# CS 400 Lab 2: Vectors

**Note**: for CS 400’s lab works, you will need to

1) submit your solution(.cpp file) to blackboard AND

2) explain your solution to lab teaching assistant.

## Part 1

(Lab teaching assistant will show partial solution. Students need to complete this question.)

Design a function that takes a vector of integers and tells if the vector can be used as a set. A set is a container with no duplicate elements.

For example,

* Vector {1, 4, 5, 6, 9} is a set as all numbers in this vector is unique.
* Vector {1, 4, 5, 6, 1} is NOT a set as 1 appears more than once in this vector.

You may use std::find() (<https://cplusplus.com/reference/algorithm/find/>) or develop your own helper function on this task.

The function will return a Boolean value indicating if the given vector (by const reference) is a set or not.

## Question 2:

(Lab teaching assistant may provide general guidelines on this question. TA will not help with coding.)

Given two vectors of integers (both vectors are sets, i.e., unique numbers), design the following functions to perform set operations:

* Set union operation.
* Set intersection operations.
* Set difference operations.

For example, vector1 {1, 2, 3, 4} and vector2 {2, 4, 5, 6}:

* Union (vector1, vector2) should return {1, 2, 3, 4, 5, 6}. Note that the result is also a set with no duplicates.
* Intersection (vector1, vector2) should return {2, 4}.
* Difference (vector1, vector2) should return {1, 3}.
* Difference (vector2, vector1) should return {5, 6}.