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Advanced Java Programming

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**Project 7-1 Incorporating Loops for GPA**

**Source Code:**

// @author Maddison Kiefer

// Student class represents a student with a name, address, and GPA

public class Student implements Comparable<Student>{

// Variables to store student information

private String name;

private String address;

private double gpa;

// Constructor to initialize a Student object with given name, address, and GPA

public Student(String name, String address, double gpa) {

this.name = name;

this.address = address;

this.gpa = gpa;

}

// Getter method to retrieve the student's name

public String getName() {

return name;

}

// Setter method to update the student's name

public void setName(String name) {

this.name = name;

}

// Getter method to retrieve the student's address

public String getAddress() {

return address;

}

// Setter method to update the student's address

public void setAddress(String address) {

this.address = address;

}

// Getter method to retrieve the student's GPA

public double getGpa() {

return gpa;

}

// Setter method to update the student's GPA

public void setGpa(double gpa) {

this.gpa = gpa;

}

// Override the toString() method to provide a string representation of the Student object

@Override

public String toString() {

return "Name: " + name + "\nAddress: " + address + "\nGPA: " + gpa;

}

// Override the compareTo() method from the Comparable interface to enable sorting by name

@Override

public int compareTo(Student s) {

return getName().compareTo(s.getName());

}

}

//@author Maddison Kiefer

import java.io.FileWriter;

import java.io.IOException;

import java.util.Collections;

import java.util.Iterator;

import java.util.LinkedList;

import java.util.List;

import java.util.Scanner;

// Main class

public class Main {

public static void main(String[] args) {

// Create a Scanner object for user input

Scanner scnr = new Scanner(System.in);

int count = 0;

// Prompt the user to enter the number of students data they want to input

System.out.print("How many students data you want to enter: ");

count = scnr.nextInt();

// Create a list to store Student objects

List<Student> studentInfo = new LinkedList<Student>();

// Loop to gather information for each student

for (int i = 0; i < count; i++) {

scnr.nextLine();

System.out.print("Enter name: ");

String name = scnr.nextLine();

System.out.print("Enter address: ");

String address = scnr.nextLine();

System.out.print("Enter gpa: ");

double gpa = scnr.nextDouble();

Student stud1 = new Student(name, address, gpa);

studentInfo.add(stud1);

}

// Sort the list of students based on their names

Collections.sort(studentInfo);

// Use an iterator to traverse the list and write sorted student data to a file

Iterator<Student> iterator = studentInfo.iterator();

try {

// Create a FileWriter to write to the file "SortedStudentData.txt"

FileWriter fileWrite = new FileWriter("SortedStudentData.txt");

// Iterate through the list and write each student's information to the file

while(iterator.hasNext()) {

fileWrite.write(iterator.next().toString() + "\n");

}

// Close the FileWriter

fileWrite.close();

} catch (IOException e) {

}

}

}

**Executing the Application:**



