OOAD Lab 1 Report

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1 Program 1 - Test Question Manager

```java
import java.util.*;
import java.io.*;

abstract class TestQuestion
{
    String question;
    abstract void readQuestion();
}

class ShortAnswer extends TestQuestion
{
    int numLines = 1;

    void readQuestion()
    {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter the question: ");
        question = in.nextLine();
        System.out.print("Enter the number of lines: ");
        numLines = in.nextInt();
    }

    public String toString()
    {
        String str = "Question: " + this.question;
        return str;
    }
}

class LongAnswer extends TestQuestion
{
    int numLines;

    void readQuestion()
    {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter the question: ");
        question = in.nextLine();
        System.out.print("Enter the number of lines: ");
        numLines = in.nextInt();
    }
```

```
42
43      public String toString()
44      {
45          String str = "Question: " + this.question + '\n' + "Number
        of lines: " + this.numLines;
46          return str;
47      }
48
49  }
50
51  class MCQ extends TestQuestion
52  {
53      int numChoices;
54      String[] choices;
55
56      void readQuestion()
57      {
58          Scanner in = new Scanner(System.in);
59          System.out.print("Enter the question: ");
60          question = in.nextLine();
61          System.out.print("Enter the number of choices: ");
62          numChoices = in.nextInt();
63          choices = new String[numChoices];
64
65          in.nextLine();
66          for (int i = 0; i < numChoices; i++)
67          {
68              System.out.print("Enter choice " + (i + 1) + ": ");
69              choices[i] = in.nextLine();
70          }
71      }
72
73      public String toString()
74      {
75          String str = "Question: " + this.question + '\n' + "Number
        of choices: " + this.numChoices + '\n';
76          for (int i = 0; i < this.numChoices; i++)
77          {
78              str += "Choice " + (i + 1) + ": " + this.choices[i] + '
        \n';
79          }
80          return str;
81      }
82
83  }
84
85  class TQManager
86  {
87      public static void main(String[] args)
88      {
89          Scanner in = new Scanner(System.in);
90          System.out.print("Enter the number of questions: ");
91          int numQuestions = in.nextInt();
92
93          String[] questionTypes = new String[numQuestions];
94          TestQuestion[] questions = new TestQuestion[numQuestions];
95          int questionType;
```

```
        for (int i=0; i<numQuestions; i++)
        {
            System.out.println("1. Short Answer");
            System.out.println("2. Long Answer");
            System.out.println("3. Multiple Choice");
            System.out.println();
            System.out.print("Enter the question type: ");
            questionType = in.nextInt();
            System.out.println();

            Boolean valid = false;
            switch(questionType)
            {
                case 1:
                    questions[i] = new ShortAnswer();
                    questions[i].readQuestion();
                    questionTypes[i] = "Short Answer";
                    break;
                case 2:
                    questions[i] = new LongAnswer();
                    questions[i].readQuestion();
                    questionTypes[i] = "Long Answer";
                    break;
                case 3:
                    questions[i] = new MCQ();
                    questions[i].readQuestion();
                    questionTypes[i] = "Multiple Choice";
                    break;
                default:
                    System.out.println("Invalid question type!");
                    break;
            }
            System.out.println();
        }

        System.out.println("\nQuestion details: \n");
        String[] uniqueQuestionTypes = {"Short Answer", "Long
    Answer", "Multiple Choice"};
        for (int j=0; j<3; j++)
        {
            String uniqueQuestionType = uniqueQuestionTypes[j];
            System.out.println(uniqueQuestionType + " Question
    details: \n");
            for (int i=0; i<numQuestions; i++)
            {

                if (questionTypes[i].equals(uniqueQuestionType))
                {
                    String str = questions[i].toString();
                    System.out.println("Question " + (i + 1) + " -
    " + questionTypes[i] + ": ");
                    System.out.println(str);
                    System.out.println();
                }
            }
        }
    }
```

```
150 }
```

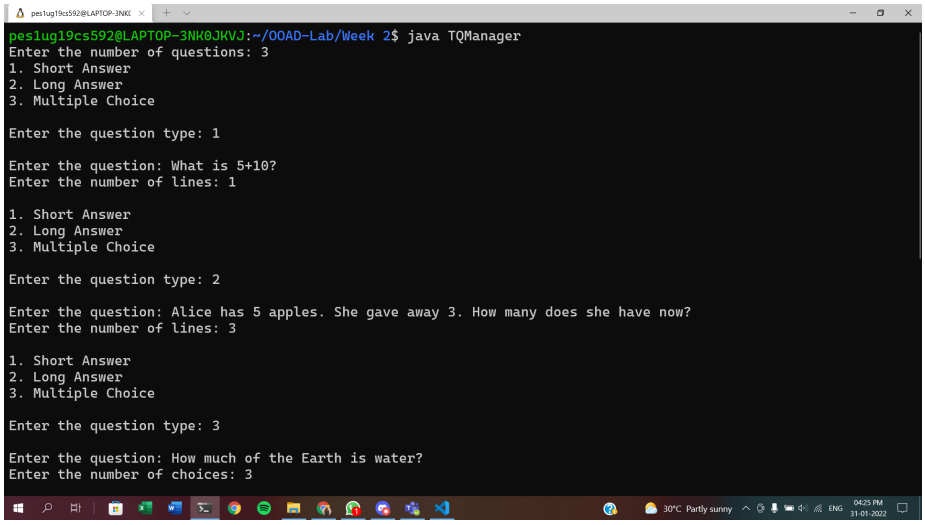

Figure 1: Output screenshot 1

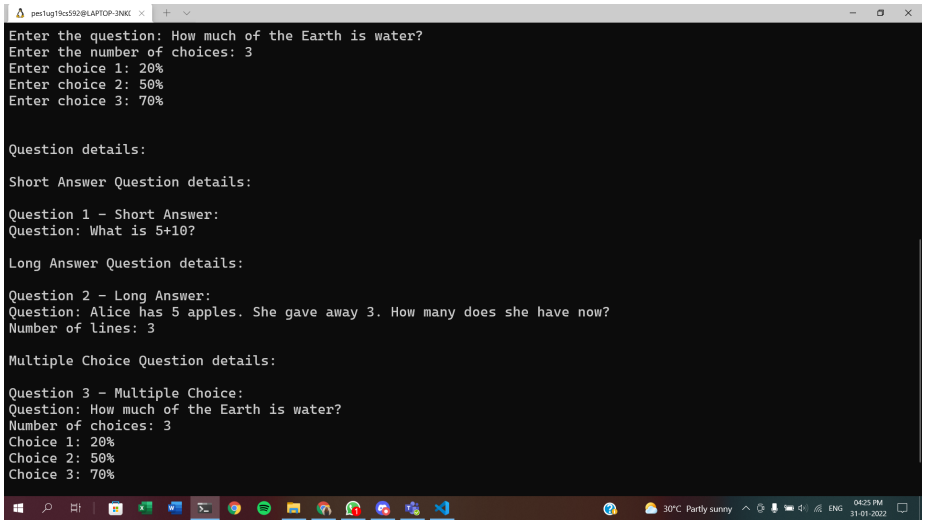

Figure 2: Output screenshot 2