**package** com.ofs.training;

**import** java.util.Scanner;

**public** **class** Test {

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

**int** totalCount = 0;

String simpleQuestion1 = Question.***simple1***;

String simpleQuestion2 = Question.***simple2***;

String moderateQuestion1 = Question.***moderate1***;

String moderateQuestion2 = Question.***moderate2***;

String complexQuestion1 = Question.***complex1***;

String complexQuestion2 = Question.***complex2***;

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

QuestionCreator[] simpleQuestions = {

**new** QuestionCreator(simpleQuestion1, "a"),

**new** QuestionCreator(simpleQuestion2, "a")

};

QuestionCreator[] moderateQuestions = {

**new** QuestionCreator(moderateQuestion1, "b"),

**new** QuestionCreator(moderateQuestion2, "b")

};

QuestionCreator[] complexQuestions = {

**new** QuestionCreator(complexQuestion1, "c"),

**new** QuestionCreator(complexQuestion2, "c")

};

QuestionCreator[][] q1 = {

simpleQuestions,

moderateQuestions,

complexQuestions

};

totalCount = *takeModerate*(q1, input, totalCount);

System.***out***.println("Your score is " + totalCount);

}

**public** **static** **int** takeSimple(QuestionCreator[][] questions, Scanner input, **int** count) {

**int** simpleCount = count;

String userAnswer;

**for** (**int** i = 0; i < 1; i++) {

**for** (**int** j = 0; j < questions[i].length; j++) {

System.***out***.println(questions[i][j].question);

userAnswer = input.next();

**if**(questions[i][j].answer.equalsIgnoreCase(userAnswer)) {

simpleCount++;

**break**;

}

}

}

**return** simpleCount;

}

**public** **static** **int** takeModerate(QuestionCreator[][] questions, Scanner input, **int** count) {

**int** moderateCount = count;

String userAnswer;

**for** (**int** i = 1; i < 2; i++) {

**for** (**int** j = 0; j < questions[i].length; j++) {

System.***out***.println(questions[i][j].question);

userAnswer = input.next();

**if**(questions[i][j].answer.equalsIgnoreCase(userAnswer)) {

moderateCount++;

moderateCount = *takeComplex*(questions, input, moderateCount);

**break**;

} **else** {

moderateCount = *takeSimple*(questions, input, moderateCount);

**break**;

}

}

}

**return** moderateCount;

}

**private** **static** **int** takeComplex(QuestionCreator[][] questions, Scanner input, **int** count) {

**int** complexCount = count;

String userAnswer;

**for** (**int** i = 2; i < 3; i++) {

**for** (**int** j = 0; j < questions[i].length; j++) {

System.***out***.println(questions[i][j].question);

userAnswer = input.next();

**if**(questions[i][j].answer.equalsIgnoreCase(userAnswer)) {

complexCount++;

} **else** {

**break**;

}

}

}

**return** complexCount;

}

}

**package** com.ofs.training;

**public** **class** QuestionCreator {

String question;

String answer;

**public** QuestionCreator(String ques, String answer) {

**super**();

**this**.question = ques;

**this**.answer = answer;

}

}

**package** com.ofs.training;

**public** **interface** Question {

String ***simple1*** = **new** StringBuilder("what is the color of apple\n")

.append("(a)red\n")

.append("(b)green\n")

.append("(c)yellow").toString();

String ***simple2*** = **new** StringBuilder("what is the color of plum\n")

.append("(a)red\n")

.append("(b)green\n")

.append("(c)yellow").toString();

String ***moderate1*** = **new** StringBuilder("what is the age of saravana\n")

.append("(a)12\n")

.append("(b)11\n")

.append("(c)13").toString();

String ***moderate2*** = **new** StringBuilder("what is (1+2)\n")

.append("(a)3\n")

.append("(b)3\n")

.append("(c)2").toString();

String ***complex1*** = **new** StringBuilder("what is the age of karthick\n")

.append("(a)12\n")

