Intelligent Systems Programming

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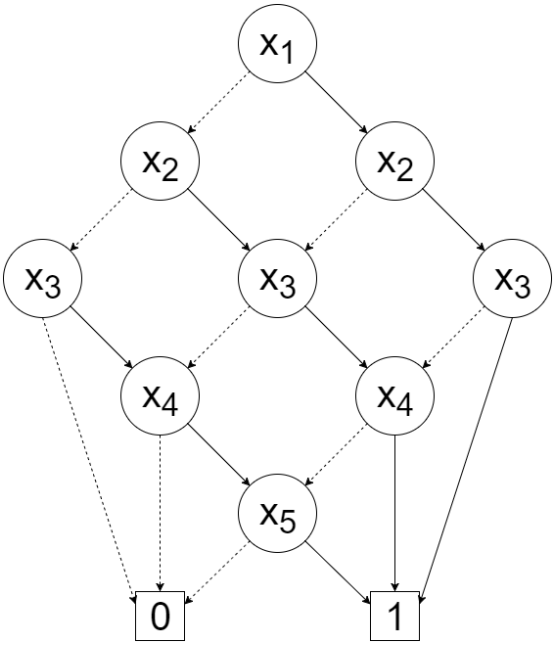
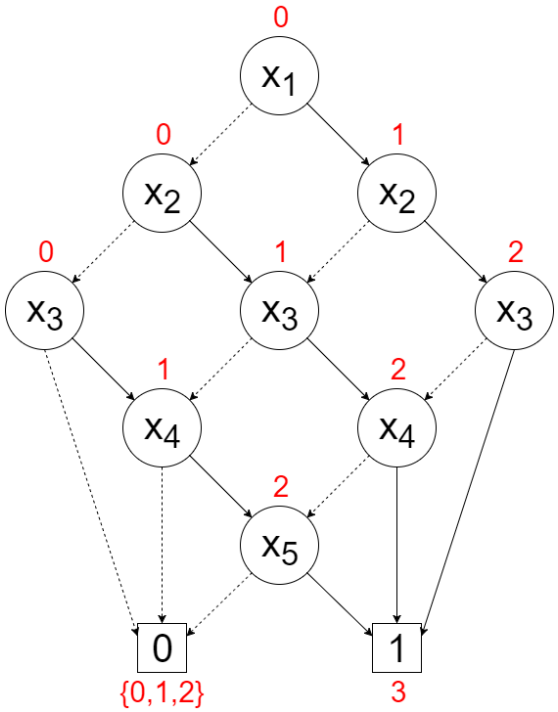
March 16, 2016

In collaboration with Søren Harrison.

1 Reduced Ordered Binary Decision Diagram



2 Assigning nodes with true variables on path



3 Number of nodes

On the figure below, it shows that adding an additional required true node to k will add an addition row in the *matrix* in the k direction (green). The same principle can be applied to n, where adding an addition variable i.e. x_6 makes it necessary for the ROBDD to check another row in the n direction (blue).

Since the matrix structure is kept when $0 \leqslant k \leqslant n$ and since the number of elements in a matrix of equal row size is given as $columns \times rows$, it therefor also holds that the number of nodes in the ROBDD is given by $O(kn)$ for $0 \leqslant k \leqslant n$. Though when $k > n$ then the ROBDD will be the single terminal node 0 because it's never possible to have a path longer than the total number of variables.