

PDS Lab Section 11

Lab Day 7 – January 13, 2021

The top two lines of your programs must contain the following information:

//Roll No.: <Type in your roll no.>

//Name: <Type in your name>

You have to give different names to your C files and upload them in Moodle. Please read the instructions given below.

Document your programs meaningfully using appropriately named variable and sufficient amount of comments as suggested in an earlier email. There will be marks for documentation.

1. Write a C program to achieve the following.

In the main program, declare an array of size 16 and name it **binNum**. Fill it randomly with 1 and 0 values by calling the rand() function repeatedly. Display the array of numbers as a binary number. The program then waits in an infinite loop showing the following options:

1. Display the above number in decimal format
2. Display the above number in Hexadecimal format
3. Display the above number in Octal format
4. Multiply the original binary number by 2 (achieved by left shift one bit) and display the result
5. Divide the original binary number by 2 (achieved by right shift one bit) and display the result
6. Exit

Enter Your Choice: _

Based on the user choice of number shown above, the following functions will be appropriately called. The result will be displayed inside the function and the program will continue waiting in the infinite loop. The program will exit when the user types 6.

- a. Write a function named **b2d** that takes an array of 1s and 0s and prints the decimal equivalent considering the array as an unsigned binary number.
- b. Write a function named **b2h** that takes an array of 1s and 0s and prints the Hexadecimal equivalent considering the array as an unsigned binary number.
- c. Write a function named **b2o** that takes an array of 1s and 0s and prints the octal equivalent considering the array as an unsigned binary number.
- d. Write a function named **multiply** that takes an array of 1s and 0s and prints the binary number shifted left by one bit.
- e. Write a function named **divide** that takes an array of 1s and 0s and prints the binary number shifted right by one bit.

Name your C program file as LD7_1_<roll_no>.c.

[25 Marks]

Submit your .c file in Moodle against the assignment submission link for Lab Day 7.