ONLINE HIGH LEVEL SYNTHESIS

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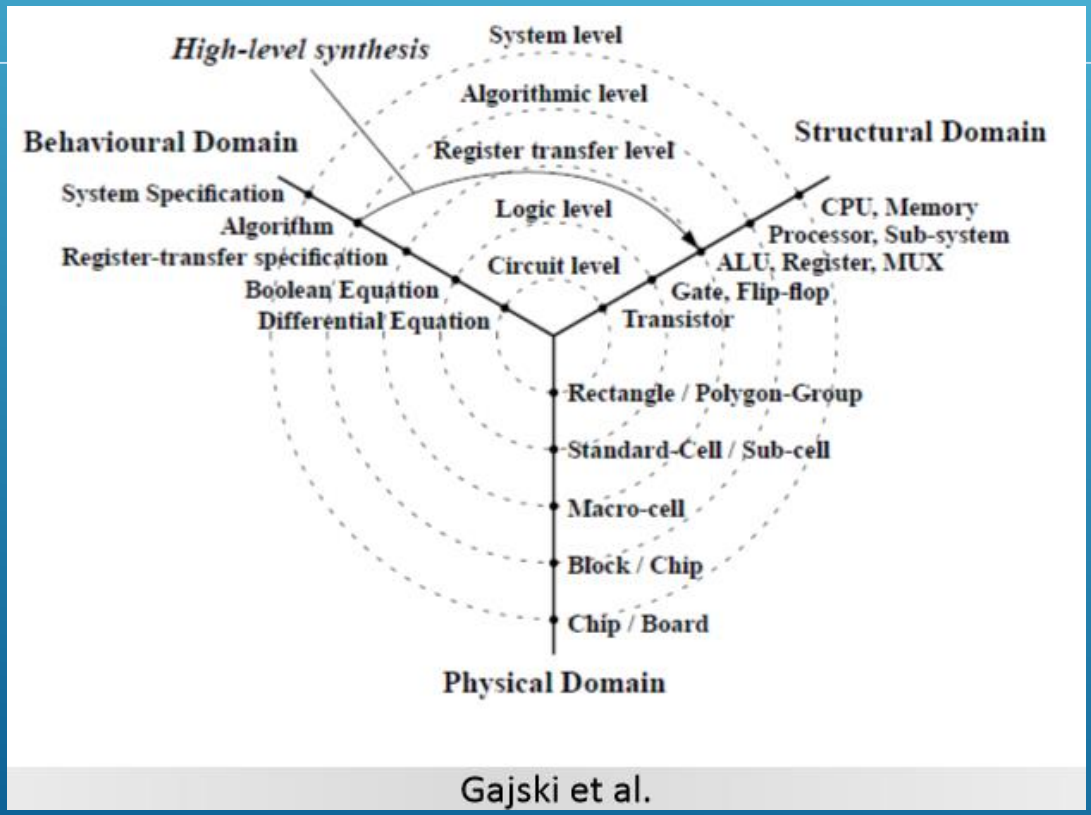
WHAT IS HIGH LEVEL SYNTHESIS

- Definition:
  - "Automatic conversion of behavioral, untimed descriptions into hardware that implements that behavior" .
  - Transfer ANSI-C description to VHDL (or Verilog) Description



