

OOAD Lab 1 Report

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1 Program 1 - Test Question Manager

```
1 import java.util.*;
2 import java.io.*;
3
4 abstract class TestQuestion
5 {
6     String question;
7     abstract void readQuestion();
8 }
9
10 class ShortAnswer extends TestQuestion
11 {
12     int numLines = 1;
13
14     void readQuestion()
15     {
16         Scanner in = new Scanner(System.in);
17         System.out.print("Enter the question: ");
18         question = in.nextLine();
19         System.out.print("Enter the number of lines: ");
20         numLines = in.nextInt();
21     }
22
23     public String toString()
24     {
25         String str = "Question: " + this.question;
26         return str;
27     }
28 }
29
30 class LongAnswer extends TestQuestion
31 {
32     int numLines;
33
34     void readQuestion()
35     {
36         Scanner in = new Scanner(System.in);
37         System.out.print("Enter the question: ");
38         question = in.nextLine();
39         System.out.print("Enter the number of lines: ");
40         numLines = in.nextInt();
41     }
42 }
```

```

42
43     public String toString()
44     {
45         String str = "Question: " + this.question + '\n' + "Number
46         of lines: " + this.numLines;
47         return str;
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
76         of choices: " + this.numChoices + '\n';
77         for (int i = 0; i < this.numChoices; i++)
78         {
79             str += "Choice " + (i + 1) + ": " + this.choices[i] + '
80             \n';
81         }
82         return str;
83     }
84 }
85
86 class TQManager
87 {
88     public static void main(String[] args)
89     {
90         Scanner in = new Scanner(System.in);
91         System.out.print("Enter the number of questions: ");
92         int numQuestions = in.nextInt();
93
94         String[] questionTypes = new String[numQuestions];
95         TestQuestion[] questions = new TestQuestion[numQuestions];
96         int questionType;

```

```

96     for (int i=0; i<numQuestions; i++)
97     {
98         System.out.println("1. Short Answer");
99         System.out.println("2. Long Answer");
100        System.out.println("3. Multiple Choice");
101        System.out.println();
102        System.out.print("Enter the question type: ");
103        questionType = in.nextInt();
104        System.out.println();
105
106        Boolean valid = false;
107        switch(questionType)
108        {
109            case 1:
110                questions[i] = new ShortAnswer();
111                questions[i].readQuestion();
112                questionTypes[i] = "Short Answer";
113                break;
114            case 2:
115                questions[i] = new LongAnswer();
116                questions[i].readQuestion();
117                questionTypes[i] = "Long Answer";
118                break;
119            case 3:
120                questions[i] = new MCQ();
121                questions[i].readQuestion();
122                questionTypes[i] = "Multiple Choice";
123                break;
124            default:
125                System.out.println("Invalid question type!");
126                break;
127        }
128        System.out.println();
129    }
130
131    System.out.println("\nQuestion details: \n");
132    String[] uniqueQuestionTypes = {"Short Answer", "Long
133    Answer", "Multiple Choice"};
134    for (int j=0; j<3; j++)
135    {
136        String uniqueQuestionType = uniqueQuestionTypes[j];
137        System.out.println(uniqueQuestionType + " Question
138        details: \n");
139        for (int i=0; i<numQuestions; i++)
140        {
141            if (questionTypes[i].equals(uniqueQuestionType))
142            {
143                String str = questions[i].toString();
144                System.out.println("Question " + (i + 1) + " -
145                " + questionTypes[i] + ": ");
146                System.out.println(str);
147                System.out.println();
148            }
149        }
150    }

```

```

penlug19cs592@LAPTOP-3NKE: ~/OOAD-Lab/Week 2$ java TQManager
Enter the number of questions: 3
1. Short Answer
2. Long Answer
3. Multiple Choice

Enter the question type: 1

Enter the question: What is 5+10?
Enter the number of lines: 1

1. Short Answer
2. Long Answer
3. Multiple Choice

Enter the question type: 2

Enter the question: Alice has 5 apples. She gave away 3. How many does she have now?
Enter the number of lines: 3

1. Short Answer
2. Long Answer
3. Multiple Choice

Enter the question type: 3

Enter the question: How much of the Earth is water?
Enter the number of choices: 3

```

Figure 1: Output screenshot 1

```

penlug19cs592@LAPTOP-3NKE: ~/OOAD-Lab/Week 2$ java TQManager
Enter the question: How much of the Earth is water?
Enter the number of choices: 3
Enter choice 1: 20%
Enter choice 2: 50%
Enter choice 3: 70%

Question details:

Short Answer Question details:
Question 1 - Short Answer:
Question: What is 5+10?

Long Answer Question details:
Question 2 - Long Answer:
Question: Alice has 5 apples. She gave away 3. How many does she have now?
Number of lines: 3

Multiple Choice Question details:
Question 3 - Multiple Choice:
Question: How much of the Earth is water?
Number of choices: 3
Choice 1: 20%
Choice 2: 50%
Choice 3: 70%

```

Figure 2: Output screenshot 2