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Minimum Sum of Products Solver
Manual

Note: The solver is run by using Karnaugh Maps.

How to run solver:

1. By using the terminal: run JupyterNotebook and open the kmapsolver.ipynb file.
2. The following steps are also noted on the JupyterNotebook file. To run the solver:
   1. Import the following kmap.py file with the following methods included. The import code is already prepared to be entered below.
   2. Specify the minterms in list form. For example: `minterms = [0,1,3,4,5]`. It does not need the minterms to be arranged in any specific order.
   3. To start the program, enter the number of variables and the list in the form: `kmap(variables, minterms)`.
   4. The application will solve the Minimum Sum of Products of the given minterms as well as print out a simple illustration of the K-MAP.
   5. The output of the KMAP solver is interpreted as follows
      1. The digits are arranged as $x_1x_2x_3$ for 3 variables and $x_1x_2x_3x_4$ for variables.
      2. 0 stands for *x'* and 1 stands for *x.*
      3. All of the * are ignored when reading the outputs.
      - For example: `[ *11 + 11* + 1*1 + 000]` is read as `[ x2x3 + x1x2 + x1x3 + x'1x'2x'3]`.

See the following example:

Sample Input and Outputs:

3 Variable K-Map

```
In [2]: minterm_3 = [0,1,3,7]
        three_variables = kmap(3,minterm_3)
```

```
=========   3 Variable K-Map   =========

\BC  [00] [01] [11] [10]
A 0| [[1], [1], [1], [0]]
  1| [[0], [0], [1], [0]]

=======================================
Minterms are:
[0, 1, 3, 7]
Minimal Sum of Products: [ *11 + 00* ]
```