COMP 170 Week 2 Homework
These are Chapter 2, Programming Projects 2, 4, and 5, plus 7 for extra credit

2. (*hate* → *love*) Write a program that reads a line of text and then displays the line, but with the first occurrence of *hate* changed to *love*. For example, a possible sample dialogue, with the user's input in `blue`, might be:

```
Enter a line of text.
I hate you
I have rephrased that line to read:
I love you
```

   You can assume that the word *hate* occurs in the input. If the word *hate* occurs more than once in the line, your program will replace only its first occurrence. ***Hint*: Use String methods.** Name your file LoveHate.java.

4. (silly sentence) Write a program that asks the user to enter a favorite color, a favorite food, a favorite animal, and the first name of a friend or relative. The program should then print the following two lines, with the user's input replacing the items in italics:

```
I had a dream that Name ate a Color Animal
and said it tasted like Food!
```

   For example, if the user entered ***blue*** for color, ***hamburger*** for food, ***dog*** for the animal, and ***Jake*** for the person's name, the output would be:

```
I had a dream that Jake ate a blue dog
and said it tasted like hamburger!
```

5. (vending machine change) Write a program that determines the change to be dispensed from a vending machine. An item in the machine can cost between 25 cents and a dollar, in 5-cent increments (25, 30, 35, …, 90, 95, or 100), and the machine accepts only a single dollar bill to pay for the item. For example, a possible dialogue with the user might be (user input in `blue`): Name your file VendingChange.java.

```
Enter price of item
(from 25 cents to a dollar, in 5-cent increments: 45

You bought an item for 45 cents and gave me a dollar,
so your change is
2 quarters,
0 dimes, and
1 nickels.
```

***Hint*: Use / and % plus concatenation.**

8. Also watch the VideoNote giving the solution for Programming Project 8, Basal Metabolic Rate (BMR).

Go on to the next page for the extra credit problem.

7. (water in a well; **extra credit problem**) Many private water wells produce only 1 or 2 gallons of water per minute. One way to avoid running out of water with these low-yield wells is to use a holding tank. A family of 4 will use about **250** gallons of water per day. However, there is a "natural" water holding tank in the casing (i.e., the hole) of the well itself. The deeper the well, the more water that will be stored that can be pumped out for household use. But how much water will be available?

   Write a program that allows the user to input the radius of the well casing in inches (a typical well will have a 3-inch radius) and the depth of the well in feet (assume water will fill this entire depth, although in practice that will not be true since the static water level will generally be 50 feet or more below the ground surface). The program should output the number of gallons stored in the well casing. For your reference:

   The volume of a cylinder is $\pi r^2 h$, where r is the radius and h is the height. 1 cubic foot = 7.48 gallons of water.

   For example, a **300-foot well** full of water with a radius of **3** inches for the casing holds about **441 gallons** of water—plenty for a family of 4 and no need to install a separate holding tank.

   Name your file WaterWell.java

   ***Hints*: you have to convert the radius in inches to its *double* value in *feet* by dividing by 12; in Java the value of pi is provided as Math.PI**.