

Unit 5 Programming Assignment Solution

The quiz questions, answers, and choices for correct answer should be unique for each submission. Here is an example.

File "Question.java":

```
import javax.swing.JOptionPane;

public abstract class Question {

    static int nQuestions = 0;

    static int nCorrect = 0;

    String question;

    String correctAnswer;

    abstract String ask();

    void check() {

        nQuestions++;

        String answer = ask();

        if (answer.equals(correctAnswer)) {

            JOptionPane.showMessageDialog(null, "Correct!");

            nCorrect++;

        } else {

            JOptionPane.showMessageDialog(null, "Incorrect. The correct
answer is "+correctAnswer+".");

        }

    }

    static void showResults() {

        JOptionPane.showMessageDialog(null, nCorrect+" correct out of
"+nQuestions+" questions");

    }

}
```

File "TrueFalseQuestion.java".

```
import javax.swing.JOptionPane;

public class TrueFalseQuestion extends Question {

    String ask() {

        while (true) {

            String answer = JOptionPane.showInputDialog(question);

            answer = answer.toUpperCase();

            if (answer.equals("T") || answer.equals("Y") ||
answer.equals("YES")) answer = "TRUE";

            if (answer.equals("F") || answer.equals("N") ||
answer.equals("NO")) answer = "FALSE";

            boolean valid = (answer.equals("FALSE") ||
answer.equals("TRUE"));

            if (valid) return answer;

            JOptionPane.showMessageDialog(null,"Invalid answer. Please
enter TRUE or FALSE.");

        }

    }

    TrueFalseQuestion(String question, String answer) {

        this.question = "TRUE or FALSE: "+question;

        answer = answer.toUpperCase();

        if (answer.equals("T") || answer.equals("TRUE") ||
answer.equals("Y") || answer.equals("YES")) correctAnswer = "TRUE";

        if (answer.equals("F") || answer.equals("FALSE") ||
answer.equals("N") || answer.equals("NO")) correctAnswer = "FALSE";

    }

}
```

File "MultipleChoiceQuestion.java"

```
import javax.swing.JOptionPane;
```

```

public class MultipleChoiceQuestion extends Question {

    MultipleChoiceQuestion(String query, String a, String b, String c,
String d, String e, String answer) {

        question = query+"\n";

        question += "A. "+a+"\n";

        question += "B. "+b+"\n";

        question += "C. "+c+"\n";

        question += "D. "+d+"\n";

        question += "E. "+e+"\n";

        correctAnswer = answer.toUpperCase();

    }

    String ask() {

        while (true) {

            String answer = JOptionPane.showInputDialog(question);

            answer = answer.toUpperCase();

            boolean valid = (answer.equals("A") || answer.equals("B")
|| answer.equals("C") || answer.equals("D") || answer.equals("E"));

            if (valid) return answer;

            JOptionPane.showMessageDialog(null,"Invalid answer. Please
enter A, B, C, D, or E.");

        }

    }

}

```

File "Quiz.java".

```

public class Quiz {

    public static void main(String[] args) {

        Question question = new TrueFalseQuestion("Quizzes are
fun!", "y");
    }
}

```

```

        question.check();

        question = new TrueFalseQuestion("Quizzes are more fun
than programming!", "n");

        question.check();

        question = new TrueFalseQuestion("Which one starts with
T?", "t");

        question.check();

        question = new TrueFalseQuestion("Which one starts with
F?", "f");

        question.check();

        question = new TrueFalseQuestion("Which one is not
true?", "false");

        question.check();

        question = new MultipleChoiceQuestion(
            "What is a quiz?",
            "a test of knowledge, especially a brief informal
test given to students",
            "42",
            "a duck",
            "to get to the other side",
            "To be or not to be, that is the question.",
            "a");

        question.check();

        question = new MultipleChoiceQuestion("When is a quiz?",
            "long, long ago",
            "right now",
            "the best of times",
            "the worst of times",
            "nevermore",

```

```
        "b");

question.check();

question = new MultipleChoiceQuestion("Where is a quiz?",

    "a galaxy far, far away",

    "under the sea",

    "right here",

    "there and back again",

    "the other side of the mountain",

    "c");

question.check();

question = new MultipleChoiceQuestion("Why is a quiz?",

    "I think, therefore it is.",

    "Who is to say?",

    "You tell me.",

    "Because learning is fun!",

    "Because I said so.",

    "d");

question.check();

question = new MultipleChoiceQuestion("How is a quiz?",

    "fair to middling",

    "not bad",

    "by a stroke of luck",

    "by accident",

    "Using Java object-oriented programming!",

    "e");

question.check();

MultipleChoiceQuestion.showResults();
```

```
}  
}
```

Screen shot of a true/false question.