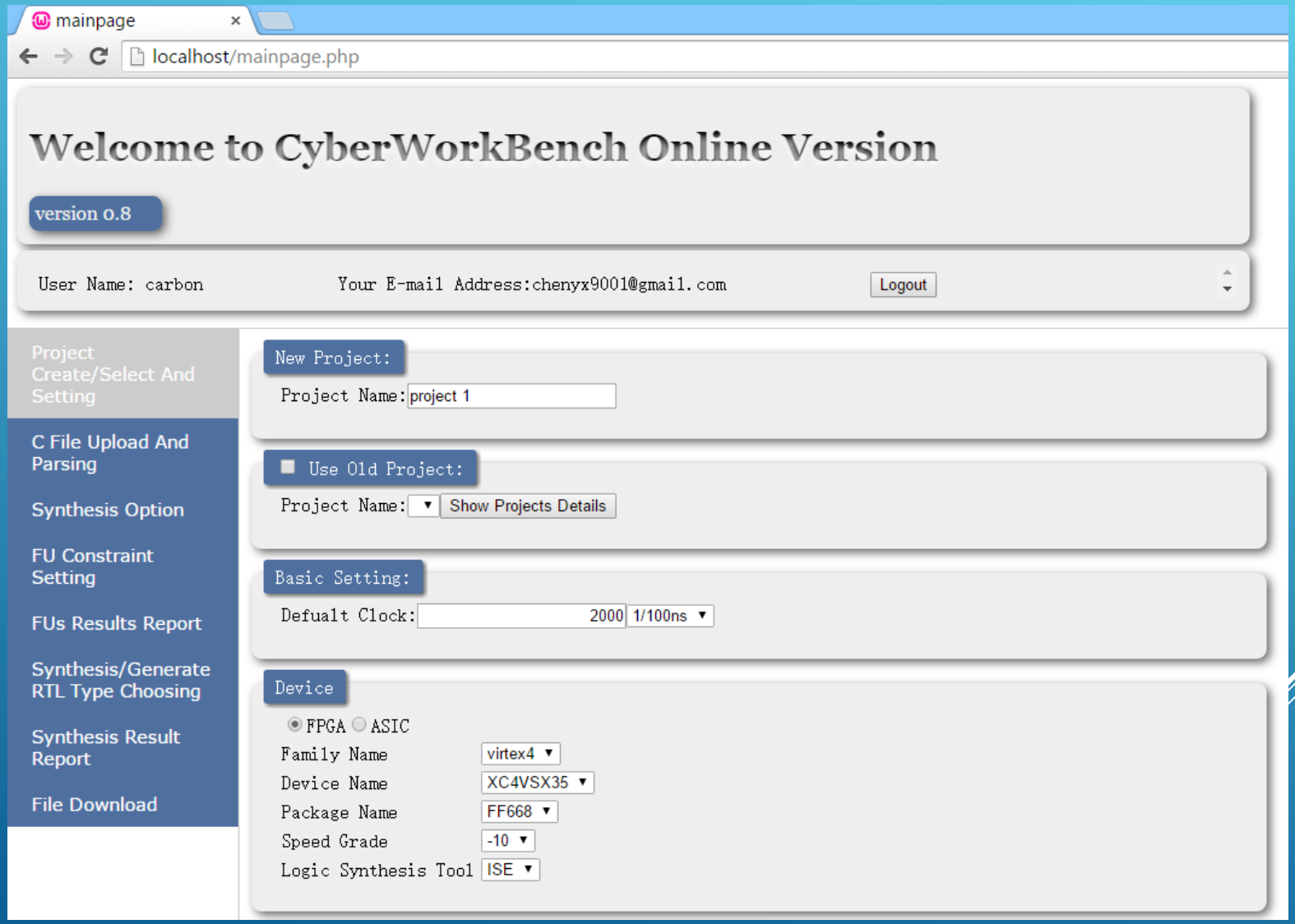
WHY ONLINE?

- Web Service
  - self-describing software modules that can be programmatically invoked over the Internet.
- Advantage
  - Discoverable
  - Cost reduction
  - Better Security
  - Better Utilization
  - Ease HW and SW maintenance (Upgrade and failed)
  - Operation system independence

WHAT CAN IT DO?

- User management
- File Management
- File Upload and download
- Project Zip
- Graphical User Interface
- Function Constraint file generation
- High level Synthesis
- Quality of Report

