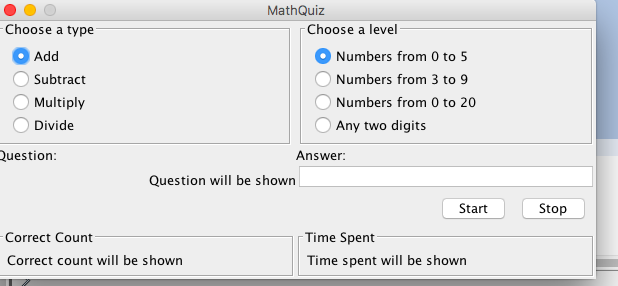
For: Abdulaziz Almutairi

Assignment: Hands on 3

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| **Screenshot(s)** |
| *Paste screen shot(s) here, within this../Desktop/Screen%20Shot%202017-04-30%20at%205.24.08%20PM.png table entry* |
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| **Code** |
| *import java.awt.BorderLayout;*  *import java.awt.Container;*  *import java.awt.FlowLayout;*  *import java.awt.GridLayout;*  *import java.awt.event.ActionEvent;*  *import java.awt.event.ActionListener;*  *import java.util.Random;*  *import javax.swing.BoxLayout;*  *import javax.swing.ButtonGroup;*  *import javax.swing.JButton;*  *import javax.swing.JFrame;*  *import javax.swing.JLabel;*  *import javax.swing.JOptionPane;*  *import javax.swing.JPanel;*  *import javax.swing.JRadioButton;*  *import javax.swing.JTextField;*  *import javax.swing.Timer;*  *import javax.swing.border.CompoundBorder;*  *import javax.swing.border.EmptyBorder;*  *import javax.swing.border.TitledBorder;*  *public class MathQuiz extends JFrame implements ActionListener{*    *static final int MAX\_QUESTIONS = 10;*    *// Start and Stop button*  *private JButton btStart, btStop;*    *// radio buttons for question type*  *JRadioButton rdBtAdd, rdBtSubtract, rdBtMultiply, rdBtDivide;*    *// radio buttons for selecting a level*  *JRadioButton rdBtLevel0To5, rdBtLevel3To9, rdBtLevel0To20, rdBtLevelAnyTwoDigits;*    *// button for the quetion type and level*  *ButtonGroup grType, grLevel;*    *// text box for answer*  *JTextField txAnswer;*    *// random number generator*  *Random rand = new Random();*    *// the timer*  *Timer timer = new Timer(1000, this);*    *// count of correct answers*  *int correctCount = 0;*    *// number of seconds elapased*  *int secsElapsed = 0;*    *// numbers of the current question*  *int number1, number2;*    *// range of numbers as per level*  *int numberMax=0, numberMin=5;*    *// answer of current question*  *int answer;*    *// count of questions being asked*  *int countQuestions = 0;*    *// text for question, correct count and time spent*  *JLabel lblQuestion, lblCorrectCount, lblTimeSpent;*    *public MathQuiz(){*  *super("MathQuiz");*  *Container cont = this.getContentPane();*  *cont.setLayout(new BorderLayout());*    *// create the top panel to show question type and level*  *JPanel p1 = new JPanel();*  *p1.setLayout(new GridLayout(1, 2, 5, 0));*  *JPanel p1Child1 = new JPanel();*  *p1Child1.setBorder(new CompoundBorder(new TitledBorder("Choose a type"), new EmptyBorder(5, 5, 5, 5)));*  *p1Child1.setLayout(new BoxLayout(p1Child1, BoxLayout.Y\_AXIS));*  *grType = new ButtonGroup();*  *rdBtAdd = new JRadioButton("Add", true);*  *grType.add(rdBtAdd);*  *rdBtSubtract = new JRadioButton("Subtract");*  *grType.add(rdBtSubtract);*  *rdBtMultiply = new JRadioButton("Multiply");*  *grType.add(rdBtMultiply);*  *rdBtDivide = new JRadioButton("Divide");*  *grType.add(rdBtDivide);*  *p1Child1.add(rdBtAdd);*  *p1Child1.add(rdBtSubtract);*  *p1Child1.add(rdBtMultiply);*  *p1Child1.add(rdBtDivide);*  *p1.add(p1Child1);*    *JPanel p1Child2 = new JPanel();*  *p1Child2.setBorder(new CompoundBorder(new TitledBorder("Choose a level"), new EmptyBorder(5, 5, 5, 5)));*  *p1Child2.setLayout(new BoxLayout(p1Child2, BoxLayout.Y\_AXIS));*  *grLevel = new ButtonGroup();*  *rdBtLevel0To5 = new JRadioButton("Numbers from 0 to 5", true);*  *rdBtLevel0To5.addActionListener(this);*  *grLevel.add(rdBtLevel0To5);*  *rdBtLevel3To9 = new JRadioButton("Numbers from 3 to 9", true);*  *rdBtLevel3To9.addActionListener(this);*  *grLevel.add(rdBtLevel3To9);*  *rdBtLevel0To20 = new JRadioButton("Numbers from 0 to 20", true);*  *rdBtLevel0To20.addActionListener(this);*  *grLevel.add(rdBtLevel0To20);*  *rdBtLevelAnyTwoDigits= new JRadioButton("Any two digits", true);*  *rdBtLevelAnyTwoDigits.addActionListener(this);*  *grLevel.add(rdBtLevelAnyTwoDigits);*  *p1Child2.add(rdBtLevel0To5);*  *p1Child2.add(rdBtLevel3To9);*  *p1Child2.add(rdBtLevel0To20);*  *p1Child2.add(rdBtLevelAnyTwoDigits);*  *p1.add(p1Child2);*    *// create the middle panel to question and answer input text box*  *JPanel p2 = new JPanel(new GridLayout(1, 2));*  *JPanel p2Child1 = new JPanel(new BorderLayout());*  *//p2Child1.setBorder(new CompoundBorder(new TitledBorder("Correct Count"), new EmptyBorder(5, 5, 5, 5)));*  *JLabel l1 = new JLabel("Question:");*  *l1.setAlignmentX(0.0f);*  *p2Child1.add(l1, BorderLayout.NORTH);*  *lblQuestion = new JLabel("Question will be shown");*  *lblQuestion.setHorizontalAlignment(JLabel.RIGHT);*  *p2Child1.add(lblQuestion, BorderLayout.CENTER);*  *p2.add(p2Child1);*  *JPanel p = new JPanel();*  *p.setBorder(new EmptyBorder(17, 5, 5, 10));*  *p2Child1.add(p, BorderLayout.SOUTH);*  *JPanel p2Child2 = new JPanel(new BorderLayout());*  *//p2Child2.setBorder(new CompoundBorder(new TitledBorder("Time Spent"), new EmptyBorder(5, 5, 5, 5)));*  *l1 = new JLabel("Answer:");*  *l1.setAlignmentX(0.0f);*  *p2Child2.add(l1, BorderLayout.NORTH);*  *txAnswer = new JTextField(15);*  *txAnswer.addActionListener(this);*  *p2Child2.add(txAnswer, BorderLayout.CENTER);*  *p2.add(p2Child2);*    *JPanel p2Child3 = new JPanel(new FlowLayout(FlowLayout.TRAILING));*  *// create the Start button*  *btStart = new JButton("Start");*  *btStart.addActionListener(this);*  *p2Child3.add(btStart);*    *// create the Stop button*  *btStop = new JButton("Stop");*  *btStop.addActionListener(this);*  *p2Child3.add(btStop);*  *p2Child2.add(p2Child3, BorderLayout.SOUTH);*    *// create the bottom panel to show correct count and time spent*  *JPanel p3 = new JPanel(new GridLayout(1, 2));*  *JPanel p3Child1 = new JPanel(new BorderLayout());*  *p3Child1.setBorder(new CompoundBorder(new TitledBorder("Correct Count"), new EmptyBorder(5, 5, 5, 5)));*    *// create the lable for correct count*  *lblCorrectCount = new JLabel("Correct count will be shown");*  *p3Child1.add(lblCorrectCount, BorderLayout.CENTER);*  *p3.add(p3Child1);*    *// create the lable for time spent*  *JPanel p3Child2 = new JPanel(new BorderLayout());*  *p3Child2.setBorder(new CompoundBorder(new TitledBorder("Time Spent"), new EmptyBorder(5, 5, 5, 5)));*  *lblTimeSpent = new JLabel("Time spent will be shown");*  *p3Child2.add(lblTimeSpent, BorderLayout.CENTER);*  *p3.add(p3Child2);*      *// add all the panels to the frame*  *cont.add(p1, BorderLayout.NORTH);*  *cont.add(p2, BorderLayout.CENTER);*  *cont.add(p3, BorderLayout.SOUTH);*  *}*  *@Override*  *public void actionPerformed(ActionEvent e) {*  *// handle all the change in radio buttons, button click events and*  *// answer text box ENTER event*    *// get the UI control that caused the event*  *Object src = e.getSource();*  *if(src == timer){*  *// timer fired after 1 sec*  *secsElapsed++;*  *lblTimeSpent.setText(secsElapsed + " seconds");*  *}*  *else if(src == btStart){*  *// Start*  *start();*  *}else if(src == btStop){*  *// Stop*  *stop();*  *}else if(src == txAnswer){*  *// answer text box ENTER*  *if(timer.isRunning()){*  *String input = txAnswer.getText();*  *try{*  *int userAns = Integer.parseInt(input);*  *if(userAns == answer){*  *correctCount++;*  *lblCorrectCount.setText("" + correctCount);*  *}*  *}catch(NumberFormatException ex){*  *}*  *txAnswer.setText("");*  *generateQuestionAnswer();*  *countQuestions++;*  *if(countQuestions == MAX\_QUESTIONS){*  *String msg = "\*\*\*\*\* QUIZ OVER \*\*\*\*\*\*\n";*  *msg += "Score: "+correctCount+"/"+MAX\_QUESTIONS;*  *JOptionPane.showMessageDialog(this, msg, "Score", JOptionPane.INFORMATION\_MESSAGE);*  *stop();*  *}*  *}*  *}*  *}*    *// Stop the quiz and reset UI*  *private void stop() {*  *correctCount = 0;*  *countQuestions = 0;*  *secsElapsed = 0;*  *if(timer.isRunning())*  *timer.stop();*  *btStop.setEnabled(false);*  *btStart.setEnabled(true);*  *lblQuestion.setText("Question will be shown");*  *}*    *// Start the quiz again*  *private void start() {*  *correctCount = 0;*  *lblCorrectCount.setText("0");*  *lblTimeSpent.setText("0 secs");*  *generateQuestionAnswer();*  *timer.start();*  *btStart.setEnabled(false);*  *btStop.setEnabled(true);*  *}*    *// generate two numbers and the answer as per question type*  *// and level*  *private void generateQuestionAnswer() {*  *String question = "";*    *if (rdBtLevel0To5.isSelected()) {*  *// generate two numbers between 0 to 5*  *number1 = rand.nextInt(6);*  *number2 = rand.nextInt(6);*  *if(rdBtDivide.isSelected() && number2 == 0){*  *while(number2 == 0){*  *number2 = rand.nextInt(6);*  *}*  *}*  *} else if (rdBtLevel3To9.isSelected()) {*  *// generate two numbers between 3 to 9*  *number1 = 3 + rand.nextInt(4);*  *number2 = 3 + rand.nextInt(4);*  *if(rdBtDivide.isSelected() && number2 == 0){*  *while(number2 == 0){*  *number2 = 3 + rand.nextInt(4);*  *}*  *}*  *} else if (rdBtLevel0To20.isSelected()) {*  *// generate two numbers between 0 to 20*  *number1 = rand.nextInt(21);*  *number2 = rand.nextInt(21);*  *if(rdBtDivide.isSelected() && number2 == 0){*  *while(number2 == 0){*  *number2 = rand.nextInt(21);*  *}*  *}*  *}else{*  *// generate two numbers with any two digits*  *number1 = 10 + rand.nextInt(91);*  *number2 = 10 + rand.nextInt(91);*  *if(rdBtDivide.isSelected() && number2 == 0){*  *while(number2 == 0){*  *number2 = 10 + rand.nextInt(91);*  *}*  *}*  *}*  *// compute the answer*  *if (rdBtAdd.isSelected()) {*  *question = String.format("%d + %d = ", number1, number2);*  *answer = number1 + number2;*  *} else if (rdBtSubtract.isSelected()) {*  *question = String.format("%d - %d = ", number1, number2);*  *answer = number1 - number2;*  *} else if (rdBtMultiply.isSelected()) {*  *question = String.format("%d \* %d = ", number1, number2);*  *answer = number1 \* number2;*  *} else {*  *question = String.format("%d / %d = ", number1, number2);*  *answer = number1 / number2;*  *}*  *// display the question*  *lblQuestion.setText(question);*  *}*    *public static void main(String[] args){*  *MathQuiz quiz = new MathQuiz();*  *quiz.setDefaultCloseOperation(EXIT\_ON\_CLOSE);*  *quiz.setSize(600, 280);*  *quiz.setVisible(true);*  *quiz.setResizable(false);*  *quiz.setLocationRelativeTo(null);*  *}*  *}*  *Paste code here, within this table entry. Use the retain formatting option of the Paste* |
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