CSE101: **Home Assignment-5**

In this assignment you will implement *Quine-McCluskey* and *Petrick* methods. These methods are used together to compute the minimization of a Boolean function. The methods basically involve two steps:

1. Finding the prime implicants of a given Boolean function.
2. Use of those prime implicants in a prime implicant chart to find the essential prime implicants of the function, as well as other prime implicants that are necessary to cover the function.

The details about the algorithms can be found at https://en.wikipedia.org/wiki/Quine%E2%80%93McCluskey_algorithm, https://en.wikipedia.org/wiki/Petrick%27s_method and http://www.cs.columbia.edu/~cs6861/handouts/quine-mccluskey-handout.pdf

The objectives of the assignment are as follows:

1. Writing a program for an NP-complete problem, the solution for which you have learnt in another course in the same semester (Digital Circuits).
2. Implementing Python OOP concepts.

Input Format:

You shall be provided input in 3 rows. First row would specify the number of variables in a term, the 2nd row would specify all the min-terms using comma (‘,’) as a separator, and the 3rd row would specify the “Don’t” care terms using comma as a separator. As an example consider the following input:

4
4, 8, 10, 11, 12, 15
9, 14

It describes a Boolean function with each term consisting of 4 variables having 6 min-terms m4, m8, m10, m11, m12, m15 and 2 “Don’t” care terms m9, m14.

Output:

The output would be a minimized Boolean function represented as a string. The output string is formed by concatenating the terms in lexicographic order.

Other Issues:

1. This assignment has to be done in groups whereas each group will consist of 4 members at most.
2. The number of modules and number of classes are not fixed, you need to identify the classes on your own. The code should have at least 4 classes like minterm, Boolean function, terms table etc.
3. Each module should have the name and roll number of each teammate.
4. The code should be properly documented.
5. Test cases have to be provided for each class.
6. The submission will be in the form of zip file.