Homework 12

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**Homework Problem 1**

**Requirements**

Create a program which creates a GUI that allows the user to change the color to white and back at the click of a check box.

**Design**

Instance variables

Container, JPanel (x2), JCheckBox (x2), ActionListener, int (color numbers) (x6)

*constructor*

sets up GUI with panels and check boxes linked to the action listener for changing the color of the panels.

*main*

new C18h5();

*class Listener implements ActionListener*

causes color to change if an action event occurs at the check box

**Iterative Development Steps**

1. Create GUI according to normal structure of a two panel GUI
2. Create a Listener class that can be used to change the color of the panels

**Tests**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description of test | Input | Expected result | Actual result | Cause |
| GUI test 1 | N/A | GUI with check box that changes color of panel | GUI with check box that changes color of panel | Good code |

**Homework Problem 2**

**Requirements**

Create a program which records exam results and finds the average, maximum, minimum, and number of grades entered into

**Design**

Instance variables

Count (int), max (int), min (int), sum (double), average (double), index (int)

*constructor*

initializes relevant variables

*public void record(parameter)*

places exam results into an array

*public double average()*

calculates and returns the average of the entered grades

*public int max()*

finds and returns the highest grade score

*public int min()*

finds and returns the lowest grade score

*public int count()*

returns how many grades have been entered

**Iterative Development Steps**

1. Create a class that places numbers between 0 and 100 into an array and finds the average, maximum, and minimum number based on the numbers entered.
2. Create a class for testing each method in the first class.

**Tests**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description of test | Input | Expected result | Actual result | Cause |
| Method test 1 | N/A | Confirmation of working methods | Confirmation of working methods | Good methods |

**Homework Problem 3**

**Requirements**

Create a program with four classes that pass values from the third class in series to references in the main class and allow the values to be changed from the main class.

**Design**

*Class C1*

Constructor that creates an object that references the next class in series, copy constructor, setter, and getter.

*Class C2*

Constructor that creates an object that references the next class in series, copy constructor, setter, and getter.

*Class C3*

Constructor that assigns x a value of 7, copy constructor, setter for x, getter for x.

*Class C7h3*

Main class that creates reference objects for integer values contained in class C3, c2 being a copy of c1. Use the setter path in classes C1, C2, and C3 to set the value of c1 to 11. Use println statements and the getter path in classes C1, C2, and C3 to get the values of c1 and c2.

**Iterative Development Steps**

1. Create three classes that reference each other in series with respect to one another. Each of these classes should have a constructor, which the first two reference the next class and the last class instantiates the x variable, a copy constructor, a setter, and a getter.
2. Create a main class that creates new objects with type of the first class in series. The first object should be a brand new object, while the second object should be a copy of the first. Then use the setters and getter to change the brand new object’s value and display the values.

**Tests**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description of test | Input | Expected result | Actual result | Cause |
| Path test 1 | N/A | Confirmation of working paths | Confirmation of working paths | Correct pathways |

**References**

An Introduction to Programming Using Java, Anthony J Dos Reis.