

## PS 1: Part I

1. Select *File->Make a copy...* and save a copy of this template to your Google Drive using the name **ps1\_partI**.
2. Put your answers for Part I in the appropriate locations below.
3. Once you are done with Part I, choose *File->Download->PDF*, and save the file on your machine. The resulting PDF file (**ps1\_partI.pdf**) is the one that you will ultimately submit.

### Problem 1: Java programming basics

1-1)

```
import java.util.*;

public class Buggy{
    /*
     * This static method should take an integer x and return:
     *   x + 1 if x is even
     *   the unchanged value of x when x is odd
     */
    public static int makeOdd(int x)
    {
        if (x % 2 == 0){
            x++;
        }
        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("makeOdd(x) = "+ makeOdd(x));
    }
}
```

1-2)

- a) 14.0
- b) "10d"
- c) 0
- d) 0.4
- e) 0.4

- f) 8.0
- g) 2.0
- h) 2.5
- i) "33"
- j) "123"

## **Problem 2: Conditional execution**

**2-1)**

- a) "Bruins"  
"Patriots"  
"Go BU!"
- b) "Celtics"  
"Patriots"  
"Go BU!"
- c) "Terriers"  
"Go BU!"
- d) "Renegades"  
"Terriers"  
"Go BU!"
- e) "Huskies"  
"Revolution"  
"Go BU!"
- f) "Terriers"  
"Go BU!"

**2-2)** "Red Sox" would not be printed. This statement only gets printed if  $!(a \geq b)$  or in other words,  $(a < b)$ . If this were true with the given inputs, the first if statement would be executed causing the else if, where the nested if of  $1(a \geq b)$  is located, to not be executed. Therefore "Red Sox" would not be printed.

### Problem 3: Static methods

3-1

variables that belong to main()

x	y
6	3
6	1
4	1

variables that belong to compute()

x	y
6	3
1	9
1	6
3	7
4	4
2	8

output (the lines printed by the program)

6 3

1 9  
6 1  
3 7  
4 1  
2 8  
4 1

3-2)

```
public static double triArea(int b, int h) {  
    double area = 0.5*b*h;  
    return area;  
}
```

#### Problem 4: Loops

4-1)

```
for (int i=0;i<112;i++) {  
    System.out.println("Fruit loops");  
}
```

4-2)

```
int y = 20;    // do not change this line  
while (y > -2) {  
    System.out.print(y + " ");  
    y -= 2;  
}
```

4-3)

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

#### Problem 5: Variable scope

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

## **Problem 6: String objects and their methods**

**6-1**

a) `s1.substring(6) + " " + s2.substring(0, 2)`

b) `System.out.println(s1.substring(6,7)+s1.substring(9)+s2.substring(2,8));`

c) `System.out.println((s1.substring(0,1)+s1.substring(9)).toUpperCase()+s2.substring(s2.length()-1));`

d) `System.out.println((s1.substring(0,1)).toLowerCase()+s1.substring(9,10)+s2.substring(0,2));`

e) `System.out.println(s1.charAt(8));`

f) `System.out.println(s1.indexOf('i'));`

g) `System.out.println(s1.replace('t', 'u'));`