



Columbia College  
Vancouver, Canada

**Introduction to Computer Science and Programming 1**  
**CSCI120**

**Chapter9: Dictionary and Set**

Sample Codes

**Note:** This document has been designed and developed as part of an initiative for creating an OER (Open Education Resource) package for the course CSCI 120 at Columbia College.

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## Problem1

- Implement a function which receives a list of integers (numbers) as input. The list might have repeated numbers. The function will return the number that is repeated the most. You can make this assumption that only one number is repeated the most and other numbers are either not repeated or repeated less number of times.
- Hint: Use a dictionary
- Example: for this list [1,4,5,6,1,2,4,5,6,5] the function returns 5 because it is the only numbers repeated 3 times (the most)

## Problem2

- Write a function, which receives a list of integers which may or may not contains repeated numbers. The algorithm should return how many each item is repeated and also print the results.
- Hint: Use a dictionary

## Problem3

- Write a function which receives a list of integers which may contains repeated numbers. The function remove the repeated numbers and keeps the distinct numbers. The function should return the list of distinct numbers.
- Hint: Use a set

## Problem4

- Imagine, each student is represented by the following properties:
  - o firstName
  - o lastName
  - o address
  - o Year of birth
  - o gpa

Write a function which receives a list of students as its input parameter and return the student who has the highest average.

- Hint: Use a dictionary (the properties are the keys and the values are the values of the properties, for instance, "FirstName": "Ali"). And the define a list of dictionaries and each dictionary represents a student.



## Problem5

- Write a function which has no input parameter but returns a dictionary. The function lets the user enter names as long as the user enters 0. The user can enter a same name over and over. At the end the function will print and return a dictionary which shows all the names the user has entered and how many times each name is repeated.
- For example:

Ali : 3

Peter: 4

Jack: 1

Allison:2

Hint: Use a dictionary