.append("(b)11\n")

.append("(c)13").toString();

String ***complex2*** = **new** StringBuilder("what is (3+5)\n")

.append("(a)3\n")

.append("(b)3\n")

.append("(c)2").toString();

}

SOLUTION 2:

2

It is possible to remove switch or if/else blocks. The resulting code is shown below:

static final int QUESTION = 0;

static final int ANSWER = 1;

static final int START\_OF\_CHOICES = 2;

//init questions, answers, and choices

static String[][] multiChoice = new String[][]{

{"1. Which country currently emits the most greenhouse gases?", "B", "A. United States", "B. China", "C. India", "D. England"},

{"2. Question 2?", "C", "A. Option 1", "B. Option 2", "C. Option 3", "D. Option 4"},

{"3. Question 3?", "A", "A. Option 1", "B. Option 2", "C. Option 3", "D. Option 4"},

{"4. Question 2?", "D", "A. Option 1", "B. Option 2", "C. Option 3", "D. Option 4"}};

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

//loop through each question

for (int questionIndex = 0; questionIndex < multiChoice.length; questionIndex++) {

//print current question as well as its choices

printQuestion(questionIndex);

do {

//display instruction for input. It's good to put hint like A - D so that the user will now what to enter

System.out.print("\nYour Answer [A - D]: ");

} while (!isCorrectAnswer(questionIndex, input.next().charAt(0))); //continue asking for answer if the user entered an incorrect one

}

}

//method that checks whether the user's answer is correct for a particular question

static boolean isCorrectAnswer(int questionNum, char userAnswer) {

//true if matched, false otherwise

boolean rightAnswer = (userAnswer + "").equalsIgnoreCase(multiChoice[questionNum][ANSWER]);

//equivalent to if rightAnswer is true then display "Correct", else, display "Incorrect"

System.out.println(rightAnswer ? "Correct!\n" : "Incorrect!\n");

return rightAnswer;

}

//method that prints a specific question and its choices

static void printQuestion(int questionNum) {

System.out.println(multiChoice[questionNum][QUESTION]);

int lastColumn = multiChoice[questionNum].length;

for (int x = START\_OF\_CHOICES; x < lastColumn; x++) {

System.out.println("\t" + multiChoice[questionNum][x]);

}

}

Code Explanation:

First, use a two-dimensional array. Each row holds details about the question, answer, and choices. The number of rows is equal to the number of questions. Dedicate column 0 for question, column 1 for answer, and columns 2 - 5 for choices. A sample array content is shown below:

String[][] multiChoice = new String[][]{

{"1. Which country currently emits the most greenhouse gases?", "B", "A. United States", "B. China", "C. India", "D. England"},

{"2. Question 2?", "C", "A. Option 1", "B. Option 2", "C. Option 3", "D. Option 4"},

{"3. Question 3?", "A", "A. Option 1", "B. Option 2", "C. Option 3", "D. Option 4"},

{"4. Question 2?", "D", "A. Option 1", "B. Option 2", "C. Option 3", "D. Option 4"}};

For instance, in row 0, the question is "1. Which country currently emits the most greenhouse gases?"; the answer is "B"; and the choices are "A. United States", etc.

Since you have fix index dedicated to hold a particular value (column 0 is always question), it is a good practice to declare it as a constant inorder to make your code more readable and reliable (less error in encoding).

final int QUESTION = 0; //question is always at column 0

final int ANSWER = 1; //answer is always at column 1

final int START\_OF\_CHOICES = 2; //start of choices is always at index 2

Second, breakdown your main process into sub-processes. For each sub-process, handle them independently. In case that there are required fixes to be done in your code, you only modify the sub-process(es) responsible for them.

Sub-processes:

* print question and display its choices
* check answer and display appropriate message based on the answer

Then, you plug these processes into your main program flow:

1. Initialize items (questions, answers, and choices).
2. For each item

a. print question and display its choices

b. ask user's answer

c. Check user's answer. While it is incorrect, go back to b.