5. **Driver’s License Exam**

**public** **class** **DriverExam**

{

**private** **char**[] correctAnswers = { 'B','D','A','A','C','A','B','A','C','D','B','C','D','A','D','C','C','B','D','A' };

**public** **char**[] studentAnswers = **new** **char**[**20**];

**public** **DriverExam**(**char**[] array)

{

**for** (**int** i = **0**; i < array.length; i++)

{

studentAnswers[i] = array[i];

}

}

**public** **int** **totalCorrect**()

{

**int** answer = **0**;

**for** (**int** i = **0**; i < correctAnswers.length; i++)

{

**if** (studentAnswers[i] == correctAnswers[i])

{

answer++;

}

}

**return** answer;

}

**public** **int** **totalIncorrect**()

{

**return** correctAnswers.length - totalCorrect();

}

**public** **boolean** **passed**()

{

**return** **totalCorrect**() >= (**double**)correctAnswers.length \* **3**./**4**.;

}

**public** **int**[] **questionsMissed**()

{

**int**[] missed;

missed = **new** **int**[totalIncorrect()];

**int** counter = **0**;

**for** (**int** i = **0**; i < correctAnswers.length; i++)

{

**if** (studentAnswers[i] != correctAnswers[i])

{

missed[counter] = i + **1**;

counter++;

}

}

**return** missed;

}

}

**import** **java.util.Scanner**;

**public** **class** **QuestionFive**{

**public** **static** **void** **main**(String []args)

{

Scanner scan = **new** Scanner(System.in);

**char**[] test = **new** **char**[**20**];

**int** questionNumber = **1**;

String input;

**while** (test[**19**] == **0**)

{

System.out.print("Enter answer to question " + questionNumber + ". ");

input = scan.next();

**char** answer = input.charAt(**0**);

**while** ((input.length() > **1**) || ((answer != 'A') && (answer != 'B') && (answer != 'C') && (answer != 'D')))

{

System.out.print("Invalid input. Valid inputs are A, B, C, and D.");

System.out.print("Enter answer to question " + questionNumber + ". ");

input = scan.next();

answer = input.charAt(**0**);

}

test[questionNumber - **1**] = answer;

questionNumber++;

}

DriverExam thisTest = **new** DriverExam(test);

**if** (thisTest.passed())

{

**if** (thisTest.totalCorrect() == **20**)

{

System.out.println("You got every question correct. Congratulations!");

}

**else**

{

System.out.println("You passed with " + thisTest.totalCorrect() + " correct answers. You missed " + thisTest.totalIncorrect() + " answers. The questions you missed are:");

**for** (**int** i = **0**; i < thisTest.totalIncorrect(); i++)

{

System.out.println(thisTest.questionsMissed()[i]);

}

}

}

**else**

{

System.out.println("You failed with " + thisTest.totalCorrect() + " correct answers. You missed " + thisTest.totalIncorrect() + " answers. The questions you missed are:");

**for** (**int** i = **0**; i < thisTest.totalIncorrect(); i++)

{

System.out.println(thisTest.questionsMissed()[i]);

}

}

}

}

9. **Lottery Application**

**import** **java.util.Random**;

**public** **class** **Lottery**

{

**private** **int**[] lotteryNumbers = **new** **int**[**5**];

**public** **int**[] personPick = **new** **int**[**5**];

**public** **Lottery**(**int**[] array)

{

Random ran = **new** Random();

**int** choice;

**for** (**int** i = **0**; i < **5**; i++)

{

lotteryNumbers[i] = ran.nextInt(**10**);

personPick[i] = array[i];

}

}

**public** **int** **numberThatMatch**()

{

**int** answer = **0**;

**for** (**int** i = **0**; i < **5**; i++)

{

**if** (lotteryNumbers[i] == personPick[i])

{

answer++;

}

}

**return** answer;

}

**public** **int**[] **WinningTicket**()

{

**return** lotteryNumbers;

}

}

**import** **java.util.Scanner**;

**public** **class** **QuestionNine**{

**public** **static** **void** **main**(String []args)

{

Scanner scan = **new** Scanner(System.in);

**int**[] personalPick = **new** **int**[**5**];

**int** choice;

String[] ordinal = {"first", "second", "third", "fourth", "fifth"};

**for** (**int** i = **0**; i < **5**; i++)

{

System.out.println("Choose your " + ordinal[i] + " number.");

choice = scan.nextInt();

**while** (choice < **0** || choice > **9**)

{

System.out.println("Invalid choice. Number must be between 0 and 9 inclusive.");

System.out.println("Choose your " + ordinal[i] + " number.");

choice = scan.nextInt();

}

personalPick[i] = choice;

}

Lottery thisGame = **new** Lottery(personalPick);

**int** win = thisGame.numberThatMatch();

**if** (win == **5**)

{

System.out.println("You got all 5 numbers! You are a grand prize winner!");

}

**else**

{

System.out.println("You got " + win + " numbers out of 5. Better luck next time.");

}

}

}

10. **Array Operations**

**import** **java.util.Scanner**;

**import** **java.util.Random**;

**public** **class** **QuestionTen**{

**public** **static** **void** **main**(String []args)

{

//generates array of random integers up to length 10^6 for testing

Random ran = **new** Random();

**int** arraySize = ran.nextInt(**1000000**);

**int**[] testArray = **new** **int**[arraySize];

**for** (**int** i = **0**; i < arraySize; i++)

{

testArray[i] = ran.nextInt(**1000000**);

}

//demonstrates methods defined outside of main

System.out.println("Array Total: " + getTotal(testArray));

System.out.println("Array Average: " + getAverage(testArray));

System.out.println("Highest Element: " + getHighest(testArray));

System.out.println("Lowest Element: " + getLowest(testArray));

}

**private** **static** **long** **getTotal**(**int**[] array)

{

**long** answer = **0**;

**for** (**int** i = **0**; i < array.length; i++)

{

answer += array[i];

}

**return** answer;

}

**private** **static** **double** **getAverage**(**int**[] array)

{

**return** (**double**)getTotal(array) / (**double**)array.length;

}

**private** **static** **int** **getHighest**(**int**[] array)

{

**int** answer = array[**0**];

**for** (**int** i = **0**; i < array.length; i++)

{

**if** (array[i] > answer)

{

answer = array[i];

}

}

**return** answer;

}

**private** **static** **int** **getLowest**(**int**[] array)

{

**int** answer = array[**0**];

**for** (**int** i = **0**; i < array.length; i++)

{

**if** (array[i] < answer)

{

answer = array[i];

}

}

**return** answer;

}

}