BRIEF INTRODUCTION



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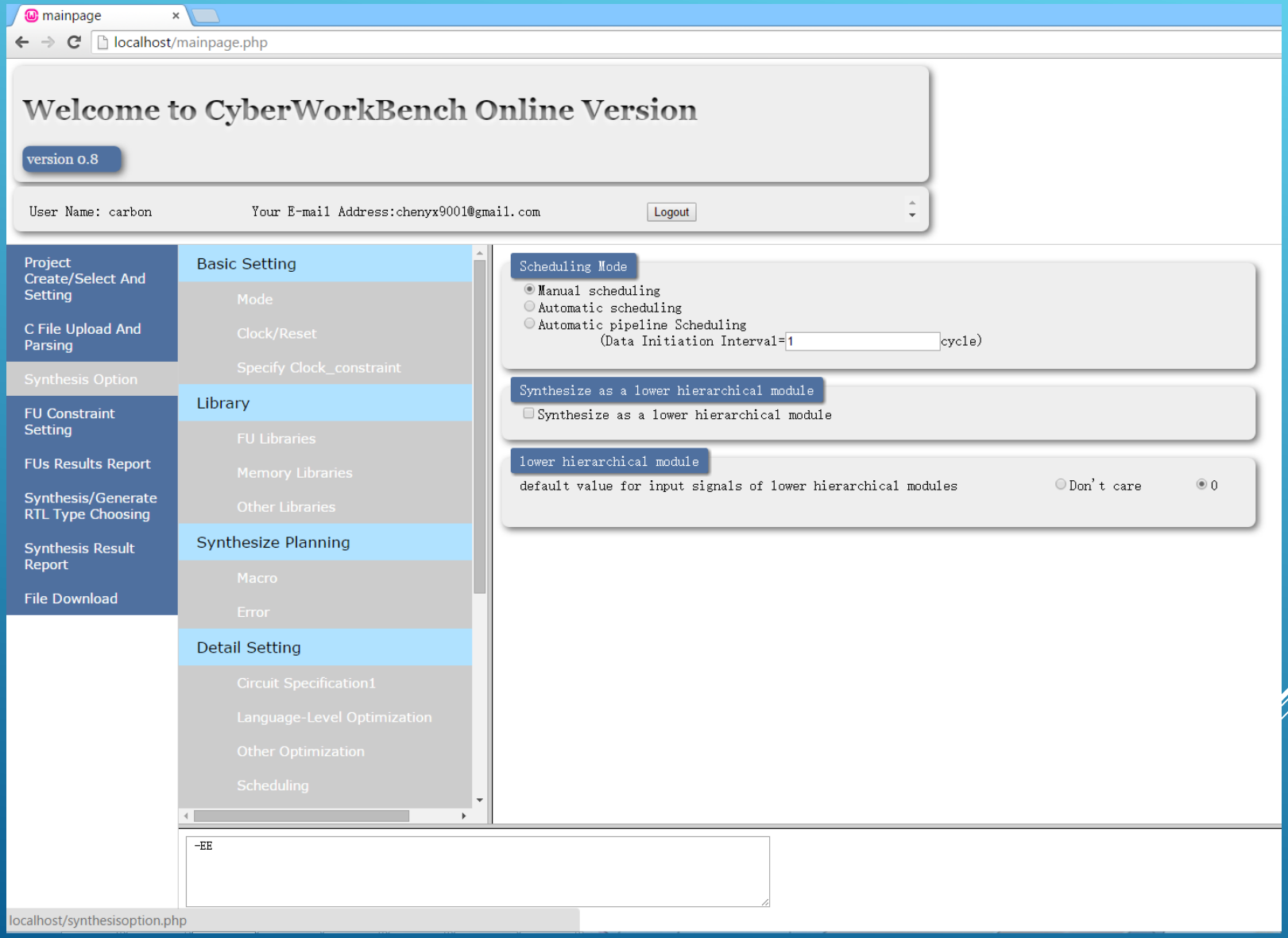

