VALIDATION METHODOLOGY

- For testing we fix the random_number_generated to a particular value and then forced it .And then checked in the simulation weather the reaction time came to be as expected.

- We also did a real time check on the board by running a parallel stop_watch which is stopped at the same time "Stop" button of the Basys Board is pressed.

- Table below shows the randomness of out put LEDs and Time taken to light them up with 6 attempts.

Attempt Number	Time Taken to light the LED	Led which lighted
1	1.96	4
2	4.73	14
3	9.95	10
4	5.46	3
5	2.75	5
6	8.46	12

- It was easier and more efficient to check the corner cases on board, so we opted not to make a test bench as that helps in verifying the reflex test and real time randomness in a better way.

Time for Led to Glow after start is pressed	Time taken to press stop after led glow	Time in stop Watch b/w led glow and stop
7.8s	1.587	1.602
9.1 s	13.162	- - - -
6.0 s	8.765	8.701
2.6 s	6.584	6.621
3.9s	3.678	3.721
7.8 s	0.234	0.298
3.7 s	0.563	0.551
5.2 s	2.345	2.456

The 2nd and 3rd column of the above table differ slightly because this includes the reaction of two different hands which is generally different for every human being .However these errors are negligible if considering real time experiment .Hence gives a validity signal.

- We checked the display block separately by making a separate xdc file for the display block and running it directly on board .

4 bit input	Display
“0000”	0
“0001”	1
“0010”	2
“0011”	3
“0100”	4
“0101”	5
“0110”	6
“0111”	7
“1000”	8
“1001”	9
“1010”	H
“1011”	I
“1100’	-

TEST AND DEMONSTRATION