**HW\_9 (abc)**  - (3 parts)

**HW\_9a**  - Arrays: **Character Arrays vs. cStrings**

- First, guess the following output. Write down what you think the output is.

- Then enter the code and run the program to see if you are correct.

#include <string>

#include <iostream>

#include <cstdlib>

using namespace std;

int main()

{

double floatArray[7] = {1.01, 2.02, 3.33, 4.044, 5.5, 6.06, 7.77};

cout << "(A). The floatArray output using - cout <<\n\t"

<< floatArray << “\n\n";

// ===============================================

cout << "(B). Output of the floatArray values - using a for loop\n\t";

for (int i = 0; i < 7; i++)

cout << floatArray[i] << '\t';

cout << endl << endl;

// ===============================================

int intArray[8] = {1, 2, 3, 4, 5, 6, 7, 8};

cout << "(C). Output of the intArray values - using cout <<\n\t"

<< intArray << "\n\n";

// ===============================================

cout << "(D). Output of the intArray values using a for loop\n\t";

for (int i = 0; i < 7; i++)

cout << intArray[i] << '\t';

cout << endl << endl;

// ==============================================

char cStringArray[8];

strcpy(cStringArray, "Tom Lee");

cout << "(E). Output of strcpy assignment to cStringArray - using cout << \n\t";

for (int i = 0; i < 7; i++)

cout << cStringArray[i];

cout << endl << endl;

// ===============================================

cout << "(F). Enter a 7-character name to be read by cin.getline(): ";

cin.getline(cStringArray, 7);

cout << "\n\tOutput after entering 7 letters - output by cout <<:\n\t";

cout << cStringArray << endl;

// ===============================================

// ===============================================

char yourName[8];

strcpy(yourName, "Tom Lee");

cout << "(G). What is output when using:\n\t"

<< "strcpy(yourName, \"Tom Lee\"); - and cout << yourName[2]: \n\t";

cout << yourName[2] << endl;

// ===============================================

char myName[8] = "Tom Lee";

cout << "(H). What is output when using:\n\t"

<< "char myName [8] = \"Bob Lee\"; - and cout << myName[2]: \n\t";

cout << myName[2] << endl;

// ===============================================

return 0;

}

**HW\_9b**  - **Checking Character Data** - <cctype> functions - while loop - functions

Write a program that produces the output shown, based on the following information.

/\* **OUTPUT:**

Enter a character: s 🡨 User enters s

Character is an alphanumeric character. 🡨 Use a cctype function

Character is an alphabetic character. 🡨 Use a cctype function

The character is lowercase. 🡨 Use a cctype function

It looks like this in uppercase: S 🡨 Use a cctype function

Do it again (Y/N)? y 🡨 User enters y

-----( **Screen clears** ) ----------------------------------

Enter a character: B 🡨 User enters B

Character is an alphanumeric character. 🡨 Use a cctype function

Character is an alphabetic character. 🡨 Use a cctype function

The character is uppercase. 🡨 Use a cctype function

It looks like this in lowercase: b 🡨 Use a cctype function

Do it again (Y/N)? y 🡨 User enters y

-----( Screen clears ) ----------------------------------

Enter a character: 3 🡨 User enters 3

Character is an alphanumeric character. 🡨 Use a cctype function

Character is digit. 🡨 Use a cctype function

Do it again (Y/N)?n 🡨 User enters n

Press any key to continue ... \*/

Write a program that does the following:

* This program prompts the user to enter a single character.
* The program uses an if else-if else control structure along with the following

**<cctype>** functions to determine the type of character the user entered. (See output)

* + isalpha()
  + isalnum()
  + isdigit()
  + islower()
  + isupper()
  + toupper()

1. First, the program should call a function named: **getCharacter()**

* No arguments are passed to the function.
* The function prompts the user to enter one keyboard character.
* The value the user enters is returned to main(). (see output)

1. Next, the program should call a function named: **displayResults()**

- The program should use an if else-if else control structure, along with

cctype functions to test the input character.

Note: If the function is going to test the character that the user inputs, what

needs to be passed as an argument to the function?

* In the displayResults() function, include code to do the following:
* First, determine if the character is an alphanumeric character.
  + If it is, print out “Character is an alphanumeric character".
* Then check to see if it is a digit (0 – 9).
  + If it is, print out “Character is a digit".
* Then check if it is an alphabetic character (a – z , or A – Z).
  + If it is, print out “Character is an alphabetic character”.
* Then see if it is lowercase.
  + If it is lowercase, print out: "The character is lowercase”.
  + If it is lowercase, convert it to uppercase and print out:

It looks like this in uppercase: (see output)

* Then see if the character is an uppercase letter.
  + If it is, print out: "The character is uppercase”.
  + If it is uppercase, convert it to lowercase and print out:

It looks like this in lowercase: (see output)

1. Include a **while loop** to allow the user to run the program repeatedly.

* Include the **toupper() function** in the while loop, so that if the user enters either

an uppercase ( ‘Y’ ) or a lowercase ( ‘y’ ), the while loop will be entered again.

* Include code inside the while loop, so that the screen will clear each time the

program runs.

1. Include proper Coding Style and comments.
2. Turn in a copy of your source code and output.

**HW\_9c**  - string (getline) vs. c\_string (cin.getline)

- c\_string functions

Write a program that produces the output shown, based on the following information.

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**/\* OUTPUT**

Enter your first name: Tom

Enter your last name: Lee

How is your love life Tom Lee?

By the way, your full name has 8 characters.

Enter your friend’s full name: Tiger Woods

How is Tiger Woods love life Tom?

By the way, your friend’s full name has 11 characters.

Press any key to continue ... /\*

**Write a program that does the following:**

The purpose of this exercise is to provide practice working with strings, c\_strings and c\_string

functions. Therefore, no functions are used in this program.

Declare 4 variables:

1. Declare a c\_string of size 20 and name it: ***firstName***
2. Declare a c\_string of size 20 and name it: ***lastName***
3. Declare a c\_string of size 40 and name it: ***fullName***
4. Declare a string variable and name it: ***friendsName***
5. Prompt the user to enter a first name. (see outut)
   * Read in the first name into ***firstName***.

Note: firstName is a c\_string, so do you use getline() or cin.getline()?

1. Prompt the user to enter a last name. (see outut)
   * Read in the last name into lastName.
2. Use the strcpy() and strcat() functions to assign a full name to

the variable ***fullName***.

* + For example if ***firstName*** holds Tom, and ***lastName*** holds Lee, then after using these

functions, ***fullName*** should hold Tom Lee (with a space between the names).

1. Display messages for each person (see output).
   * Use fullName and friendsName variables in the output statements. (see output)
2. Display messages saying how many letters are in the full names of each person.

(see output)

* + Use the ***strlen()*** and ***length()*** functions, respectively, to determine the number of characters. (see output)

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Staple all three assignments together (HW\_9a, 9b, and 9c).

* + Make sure to include the output with each program.

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