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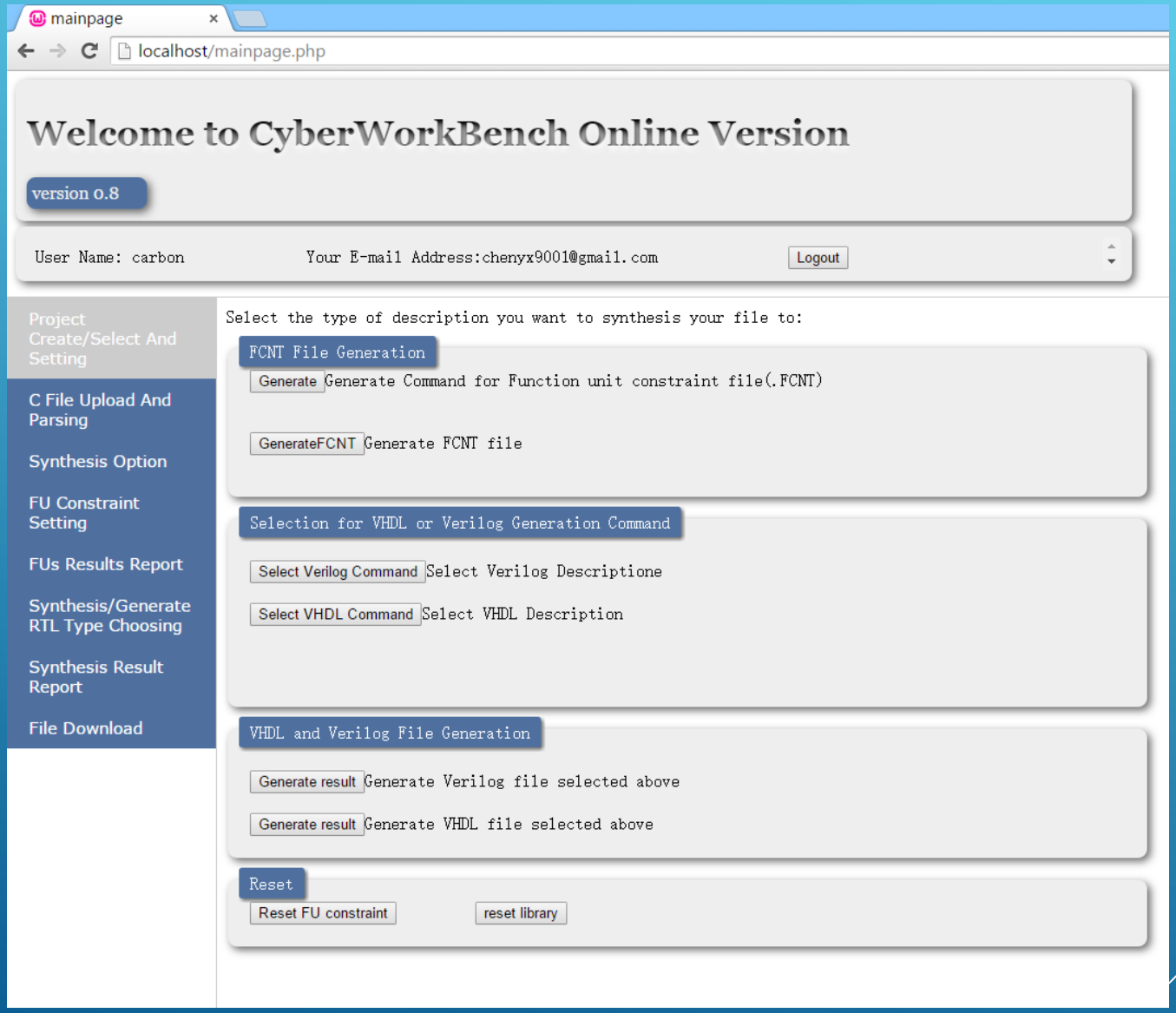

