**CSE1502 – Intro to Software Dev. with C++**

**Software Development Lab Report**

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*By*

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Homework or Lab #2

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# 1. Problem Statements

*Problem 1 requires the program to ask the user for their full name and height in inches, process the input, then output a “user profile” which lists their first name, last name, and height (converted into feet’ inches”) on 3 separate lines.*

# 2. Requirements

*This section lists the functional requirements given for the software. Functional requirements dictate what the software needs to do (i.e., that major functions of the software). Each requirement must be presented using a numbered list. In addition, each requirement must specify one (and only one) function of the system, it must be attainable and verifiable.*

*Problem 1:*

*1. The software shall output a line to the terminal asking the user for their full name.*

*2. The user shall input their full name.*

*2.1. The software shall parse the input and save the user’s first and last name separately.*

*3. The software shall ask the user for their height in inches.*

*3.1. The software shall convert the height into feet’ inches”*

*4. The software shall display the first name, last name, and height on three separate lines.*

*Problem 2:*

*1. The software shall output a line in the terminal asking the user for 3 different numbers.*

*1.2. The software shall store the three values.*

*2. The software shall determine the Maximum, Minimum, and Average of the three values.*

*3. The software shall output the Max, Min, and Average values.*

# 3. Software Construction (C++ Code)

*This section includes the software implementation of the design provided in section 3—it includes annotated explanations of well-formatted and commented C++ code. Students shall follow coding guidelines (given by Faculty/TA) to ensure high-quality software.*

*Problem 1: (On next page)*

#include <iostream>

using namespace std;

int main()

{

/\* Initializing Variables \*/

string firstName, lastName;

int inches;

/\* Get input from user \*/

cout << "Hello! What is your full name?" << endl;

cin >> firstName;

cin >> lastName;

cout << "What is your height (in inches)?" << endl;

cin >> inches;

/\* Output Profile \*/

cout << "\n\tFIRST NAME: " << firstName << endl;

cout << "\tLAST NAME: " << lastName << endl;

cout << "\tHEIGHT: " << inches/12 << "' " << inches%12 << "\"\n" << endl;

return 0;

}

*The first line allows the program to use Input/Output commands. Next, I use the namespace std in order to bypass needing to type std:: before every use of cout and cin. The main function begins, and I begin by initializing variables. The variables for the user’s first and last name are strings, and then the input inches is an integer. The program asks for Full name, and it saves the two words input as the First and Last name. The program prompts the user for height in inches, then saves the input. The program then outputs first name, last name, and height converted into feet and inches.*

*Problem 2: (on next page)*

#include <iostream>

using namespace std;

int main()

{

/\* Initializing Variables \*/

double i1, i2, i3;

double avg, min, max;

/\* Get input from user \*/

cout << "Please enter three different numbers: " << endl;

cin >> i1;

cin >> i2;

cin >> i3;

/\* Calculations and sorting \*/

max = i1;

min = i1;

avg = (i1 + i2 + i3)/3;

/\* Max \*/

if(i2 > max)

{

max = i2;

}

if(i3 > max)

{

max = i3;

}

/\* Min \*/

if(i2 < min)

{

min = i2;

}

if(i3 < min)

{

min = i3;

}

/\* Output Min, Max, and Avg. \*/

cout << "Thanks. Here are the result:" << endl;

cout << "\n\tMIN: " << min << endl;

cout << "\tMAX: " << max << endl;

cout << "\tAVG: " << avg << "\n" << endl;

return 0;

}

*The first line of the program allows use of input and output commands. The program is then instructed to use the namespace std, which makes the code a little neater by removing std:: from every console i/o command. After initializing the variables, the program prompts the user for 3 different numbers, which are saved to the variables i1, i2, and i3. The program then sets the max and min to i1, and calculates the average. The program compares the “max” variable (currently assigned i1) to i2 and i3, and assigns the largest value to max. It then does the opposite for the min variable, and outputs the values.*

# 4. Software Testing

*This section provides information and test cases that are used to verify that all requirements identified in section 1are achieved by the software. Sample screenshots shall be included here.*

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# 5. Self-Reflection

*This section provides information about what the student learned, what challenges were encountered, and what the student did to overcome the challenges and complete the lab. Please make sure that you document any other information that was helpful to you during this assignment.*

(*Note: In case of multiple problems, repeat steps1-5 above for each problem.*)

The second problem was definitely more challenging than the first: I had to use “if” control structures to evaluate the input values and properly sort them, assigning the largest to max and smallest value to min. Though, this challenge wasn’t particularly a problem for me as I just made sure to use proper formatting. While doing both programs, I had to format the outputs according to the guidelines, which taught me how to use \t and \n within cout commands. I also learned how to cout a quotation mark, by typing “ \” ” instead of the quotation mark alone. I found this out by referencing the table of special backslash commands.