

BNM Institute of Technology, Bangalore

INNOVATIVE TEACHING METHODS

Title of innovation method / activity: Open book Quiz

Faculty: Rohini T.

Designation: Assistant Professor

Goals or objectives of method: To understand Verilog operators effectively.

Description of method:

1. Output of five Verilog code was asked each carrying 1marks.
2. Students were allowed to refer their books, discuss with their partner and write the answers within 10 min.
3. Answer sheets were exchanged with other bench students to evaluate and the answers were discussed.

Benefits of method:

1. Understand different verilog operators

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Quiz question and sample answer sheet.

Write the output for the following codes

1. `$display("~|4'b1001 = %b", (~|4'b1001));`
2. `$display("~^4'bz001 = %b", (~^4'bz001));`
3. `$display("4'b10x1>>>2 = %b", (4'b10x1>>>2));`
4. `$display("{2{4'b1001,1'bz}} = %b", {2{4'b1001,1'bz}});`
5. Write a verilog code to implement a tristate buffer using conditional operator.

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1. `$display("~|4'b1001 = %b", (~|4'b1001));`
 A. $\begin{matrix} 1 & 0 & 0 & 1 \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 0 & 0 & 1 \end{matrix} \Rightarrow \sim | 1001 \Rightarrow \underline{1'b0} \Rightarrow 1'b0 = \underline{0} \checkmark$

2. `$display("~^4'bz001 = %b", (~^4'bz001));`
 A. $\begin{matrix} 1 & 0 & 0 & 1 \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 0 & 0 & 1 \end{matrix} \Rightarrow \sim ^ 4'bz001 \Rightarrow 1'bz \Rightarrow \underline{x} \checkmark$

3. `$display("4'b10x1>>>2 = %b", (4'b10x1>>>2));`
 A. $4'b10x1 \gg \gg 2 \Rightarrow \underline{1110}$

4. `$display("{2{4'b1001,1'bz}} = %b", {2{4'b1001,1'bz}});`
 A. $2\{4'b1001, 1'bz\} \Rightarrow 1001 \underline{z} 1001 \underline{z} \checkmark$

5. Tristate buffer :

ctrl	y
0	z
1	a

* active high
~~bufif1 a z(y, a, ctrl);~~
 $\rightarrow y = ctrl ? a : z$

4 1/2