

## CS200 - Programming Assignment 2

Due: Monday, September. 25. Must be uploaded to Canvas before the beginning of class.

Please read the sections of the syllabus on programming assignments and honor code before starting this homework. I would also recommend reading the [rubric](#) for programming grading, so that you know how we will be grading this assignment.

1. **[30 Points]** Both python and java have built-in functionality for sets. In this assignment, you will learn and apply that functionality. Let  $A$ ,  $B$ , and  $C$  be the following sets:

$$\begin{aligned} A &= \{x : x \text{ in an integer, } 0 \leq x \leq 10^6, \text{ the remainder of } x \text{ when divided by 7 is 2}\} \\ B &= \{x : x \text{ in an integer, } 0 \leq x \leq 10^6, \text{ the remainder of } x \text{ when divided by 14 is 2}\} \\ C &= \{x^2 : x \text{ in an integer, } 0 \leq x^2 \leq 10^6, \} \end{aligned} \tag{1}$$

Write a program using the built-in functions whose output is the following (with “xxx” filled in with the appropriate numbers and either true or false is printed on the last line:

```
The size of the intersection of A and B is xxx.
The size of the intersection of A and C is xxx.
The size of A\B is xxx.
The size of B\C is xxx.
The size of the union of A,B, and C is xxx.
The size of the union of C and (A\B) is xxx.
It is (true/false) that B\A is contained in C.
```

Put a multi-line comment at the beginning of your program. It should contain:

- Your name
- “Programming Assignment 2”
- The name of anyone you worked with
- Sample output from your program
- The amount of time (approximately) that you spent on this assignment