**Module 02 Assignment - Inheritance**

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Java Programming

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Module 02

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I created a Java project named ‘SortThenAdd’. The project contains three files, Main.java, ArraySort.java, and ArrayAdd.java. Below is a breakdown of how the files are structured:  
**Main.Java:**

The main functionality is in Main.java and the other two files are the base and derived classes. The main loop creates an array of random integers. There are variables to define the array size and the range of integers in the array. The classes are then instantiated to run the logic and output the results.  
**ArraySort.Java:**

The ArraySort class takes an array of integers and sorts it using the arrays class ‘sort()’ method. There is a second method in the ArraySort class to print the sorted array. This serves as a base class for the ArrayAdd class.

**ArrayAdd.java:**

The ArrayAdd class extends the ArraySort class and also takes an array of integers and sorts it. The numbers are then added and the sum is output to the user.

Below are screenshots of the application running with different array sizes and integers ranges:

A screenshot of a computer program

Description automatically generated

A screenshot of a computer program

Description automatically generated

For reference, the source code is in a public git repository at the URL:

<https://github.com/timmasta/rasmussen/tree/main/SortThenAdd>

I included the Java code for each of the files below:

//Main.java  
  
import java.util.ArrayList;  
import java.util.Random;  
  
public class Main {  
 public static void main(String[] args) {  
 int n = 10; // Change this to the desired size of the array  
 int min = 100; // Minimum value (inclusive)  
 int max = 501; // Maximum value (exclusive)  
  
 // Create an array to hold random integers  
 int[] randomArray = new int[n];  
  
 Random random = new Random();  
 //populate the array with random integers (size and range are set above)  
 for (int i = 0; i < n; i++) {  
 randomArray[i] = random.nextInt(max - min) + min; // Generates a random integer between min and max-1  
 }  
  
 // Instantiate the arraySort object which prints the sorted array  
 ArraySort arraySort = new ArraySort();  
 arraySort.sortArray(randomArray);  
 arraySort.printSortedArray();  
 // Instantiate the arrayAdd object which adds the elements and prints the sum of the array  
 ArrayAdd arrayAdd = new ArrayAdd(randomArray);  
  
  
  
  
  
  
 }  
}

//ArraySort.java  
  
import java.util.Arrays;  
  
public class ArraySort {  
 int[] sortedArray;  
  
 void sortArray(int[] numbers) {  
 Arrays.*sort*(numbers); // Sorting the array  
 sortedArray = numbers;  
 }  
  
 void printSortedArray() {  
 System.*out*.println("Sorted array: " + Arrays.*toString*(sortedArray));  
 }  
}

//ArrayAdd.java  
  
public class ArrayAdd extends ArraySort {  
 int sum = 0;  
  
 ArrayAdd(int[] numbers) {  
 sortArray(numbers); // Call the sorting method from the base class  
 addNumbers();  
 }  
  
 void addNumbers() {  
 for (int num : sortedArray) {  
 sum += num; // Adding each number to sum  
 }  
 System.*out*.println("Sum of sorted array: " + sum);  
 }  
}