

**CSC 1300 LAB 7 PURPLE**

**Fall 2023**

**Superhero Roommate Compatibility Checker**



# Concepts

* Functions
* Reference Variables
* ASCII character values
* Boolean variables
* Header files

# Description

**You may complete this assignment by yourself, or you may choose to write this program with one partner** and practice paired programming. If you do, both students must agree to either Gold or Purple lab, must write both names in the comment block at the top, and must name the zip file with both usernames. Note that you may not share your code with anyone other than the one partner you select.

Create a program to determine if two super heroes would be compatible as roommates based on the following checks:

* Check 1 - add up the ASCII value of each character in the name (including spaces) of each of the heroes and if they are within 50 of each other, check 1 passes.
* Check 2 - if super hero 1’s age is within 10 years of super hero 2, check 2 passes.
* Check 3 - if they have the same pet, check 3 passes.

If two out of the three checks are true, then the super heroes are compatible roommates. Otherwise, they are not compatible.

# Instructions

Sample output is near the bottom. Always remember to test your finished program by using all the sample outputs provided in the assignment.

## Implementing a Program in Multiple Files

Create a **LAB7Purple\_yourTTUusername** folder and inside that folder you will create the files listed below.

You will have several functions in this program and you will implement the program in three files:

* **Driver.cpp** – this file contains the **main function only**
* **Functions.cpp** – this file contains **all the programmer-defined functions**
* **Lab7.h** – this is your header file which has all the #includes, global constants, and function prototypes.

In order to compile multiple source files at the same time, you can do the following command:

**g++ -Wall \*.cpp -o Lab7output**

You can also alternately list out all the source files you want compiled together for one program like this:

**g++ -Wall Driver.cpp Functions.cpp -o Lab7output**

or

**g++ -Wall Functions.cpp Driver.cpp -o Lab7output**

Notice that you do NOT need to list .h files during compile. That is because they are included in the source files already by the #include preprocessor directive.

## Main Function

The main function should do the following:

* Print out “Super Hero Roommate Compatibility Check”
* Call the **getData()** function, sending two strings that will hold the super hero’s names, two integers that will hold the hero’s ages, and two strings that will hold the hero’s pets.
* Call the **calculateResults()** function, sending the hero’s names, ages, and pets to the function. This function returns a Boolean. True if the heroes are compatible and false otherwise.
* Last, if the heroes are compatible, print their names and print that they are compatible to be roommates. Otherwise, print their names and that they are not compatible.

## getData Function

* Nothing should be returned from this function.
* Two strings that will hold the super hero’s names, two integers that will hold the hero’s ages, and two strings that will hold the hero’s pets are arguments sent to this function.   
  **The parameters of this function are reference variables.**
* The function should ask the user for all the data and read it in in a neat easy-to-understand format.

## calculateResults Function

* This function returns a Boolean, which is true if the super heroes would make compatible roommates and false otherwise.
* All the super hero data is passed to this function **by value**.   
  **The parameters should NOT be reference variables.**
* This function should perform the three checks described at the top of this assignment.
  + You will need to use static\_cast<int> to cast the characters to integers to be able to add them up.
  + For check 1, print the resulting ASCII values for each of the names (refer to sample output)
  + For each check, print whether it ended up being true or false.
* Determine if two out of the three checks were true and if so, return true. Otherwise, return false.

# sample output

## Sample Output 1

User input is highlighted in **yellow**.

**Super Hero Roommate Compatibility Check**

**Enter the data for the first super hero:**

**NAME: Black Widow**

**AGE: 38**

**PET (dog/cat/rabbit/guinea pig): cat**

**Enter the data for the second super hero:**

**NAME: Dr. Strange**

**AGE: 42**

**PET (dog/cat/rabbit/guinea pig): guinea pig**

**The added ASCII value of Black Widow is 1031**

**The added ASCII value of Dr. Strange is 984**

**CHECK 1 is true.**

**CHECK 2 is true.**

**CHECK 3 is false.**

**\*\*\*\*\* RESULTS \*\*\*\*\***

**Black Widow and Dr. Strange are compatible to be roommates!**

## Sample Output 2

User input is highlighted in **yellow**.

**Super Hero Roommate Compatibility Check**

**Enter the data for the first super hero:**

**NAME: Batman**

**AGE: 56**

**PET (dog/cat/rabbit/guinea pig): dog**

**Enter the data for the second super hero:**

**NAME: Booster Gold**

**AGE: 26**

**PET (dog/cat/rabbit/guinea pig): rabbit**

**The added ASCII value of Batman is 595**

**The added ASCII value of Booster Gold is 1156**

**CHECK 1 is false.**

**CHECK 2 is false.**

**CHECK 3 is false.**

**\*\*\*\*\* RESULTS \*\*\*\*\***

**Batman and Booster Gold are not compatible to be roommates.**

# What to Turn In

Create a **zip file** named **Lab7Purple\_yourTTUusername** containing **Driver.cpp**, **Functions.cpp**, and **Lab7.h** and upload it to the ilearn LAB 7 assignment folder in your LAB ilearn class.

Replace “yourTTUusername” with **YOUR** TTU username (the part before @tntech.edu).