



BENEFITS OF LEARNING

# VLSI

(Very Large Scale Integration)

## Introduction to VLSI & Semiconductor Industry

- ⇒ Semiconductor ecosystem overview
- ⇒ VLSI design flow (Front-end & Back-end)
- ⇒ ASIC vs FPGA comparison
- ⇒ Role of Design Verification Engineer
- ⇒ SoC architecture basics
- ⇒ Industry trends & career roadmap

## Digital Electronics Fundamentals

- ⇒ Number systems and Boolean algebra
- ⇒ Logic gates & combinational circuits
- ⇒ Sequential circuits & FSMs
- ⇒ Timing concepts: setup, hold, clock skew

## Verilog HDL

- ⇒ Verilog modeling styles
- ⇒ Data types & operators
- ⇒ Procedural blocks
- ⇒ Blocking vs non-blocking assignments
- ⇒ RTL coding standards
- ⇒ Testbench basics

## System Verilog (SV)

- ⇒ SV data types & arrays
- ⇒ OOP concepts
- ⇒ Classes, inheritance & polymorphism
- ⇒ Interfaces and modports
- ⇒ Randomization & constraints

## Verification Fundamentals

- ⇒ Verification planning
- ⇒ Testbench architecture
- ⇒ Directed & random testing
- ⇒ Scoreboards & checkers
- ⇒ Functional coverage basics

## Assertions (SVA)

- ⇒ Immediate & concurrent assertions
- ⇒ Assertion syntax
- ⇒ Properties & sequences
- ⇒ Debugging with assertions

## UVM

- ⇒ UVM architecture
- ⇒ UVM components
- ⇒ Sequences & transactions
- ⇒ Factory & configuration DB
- ⇒ UVM phases & reporting

## Coverage Techniques

- ⇒ Code coverage
- ⇒ Functional & cross coverage
- ⇒ Coverage-driven verification
- ⇒ Coverage closure

## Standard Protocol Verification

- ⇒ AMBA overview
- ⇒ APB, AHB & AXI basics
- ⇒ Transaction-level understanding
- ⇒ Protocol verification challenges

## EDA Tools & Debugging

- ⇒ Simulation tools
- ⇒ Waveform analysis
- ⇒ Debugging techniques
- ⇒ Regression concepts
- ⇒ Industry tools exposure



## Real-Time Projects

### Memory Design using Verilog Language

Design and implementation of RAM/ROM using Verilog HDL with simulation and functional verification

### FIFO / Memory Controller Verification

System Verilog-based verification, assertions, coverage analysis, and verification sign-off

### Career Opportunities

- ⇒ VLSI Design Verification Engineer
- ⇒ ASIC Verification Engineer
- ⇒ SoC Verification Engineer
- ⇒ Verification Analyst





More Details  
89771 69236

Online  
qualitythought.in

100,000+  
Students Trained

60,000+  
Students Placed

1000+  
Placement Companies

16 Years  
of Student Trust

Our Students Are Placed In



Quality Thought Infosystems India (P) Ltd.

302, 3rd Floor, Nilgiri Block, Aditya Enclave, Ameerpet, Hyderabad, Telangana 500016