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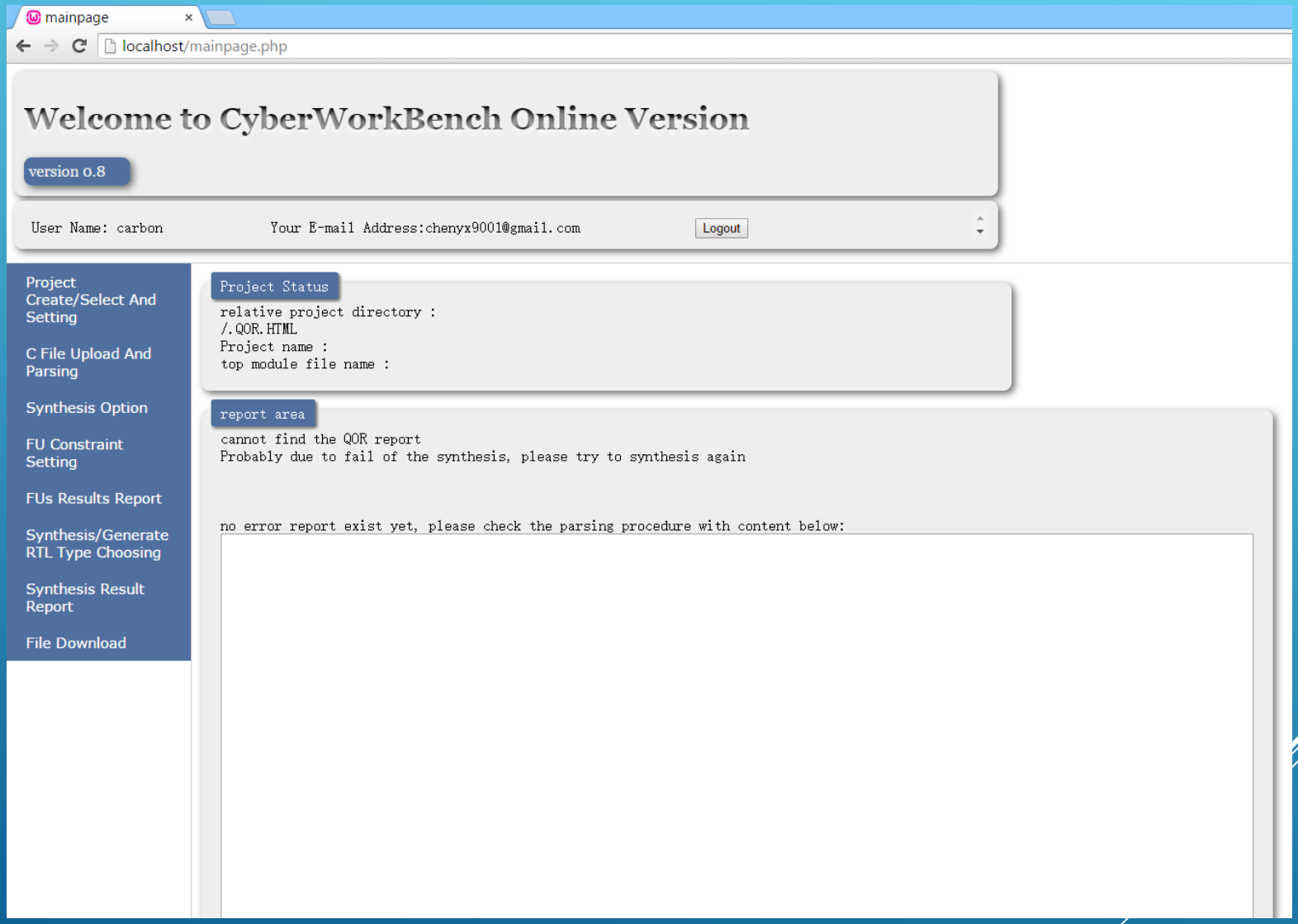

