**Computer Science 2**   **Lab # 07**



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**CS2 Section # 01**

**Due:** Problem A by the **end of the lab** and Problems B by the end of **Saturday** of the same week.

**TOPIC: RECURSION 2**

**Problem B:**

**Problem Description:**

2) Problem B: MyProgrammingLab # 71047 (chapter 18, Programming Projects)

**Analysis:**

(Describe the problem including input and output in your own words. Type your answer in the following with **BLUE font color**)

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| **…**  **INPUT: The user will provide an integer(s) to run through the program that will convert it into a hexadecimal.**  **OUTPUT: After going through the recursive method, the program will display the hexadecimal value for the integer(s) given.** |

**Design:**

(Describe the major steps for solving the problem. Type your answer in the following with **BLUE font color**)

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| **The major steps for solving this problem was determining how the recursive method would work and return the appropriate value(s) for the integer(s) given by the user. To the find the hexadecimal value, I created a character array with all the appropriate hexadecimal values (0-9 and A-F), they would represent the numbers 0-15. If the initial value was not less than or equal to 0, the method will recall itself with the value being divided by 16 and added with the element of the character array of the value modulo 16 (ex: 10%16 is x[10]= ‘A’).** |

**Coding:** (Copy and Paste Source Code here. Type your answer in the following with **BLUE font color**)

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| **import java.util.Scanner;**  **public class DecimalToHex{**  **public static void main(String[] args) {**  **int num = 0;**  **Scanner input = new Scanner(System.in);**  **while (String.valueOf(num).length() > 0) {**  **System.out.print("Enter an integer to be converted to hex or hit enter to end program:");**  **num = input.nextInt();**  **System.out.println("The hex equivalent of " + num + " is " + dec2Hex(num));**  **}**  **}**  **public static String dec2Hex(int value){**  **char[] x = {'0', '1', '2', '3', '4', '5', '6', '7', '8', '9', 'A', 'B', 'C', 'D', 'E', 'F'};**  **if (value <= 0) {**  **return "";**  **}**  **return dec2Hex(value/16) + x[value%16];**  **}**  **}** |

**Testing:** (Describe how you test this program. Type your answer in the following with **BLUE font color**)

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| **RUN three times, using the same input as in the sample runs:**  **Test 1:**  **Enter an integer to be converted to hex or hit enter to end program:1414**  **The hex equivalent of 1414 is 586**  **Enter an integer to be converted to hex or hit enter to end program:**  **Test 2:**  **Enter an integer to be converted to hex or hit enter to end program:2018**  **The hex equivalent of 2018 is 7E2**  **Enter an integer to be converted to hex or hit enter to end program:**  **Test 3:**  **Enter an integer to be converted to hex or hit enter to end program:1999**  **The hex equivalent of 1999 is 7CF**  **Enter an integer to be converted to hex or hit enter to end program:** |