module vat\_buzzer\_behavior ( output buzzer,

input above\_25\_0, above\_30\_0, low\_level\_0,

input above\_25\_1, above\_30\_1, low\_level\_1,

input select\_vat\_1 );

assign buzzer = select\_vat\_1 ? low\_level\_1 | (above\_30\_1 | ~above\_25\_1)

: low\_level\_0 | (above\_30\_0 | ~above\_25\_0);

Endmodule

module tb\_vat\_buzzer\_behavior();

wire buzzer;

reg above\_25\_0;

reg above\_25\_1;

reg above\_30\_0;

reg above\_30\_1;

reg low\_level\_0;

reg low\_level\_1;

reg select\_vat\_1;

integer i;

vat\_buzzer\_behavior UUT(buzzer, above\_25\_0, above\_30\_0, low\_level\_0, above\_25\_1, above\_30\_1, low\_level\_1, select\_vat\_1 );

initial

begin

$monitor("buzzer = ", buzzer, "above\_25\_0 = ", above\_25\_0, "above\_25\_1 = ", above\_25\_1, "

above\_30\_0 = ", above\_30\_0, "above\_30\_1 = ", above\_30\_1, "low\_level\_0 = ", low\_level\_0, "low\_level\_1 = ", low\_level\_1, "select\_vat\_1 = ",select\_vat\_1);

for(i=0; i<=15; i=i+1)

begin

above\_25\_0 = $urandom%2;

above\_25\_1 = $urandom%2;

above\_30\_0 = $urandom%2;

above\_30\_1 = $urandom%2;

low\_level\_0= $urandom%2;

low\_level\_1= $urandom%2;

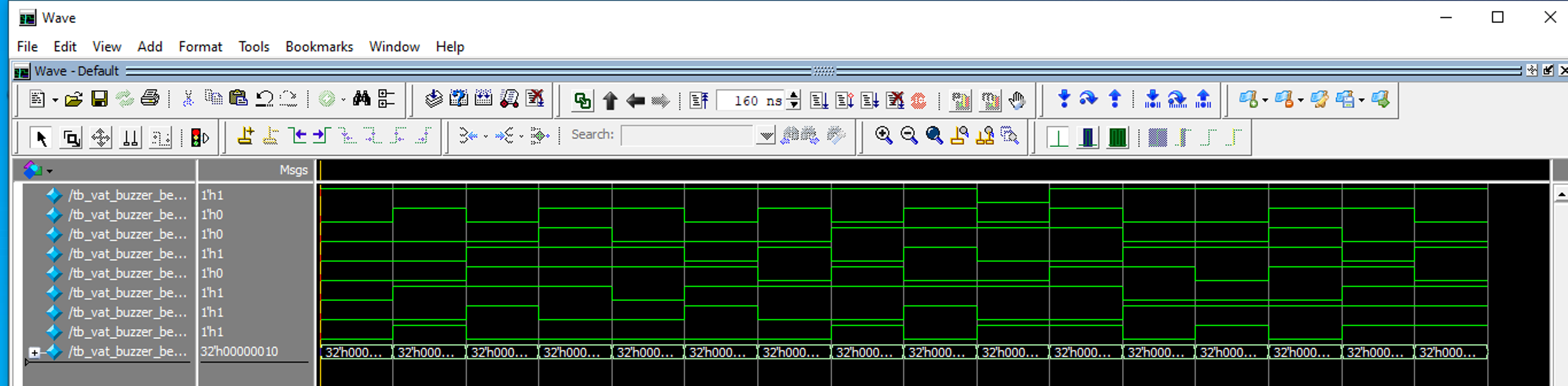
select\_vat\_1=$urandom%2;

#10;

end

end

endmodule



module alarm\_priority ( output [2:0] intruder\_zone,

output valid,

input [1:8] zone );

wire [1:8] winner;

assign winner[1] = zone[1];

assign winner[2] = zone[2] & ~zone[1];

assign winner[3] = zone[3] & ~(zone[2] | zone[1]);

assign winner[4] = zone[4] & ~(zone[3] | zone[2] | zone[1]);

assign winner[5] = zone[5] & ~(zone[4] | zone[3] | zone[2] |

zone[1]);

assign winner[6] = zone[6] & ~(zone[5] | zone[4] | zone[3] |

zone[2] | zone[1]);

assign winner[7] = zone[7] & ~(zone[6] | zone[5] | zone[4] |

zone[3] | zone[2] | zone[1]);

assign winner[8] = zone[8] & ~(zone[7] | zone[6] | zone[5] |

zone[4] | zone[3] | zone[2] |

zone[1]);

assign intruder\_zone[2] = winner[5] | winner[6] |

winner[7] | winner[8];

assign intruder\_zone[1] = winner[3] | winner[4] |

winner[7] | winner[8];

assign intruder\_zone[0] = winner[2] | winner[4] |

winner[6] | winner[8];

assign valid = zone[1] | zone[2] | zone[3] | zone[4] |

zone[5] | zone[6] | zone[7] | zone[8];

endmodule

module tb\_alarm\_priority();

reg[1:8] zone;

wire[2:0] intruder\_zone;

wire valid;

integer i;

alarm\_priority UUT(intruder\_zone, valid, zone);

initial

begin

$monitor("intruder\_zone = %b", intruder\_zone, "valid = ", valid, "zone = %b", zone);

for (i=0; i<=15; i=i+1)

begin

zone=$urandom%2\*\*8;

#10;

$display("\n\n");

end

end

endmodule

