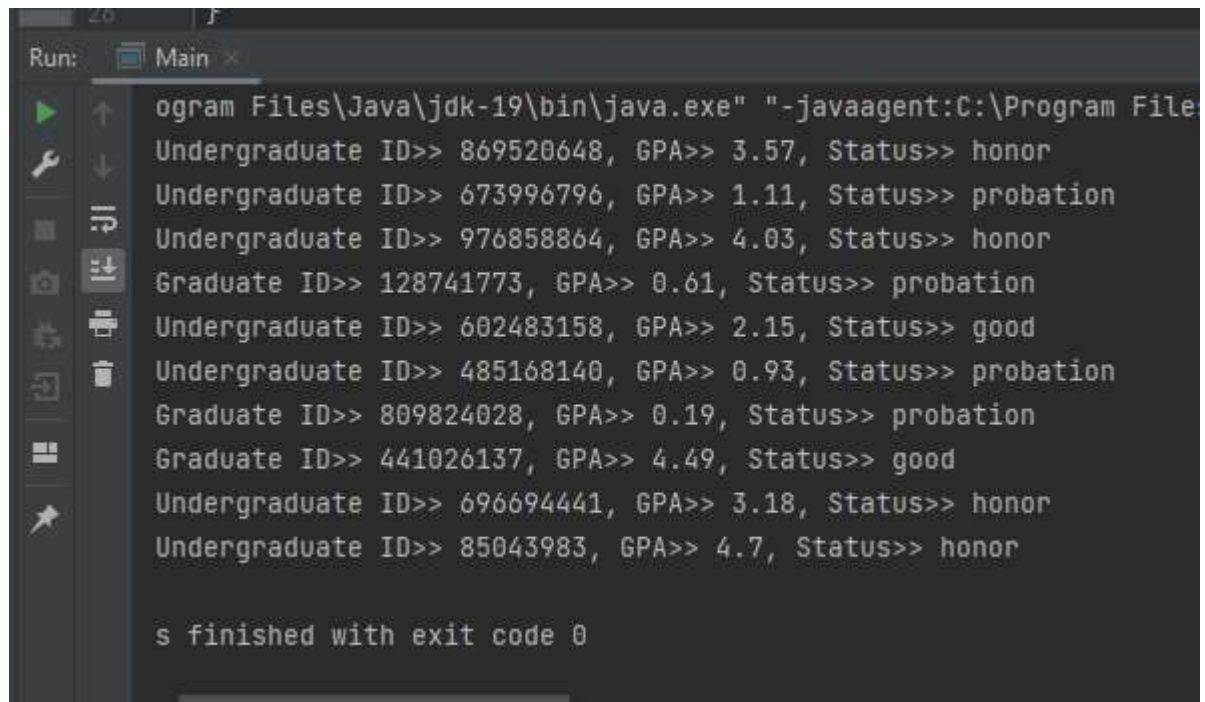
```
public class Graduate extends Student{
    String status;

    public Graduate(String ID, double GPA){
        super(ID, GPA);

        if(GPA >= 3.00){status = "good";}
        else{status = "probation";}
    }

    @Override
    public String getStatus() { return status; }
}
```

Output:



The screenshot shows a Java IDE's console window with a dark theme. The title bar of the console window reads "Run: Main x". On the left side, there is a vertical toolbar with icons for running, debugging, and other IDE functions. The main area of the console displays the following text:

```
rogram Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program File
Undergraduate ID>> 869520648, GPA>> 3.57, Status>> honor
Undergraduate ID>> 673996796, GPA>> 1.11, Status>> probation
Undergraduate ID>> 976858864, GPA>> 4.03, Status>> honor
Graduate ID>> 128741773, GPA>> 0.61, Status>> probation
Undergraduate ID>> 602483158, GPA>> 2.15, Status>> good
Undergraduate ID>> 485168140, GPA>> 0.93, Status>> probation
Graduate ID>> 809824028, GPA>> 0.19, Status>> probation
Graduate ID>> 441026137, GPA>> 4.49, Status>> good
Undergraduate ID>> 696694441, GPA>> 3.18, Status>> honor
Undergraduate ID>> 85043983, GPA>> 4.7, Status>> honor

s finished with exit code 0
```