

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) will create an error
- c) no error

1-3)

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

Problem 2: Java programming basics

2-1)

```
/*
 * Problem2.java
 *
 * 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) { // checks if x is negative
            x *= -1; //manipulates and stores x
        } else if (x % 2 == 0) { // checks if x is even
            x += 10; // manipulates and stores x
        }

        return x; // returns x either unchanged if non-negative and odd or changed if
the if/elif statements apply
    }

    public static void main(String[] args) {
        Scanner console = new Scanner(System.in); // establishes a new scanner object
to take user input for x

        System.out.print("Enter an integer x: "); // asks the user for an integer x
        int x = console.nextInt(); // reads the users input

        System.out.println("adjust(x) = " + adjust(x)); // outputs the integer after
running through the adjust function
    }
}
```

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) Bulldogs
Let's go!

3-2)

`System.out.println("Lions")` will never execute as if `a <= c` the first block of code will run, meaning the else if block will not run and therefore the if block within asking if `a < c` will never be able to run.

Problem 3: 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(int w, int h) {  
    double result = (720.0 * w) / (h * h);  
    return result;  
}
```

Problem 5: Loops

5-1)

```
for (int i = 1 ; i <= 2022 ; i++) {  
    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