Assignment 2 – Introduction to Computing and Programming

For this assignment, you will solve problems based on what you have learned in Introduction to Computers, Structured Programming and C Programming.

Instructions

- Review notes of the Chapter.
- There are 8 questions in this assignment.
- **Assignment submitted after due date will not be evaluated and a score of zero will be awarded for this assignment.**
- Upload separate .c files on BB.

Due Date: Midnight, October 14, 2019.

Submitting this Assignment

- You will submit (upload) this assignment in Blackboard. Email/paper submissions will not be accepted.
- Write C programs for each of the questions, execute them and upload .c files.
- Questions must be answered in the given order.
- Name the files as 1.c, 2.c, 3.c, etc.

Grading Criteria

Correct and to-the-point answers will be awarded full points. **This assignment has 02 points (with weightage of 02% in your overall 100 points).**

Questions:

1. Write a C Program to count and print total Set (1) Bits in all the numbers from 1 to 'n' in the binary equivalent of 'n'.

Example: **Input:** Enter a number: 6
Output: 9

Explanation: 1 → 1 → 1
2 → 10 → 1
3 → 11 → 2
4 → 100 → 1
5 → 101 → 2
6 → 110 → 2

Total = 1 + 1 + 2 + 1 + 2 + 2 = 9

2. Write a C Program to find seed of a number.
   A number X is said to be 'seed' of a number Y if multiplying X by its digits equates to Y. For example, 123 is a seed of 738 coz 123*1*2*3 = 738.

3. Write a C Program using function to check whether a number can be expressed as the sum of two prime numbers.
   For example:- 45 can be expressed as (2+43), as 2 and 43 both are prime numbers.

4. Initially the zoo have a single chick. A chick gives birth to 2 chicks everyday and the life expectancy of a chick is 6 days. Zoo officials want to buy food for chicks so they want to know the number of chicks on a nth day. Help the officials for this task.
   (You need to take the nth number from the user and print the number of chicks on that particular day)

5. Mersenne Prime is a prime number that is one less than a power of two. In other words, any prime is Mersenne Prime if it is of the form $2^k - 1$, where k is an integer greater than or equal to 2. First few Mersenne Primes are 3, 7, 31 and 127.
   The task is to print all Mersenne Primes smaller than an input positive integer n.

6. You have given an array consisting of prime number and non-prime number .You have to arrange this array in such a way that prime number will remain at their respective indices and non-prime will remain at their own indices but in descending and ascending order respectively.

   ex:- 3 7 6 4 5

   op:- 7 5 4 6 3

   3, 5, 7 are number. These are arranged in descending order in the array at the position of prime numbers while 4, 6 are arrange in ascending order.

7. Write a program to print all the Leader elements in an array. An element is said to be leader if it is greater than all the elements to its right side. And the rightmost element is always a leader. For example:

   In the array {18, 19, 6, 5, 7, 4}, leaders are 19, 7 and 4.

8. Write a program to find the minimum number of swaps required to sort (arrange) the array in ascending order.