Problem Set 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.Scanner;

public class Program1 {
      /*
     * This method should take an integer x and return:
     *    2x when x is odd
     *    the unchanged value of x when x is even
     */
      public static int double_if_odd(int x) {

            int num = x;
            if (num % 2 == 1) {
                  num *= 2;
            }
            return num;
      }

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

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

          System.out.println("double_if_odd(x) = " + double_if_odd(x));
          scan.close();
          }
}
```

1-2)

a) 17
b) “15g”
c) 17.0
d) 7
e) 7.5
f) 7.5
g) 0
h) 0
i) “112”
j) “22”

Problem 2: Conditional execution

2-1)

a) diamond
   pearl
   done
b) ruby
   pearl
   done
c) diamond
   pearl
   done
d) silver
   done
e) penny
   nickel
   done
f) diamond
   pearl
   done

2-2)

```
if (!(a > b)) {
        System.out.println("copper");
    }
```

Because when u look at the if statement above which is if (a <= b){} is the same as (!(a > b) so before it reaches to this code line it will always executre the first if line,

```
if (a <= b) {
    if (b > c || c < 4) {
        System.out.println("diamond");
    } else {
        System.out.println("ruby");
    }
    System.out.println("pearl");
}
```

2th

```
if (a < c) {
        System.out.println("gold");
    }
```

This statement also could not be reached because in other to execute, (b >= c) and to reach this a has to be smaller than c. which mean b and c has to be equal or b has to be bigger than c and a has to be smaller than c. which means a has to be always smaller than b, which is (a <= b) → it is the first if statement, so it will never reach down to esle if (b >= c) statememt.

Problem 3: Static methods

3-1

variables that belong to main()

a	b
5	4
3	4
3	7

variables that belong to callMe()

a	b
5	4
3	2
4	3
3	1
3	3
2	1

output (the lines printed by the program)

```
5 4
3 2
3 4
3 1
3 7
2 1
2
3 7
```

3-2)

```
public static double average(int a, int b) {
      double avg = (double)(a + b) / 2;
      return avg;
}
```

Problem 4: Loops

4-1)

```
for (int i = 0; i < 42; i++) {
    System.out.println("I feel loopy!");
}
```

4-2)

```
int i = 0;
while (i < 30) {
    i += 5;
    System.out.print(i);

}
```

4-3)

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

Problem 5: Variable scope

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

Problem 6: String objects and their methods

6-1

```
a) str2.substring(0, 5) + str1.substring(5)
b) str1 + " " + str2
c) str2.charAt(1) + str1.substring(10)
d) str1.substring(0,6).toLowerCase() + str2.toUpperCase().substring(6)
```

```
e) str1.charAt(4)
f) str2.substring(6,10) + str1.substring(3,5)
g) str1.indexOf('g')
h) str1.replace('i', 'o')
```