**```````````````````````````````````````Take Home Program #2 – Due on or before February 26, 2019 –**

**Objectives:** Apply if / else statement, modulus (%) and relational operators

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| --- |
| **Important instructions:**   * *All programs must include comments at the top of your program: your name,* the class name (CSIT 575)*, program name and* ***the program description (purpose of the program).*** * *Copy and paste your* ***program code*** *and* ***output*** *in Part B of each program. Note: Use snipping tool to snip the output.* * *Once it is done, save and submit this word file via Canvas.* |

1. **SumOfDigits.cpp program**

Write a program that prompts the user to enter an integer between 1 and 999.

The program first validates the number is not negative.

If the number is negative, the program displays a message asking to re-enter another number otherwise calculate the sum of digits and display on the screen.

**Sample run 1**

Enter a number between 1 and 999: -859  
Number must be positive, try again!

**Sample run 1**

Enter a number between 1 and 999: 859  
The sum of the digits is 22

**Part A: Pseudocode**

**Purpose of the program:** This program asks a user to input a number between 1 and 999. The program first checks if it is a negative number, if its not a negative number it then proceeds to find the sum of the digits in the number

**Input or given data: Number between 1-99**

**Processing: Adding each digit in the number to find the sum**

**Output: The sum of the digits is 22**

**Part B: Copy and paste your program (source) code and the outputs after this line  
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CO SCI 575

SumOfDigits.cpp

This program asks a user to input a number between 1 and 999. The program first checks if it is a negative number, if its not a negative number it then

proceeds to find the sum of the digits in the number\*/

#include <iostream>

using namespace std;

int main()

{

int num;

int sum;

int digit1;

int digit2;

int digit3;

//input

cout << "Enter a number between 1 and 999: ";

cin >> num;

if (num <= 0)

//Output

cout << "Number must be positive, try again!" << endl;

else

{

//Processing

digit1 = num % 10;

digit2 = num / 10 % 10;

digit3 = num / 100 % 10;

sum = digit1 + digit2 + digit3;

//Output

cout << "The sum of the digits is: " << sum << endl;

}

system("Pause");

return 0;

}

Output 1:

Enter a number between 1 and 999: -239

Number must be positive, try again!

Output 2:

Enter a number between 1 and 999: 637

The sum of the digits is: 16

1. **SumOfRandom.cpp**

Write a program that asks a student to calculate the sum of three random numbers generated by the computer in a range of 15 - 40. After the student has entered an answer and pressed the [Enter] key, the program should display the feedback messages as in the sample runs below

**Sample run 1**

What is the sum of the following three random numbers?

Total: 37 + 15 + 40 =? 55

Your answer is wrong.

Total should be: 92

**Sample run 2**

What is the sum of the following three random numbers?

Total: 22 + 19 + 32 =? 73

Congratulations! You are correct!

**Part A: Pseudocode**

**Purpose of the program:**

**Input or given data: Range of 15-40**

**Processing: Random Number 1 + Random Number 2 + Random Number 3**

**Output:**

**What is the sum of the following three random numbers?**

**Total: 17 + 21 + 19 =? 57**

**Congratulations! You are correct!**

**Press any key to continue . . .**

**Part B: Copy and paste your program (source) code and the outputs after this line  
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SumOfRandomNumbers.cpp

This program that asks a student to calculate the sum of three random numbers generated by the computer in a range of 15 - 40. \*/

#include <iostream>

#include <cstdlib>

#include <ctime>

using namespace std;

int main()

{

int randNum1, randNum2, randNum3;

unsigned int seed;

int sum, userSum;

seed = time(0);

srand(seed);

//Randomization and calculating the sum of the three numbers

randNum1 = rand() % 25 + 15;

randNum2 = rand() % 25 + 15;

randNum3 = rand() % 25 + 15;

sum = randNum1 + randNum2 + randNum3;

//Input

cout << "What is the sum of the following three random numbers?" << endl;

cout << "Total: " << randNum1 << " + " << randNum2 << " + " << randNum3 << " =? ";

cin >> userSum;

//Output

if (userSum == sum)

cout << "Congratulations! You are correct! " << endl;

else

{

cout << "Your answer is wrong." << endl;

cout << "Total should be: " << sum << endl;

}

system("Pause");

return 0;

}

Output 1:

What is the sum of the following three random numbers?

Total: 34 + 26 + 37 =? 87

Your answer is wrong.

Total should be: 97

Output 2:

What is the sum of the following three random numbers?

Total: 20 + 19 + 37 =? 76

Congratulations! You are correct!