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**Report-**

**SIS1** is a multi-level logic optimization tool developed by researchers at the University of California at Berkeley. An earlier version of the tool called **MIS** was hugely successful and influential in the VLSI CAD domain. SIS extended the functions of MIS and is the most recently available version of the tool.

As we noted in the lectures, all of multi-level logic optimization is based on scripts that heuristically optimize a Boolean network model of your design. Thus, SIS has many commands and many options. For simplicity, we are using a standard, default synthesis script called the RUGGED script to optimize your designs.

SIS can also read logic design in many different file formats. But conveniently for us, it can read the same format that the ESPRESSO 2-level optimizer tool uses, the so-called PLA format. So, we will let you edit files in the ESPRESSO truth table format, and those can be uploaded and optimized by SIS.

The new information you need is how to read a SIS output result, since the result is an optimized Boolean network model, each of whose nodes is an optimized 2-level SOP form. Let’s look at a few small examples to see how to read a SIS result.

EXAMPLE 1: 2 functions of 4 variables

Here are two functions named s1 and s0, each a function of input variables a1 a0 b1 b0. This is specified in the ESPRESSO PLA format:

.i 4

.o 2

.ilb a1 a0 b1 b0

.ob s0 s1

0000 00

0001 00

0010 00

0011 00

0100 00

0101 01

0110 10

0111 11

1000 00

1001 10

1010 01

1011 00

1100 00

1101 11

1110 00

1111 00

.e