

# Week 3 Task - Post-Synthesis GLS & STA Fundamentals

## Objective

To understand and perform **Gate-Level Simulation (GLS)** after synthesis, validate functionality, and get introduced to **Static Timing Analysis (STA)** concepts with practical experiments using OpenSTA.

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## Part 3 – Generate Timing Graphs with OpenSTA

- Use **OpenSTA** for timing analysis:  
[OpenSTA GitHub](https://github.com/The-OpenROAD-Project/OpenSTA)
- <https://github.com/The-OpenROAD-Project/OpenSTA>
- Follow this reference script:  
[Example Script – Day 19](https://github.com/arunkpv/vsd-hdp/blob/main/docs/Day_19.md)
- [https://github.com/arunkpv/vsd-hdp/blob/main/docs/Day\\_19.md](https://github.com/arunkpv/vsd-hdp/blob/main/docs/Day_19.md)
- Use the **Help Doc** for commands and options:  
[OpenSTA Documentation \(PDF\)](https://github.com/The-OpenROAD-Project/OpenSTA/blob/master/doc/OpenSTA.pdf)
- <https://github.com/The-OpenROAD-Project/OpenSTA/blob/master/doc/OpenSTA.pdf>
- Steps:
  1. Load your synthesized netlist and constraints into OpenSTA.
  2. Generate **timing graphs** (setup/hold paths, slack, etc.).
  3. Capture at least one **timing report** and corresponding **graph**.

## Deliverables:

- OpenSTA input scripts
  - Timing reports and graphs (screenshots with **your userid and timestamp clearly visible**)
  - Observations: e.g., What is the critical path? What does the slack indicate?
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By the end of Week 3, you will:

1. Perform **GLS and validate functional correctness** post-synthesis.
2. Gain **basic STA knowledge**.
3. Generate **timing graphs using OpenSTA** and interpret timing paths.