# CSCI 121 Project 08

## Introduction

### Purpose

The purpose of this project is to help the students to reinforce the knowledge from Chapter 8 of the textbook.

### Objectives

1. Review the top-down design.
2. Understand and apply string methods, such as `length`, `operator []`, etc.
3. Understand and apply functions in `cctype` library.
4. Understand and apply `vector` methods, such as `push_back`, `at`, `operator []`, etc.

## Problem Description

The project will solve two problems.

### Problem 1

The program will ask the user to enter a sequence of scores between 0 and 100, inclusive. The program then will print out the stats about these scores, including:

- the number of scores
- the maximum score
- the minimum score and the average score

If there are no scores entered, the output message shall just say that there is no score.

The students should implement the following two functions to solve this problem.

```cpp
void get_scores(vector<int> &v);
// get integer scores from keyboard and store in v.
// we assume that the user will input scores in range
// of 0 to 100, inclusive. User enter a negative
// number to stop the input and end the function
void print_stats(vector<int> &v);
// print out the stats of data that are stored in v
// includes: max, min, total number of data,
// and the average
```

# Problem 2

The program will ask the user to enter a sentence. The program will then display a message to indicate if this sentence is a palindrome. The following sentence is a palindrome:

> A nut for a jar of tuna.

The white space and non English letters are **not** counted. The case difference is **ignored**. Make sure your program will take a sentence as input not just a string with no space in it.

The students should implement the following function to solve this problem

```cpp
bool is_palindrome(string sentence);
// return true if the sentence is a palindrome;
// false otherwise
```

# Sample Run

**Note**: I use ⌨ symbol to show user inputs, you do **NOT** need to do ⌨ in your program.

```
Enter scores, enter -1 to stop:
⌨87
⌨98
⌨65
⌨78
⌨88
⌨93
⌨-1
There are total 6 scores
The highest score is: 98
The lowest score is: 65
The average score is: 84.8333

Do you want to try another set of scores? Y/N: ⌨y

Enter scores, enter -1 to stop:
⌨-1
There is no scores.

Do you want to try another set of scores? Y/N: ⌨n

Enter a sentence: ⌨A nut for a jar of tuna
"A nut for a jar of tuna" is a palindrome

Do you want to try another sentence? Y/N: ⌨y
```

```
Enter a sentence: ⌨Hello world
"Hello world" is not a palindrome


Do you want to try another sentence? Y/N: ⌨n
Program ended with exit code: 0
```

## Submission

Before you submit your file to Blackboard, please make sure:

- Your file name is correct, as `YourNameProj8.cpp` .
- You file can be successfully compiled and run without any errors.

Upload **only** `YourNameProj8.cpp` file to `Proj8` link inside `Projects` folder.