**Take Home Program #4 – Due on or before March 12, 2019 –**

**Objectives:** while and do while loops

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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. **DisplayASCII.cpp** (while, modulus, single if statement, type casting)

Write a program that uses a loop to display the characters for each ASCII code 32 through 127. Display 16 characters on each line with one space between characters.

Note that ASCII 32 is a blank space, so the first “character” printed on the first output line is a blank.

**Sample run 1**

! " # $ % & ' ( ) \* + , - . /

0 1 2 3 4 5 6 7 8 9 : ; < = > ?

@ A B C D E F G H I J K L M N O

P Q R S T U V W X Y Z [ \ ] ^ \_

` a b c d e f g h i j k l m n o

p q r s t u v w x y z { | } ~ 

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

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1. **MathTutor.cpp** (do while,switch statements, if else/if trailing else, random generator, stream manipulator)

Write a program that can be used a math tutor for a young student. The program displays a menu allowing the user to select an addition, subtraction, or multiplication problem. The final selection on the menu should let the user quit the program. After user has finished the math problem, the program should display the menu again. This process must be repeat until the user chooses to quit the program. It the select an item not on the menu, the program should print an error message and the display the menu again.

**Notes:** The program should display the two random numbers between 1 – 50.

For subtraction, the second random bust be smaller the first random

For multiplication, the second random generates from 1 – 9.

**Sample run:**

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

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