

PS 1: Part I

Problem 1: Learning to read Java Code

1-1)

- a) `a == b`
- b) `a < b`
- c) `a > b`
- d) `a <= b`
- e) `a > b`

1-2)

- a) No Error
- b) Error
- c) No Error

1-3)

- a) `"2bc"`
- b) `"5bc"`
- c) `"5bc"`
- d) `"bc5"`
- e) `"bc23"`

Problem 2: Java programming basics

2-1)

```
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));
        console.close();
    }
}
```

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) "Terriers"
"Crimson"
"Let's go!"
- b) "Terriers"
"Crimson"
"Let's go!"
- c) "Bears"
"Let's go!"
- d) "Big Green"
"Big Red"
"Bulldogs"
"Let's go!"
- e) "Huskies"
"Let's go!"
- f) "Big Green"
"Bulldogs"
"Let's go!"

3-2)

The line "Quakers" will never be printed because suppose the first two conditions are false, the inequality statement for a, b, c is $b \geq a > c$. Therefore the condition $!(b > c)$ will always be evaluated to be false and thus, "Quakers" will never be printed for any set of inputs.

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	3
4	2
3	3
6	3
6	0
3	4
6	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(int w, int h) {  
    double result = (720.0 * w) / (h * h);  
    return result;  
}
```

Problem 5: Loops

5-1)

```
for (int i = 0; i < 2022; i++) {  
    System.out.println("Twenty two!");  
}
```

5-2)

```
public static void countDown(int n) {  
    while (n > 0) {  
        System.out.println(n);  
        n--;  
    }  
}
```

5-3)

```
for (int i = 1; i < 4; i++) {  
    System.out.println("** " + i + " **");  
    for (int j = 3; j > 0; j--) {  
        System.out.println(i + " " + j);  
    }  
}
```

Problem 6: Variable scope

6-1) e, i

6-2) a, b, e, i, j

6-3) a, e, i

6-4) e, i, y

6-5) c

6-6) c, d