PS 1: Part I

Problem 1: Learning to read Java Code

1-1)
   a) a == b
   b) a < b
   c) b < a
   d) a <= b
   e) b < a

1-2)
b) * can't be used
c) boolean can't be added

1-3)
   a) 2bc
   b) 5bc
   c) 5bc
   d) bc5
   e) bc23

Problem 2: Java programming basics
2-1)

```java
/*
 * Problem1.java
 *
 * name: Hyungu Lee
 * email: hlee18@bu.edu
 *
 * A program with lots of syntax errors!
 */

import java.util.*;

public class Problem2 {
    /*
     * This static method should take an integer x and return:
     *    - the opposite of x when x is negative
     *    - 10 more than x when x is non-negative and even
     *    - the unchanged value of x when x is non-negative and odd
     */
    public static int adjust(int x) {
        if (x < 0) {
            x *= -1;
        }
        else if (x % 2 == 0) {
            x += 10;
        }
        return x;
    }

    public static void main(String[] args) {
        Scanner console = new Scanner(System.in);

        System.out.print("Enter an integer x: ");
        int x = console.nextInt();

        System.out.println("adjust(x) = " + adjust(x));
    }
}
```

2-2)
a) 5.75
b) 5
c) 27.0
d) xy
e) 5
f) True
g) 14
h) 12
i) 13CS
j) CS112

2-3)
a) 15g
b) 7
c) 7.5
d) 7.5
e) 0
f) 0
g) 112
h) 22

Problem 3: Conditional execution 3-1)

a)   Enter three numbers: 1 2 3
       Terriers
       Crimson
       Let's go!

b)   Enter three numbers: 4 1 4
       Terriers
       Crimson
       Let's go!

c)   Enter three numbers: 3 1 2
       Bears
       Let's go!

d)   Enter three numbers: 5 8 3
       Big Green
       Big Red
       Bulldogs
       Let's go!

e)   Enter three numbers: 5 4 4
       Huskies
       Let's go!

   f) Enter three numbers: 3 5 2
       Big Green
       Bulldogs
       Let's go!

3-2)
- Lions is not executed at all since a < c was already executed above where a <= c.
- Quakers is not executed because we know that b < a <= c, so !(b > c) can't be executed.

Problem 4: Static methods
4-1
variables that belong to main()

x	y
1	3
4	3
4	27

variables that belong to compute()

x	y
1	3
4	2
3	3
6	0
3	4
6	2

output (the lines printed by the program)
1 3
4 2
4 3
6 0
4 3
6 2
4 27

4-2)
public static double bmi(double w, double h) {
        double result = ((720*w)/(h*(double)h));
        return (result);
}

Problem 5: Loops
5-1)
```
for (int x = 1; x <= 2022; x++) {
    System.out.println("Twenty two!");
}
```

5-2)
```
public static void countDown(int n) {
    int count = n;
    while (count >= 1) {
        System.out.println(count);
        count--;
    }
}
```

5-3)
```
for (int i = 1; i <= 3; i++) {
    System.out.println("** " + i + " **");
    for (int j = 3; j >= i; j--) {
        System.out.println(i + " " + j);
    }
}
```

Problem 6: Scope of Variables

1) e, i
2) e, i, a, j, b
3) e, i, a
4) e, i, y
5) c
6) c, d