Week3Lab – 10 pts

Pre-lab questions

Conditional statements can take some practice. Work each of these out to see what they evaluate to. You may find it useful to create truth tables in your notes (p. 195)

1. String apple = “Rome”;  
   String city = “Rome”;  
   String fruit = “apple”;  
   double cost = 5.25;  
   double value = 3.0;  
   int count = 10;  
   int qty =80;  
   Boolean old = false;  
   Boolean smart = true;

* 1. apple == fruit
  2. city.equals(apple)
  3. cost > value
  4. apple != city
  5. !old ||smart
  6. smart && (value <= cost/2.0)
  7. (value == cost) && (count < 10)
  8. (qty < value) || (qty < cost)
  9. !(qty < value) && (value < cost)

a. False

b. True

c. True

d. False

e. True

f. False

g. False

h. False

i. True

1. If statements in Java are related to if sentences in English. Convert each of these sentences into their Java equivalent. Remember to declare any variables needed:  
   1. If there are more than 10 cookies on the tray, I will take one.

if (cookie > 10) {

System.***out***.print("I will take one cookie");

cookie--;

}

* 1. If the cookie tray has Oreo’s and there are more than 10 cookies on the tray, I will take an Oreo.

ArrayList<String> cookies = new ArrayList<String>();

cookies.add("Oreo");

cookies.add("Gingersnaps");

cookies.add("Snickerdoodles");

cookies.add("Chocolate Chip Cookies");

cookies.add("Shortbread Cookies");

cookies.add("Peanut Butter Cookies");

cookies.add("Whoopie Pies");

cookies.add("Sugar Cookies");

cookies.add("Molasses Cookies");

cookies.add("Butter Cookies");

cookies.add("Biscotti");

cookies.add("Vanilla");

if (cookies.contains("Oreo") && cookies.size() > 10) {

System.***out***.println("I will take an Oreo”);

Cookies.remove("Oreo");

}

* 1. If the top is on sale for less than $25 or more than 50% discount and I have at least twice the cost of the top in my wallet, I will buy it.

int top = 20;

int discount = 60;

int wallet = 50;

if (top < 25 || discount > 50) {

if (wallet >= 2 \* (top)) {

System.***out***.println("I will buy it");

}

}

* 1. I will go swimming is the weather is sunny and the temperature is over 85.

String weather = "sunny";

int temp = 85;

if (weather.equals("sunny") && temp == 85) {

System.***out***.println("I will go for swimming");

}

* 1. Help me set my alarm clock. I get up at 8 am most days, but on Thursday I have to get up at 7 am and on Saturday and Sunday I get to sleep until 9 am.

Int time;

If(days.equals(”Thurday”)){

time = 7;

}

Else if(days.equals(“Saturday”)){

time = 9;

}

Else if(days.equals(“Sunday”)){

time = 9;

}

else{

time = 8;

}

Choose one of the following do develop into a program that uses at least one class outside of the class that contains the main method. Once chosen, do the following:

Understand the problem (restate in your own words, make any assumptions clear):

I solve this problem using two different library one is scanner and one is random.

Graphical user interface

Description automatically generatedI have to generate two random numbers then first random number is decimal number I can print as it is. For second random generate number I have to convert it into binary using the method which is in another class and access it through main class.  
UML diagrams of any classes needed, including the one with main:

Graphical user interface, application

Description automatically generated

Pseudocode of each class:

Using random number I generate two random numbers one for decimal and one for decimal to binary conversion.

Then I use second decimal number to convert it into binary using the method of another class.

In one class I create method for decimal to binary and in main class I generate the random number and pass through it to another class method.

Name of files (.java) submitted:

BinaryToDec.java

Binary / Decimal Quiz Generator

Someone important to you needs to practice their binary to decimal conversions and decimal to binary conversions. You decide to practice your object-oriented programming skills to solve this problem. Develop and write a program that will generate a problem of each type with randomness. Each time you ask for a quiz, it creates two questions, each based on a random decimal number.

You will also need to create the class with a main method that will print out the problems. Don’t worry about the answer key, just generate the problems.

556 is your Decimal Random Number

Decimal to binary conversion of 781 = 1100001101

Smart Mailbox

With the availability of cheap sensors and processors, you have an idea to improve the common roadside mailbox. Develop and write an object-oriented program that represents the mailbox. Think about the things a smart mailbox would know about itself (the state) and what a smart mailbox should be able to do (the behaviors).

Also think about how the homeowner/renter would interact with the smart mailbox. Write a sample driver program (with a main method) that uses the mailbox class you created.

Tracking EBooks

You’ve recently gotten into reading ebooks and now have several apps and formats, some are rented, and some are yours, some are on your phone and some are in the cloud, etc. You need to get a handle on this AND you want one easy way to see what you have, what you’ve read and what you want. Design an ebook class with all the information you think an ebook should know about itself (format, title, author, etc) in addition to the information you WANT it to know (whether you’ve read it, own it, want it, etc.). Then design its behaviors, which should be related to those variables as you will want to set or change some of them such as marking a book read once you finish it.

You will then create the class with main that you will use to create several ebook objects, setting their variables and using their methods. Don’t forget to write a toString method so you can print an ebook out in a way that makes sense.