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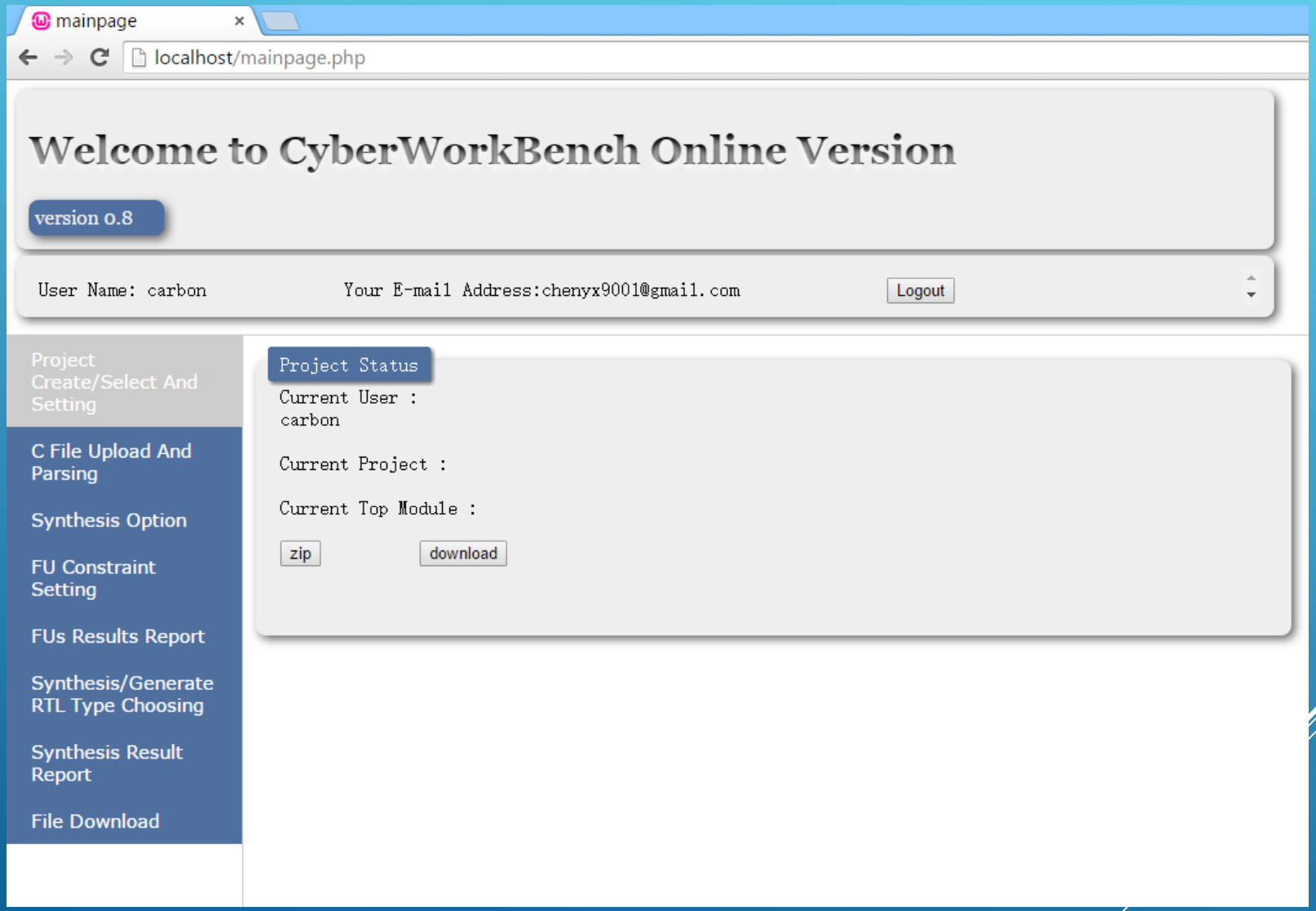
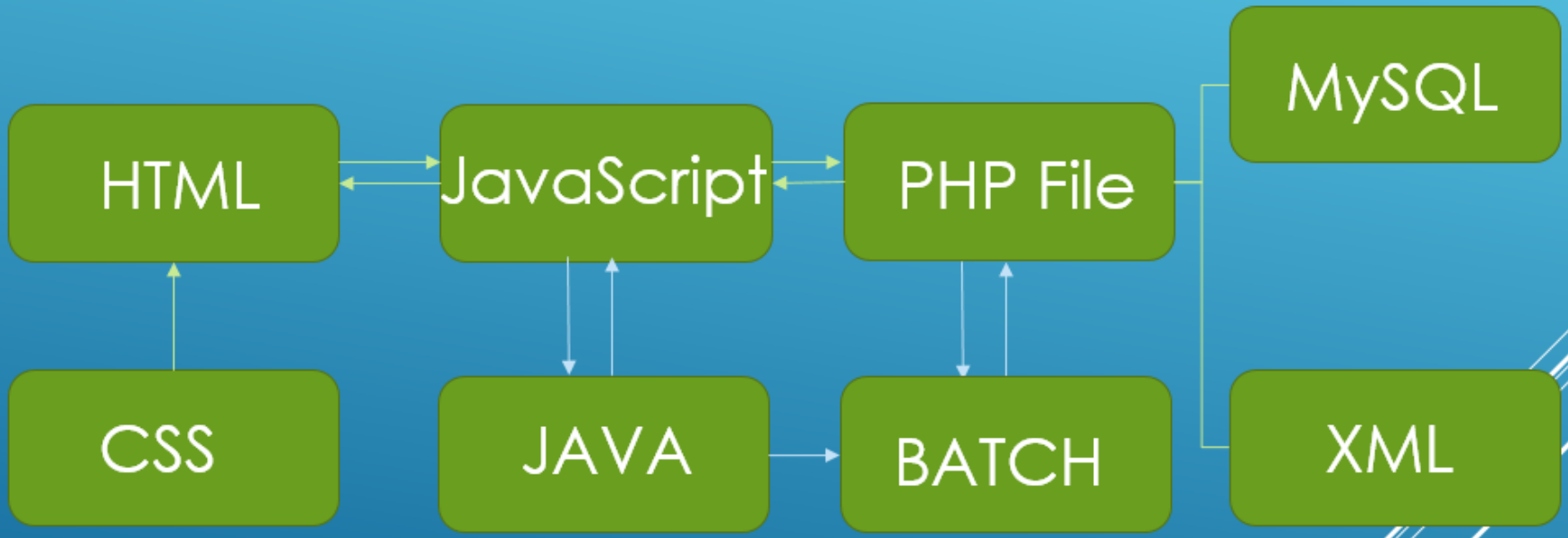


WHAT TECHNIQUE IS USED?



WHAT TECHNIQUE IS USED?

WAMP Platform

- Operation system -> W -> Windows
- Server -> A -> Apache
- Database -> M -> MySQL
- Script Language -> P -> PHP

- Advantage:
  - 1. Free
  - 2. Open Source
  - 3. Easy to implement

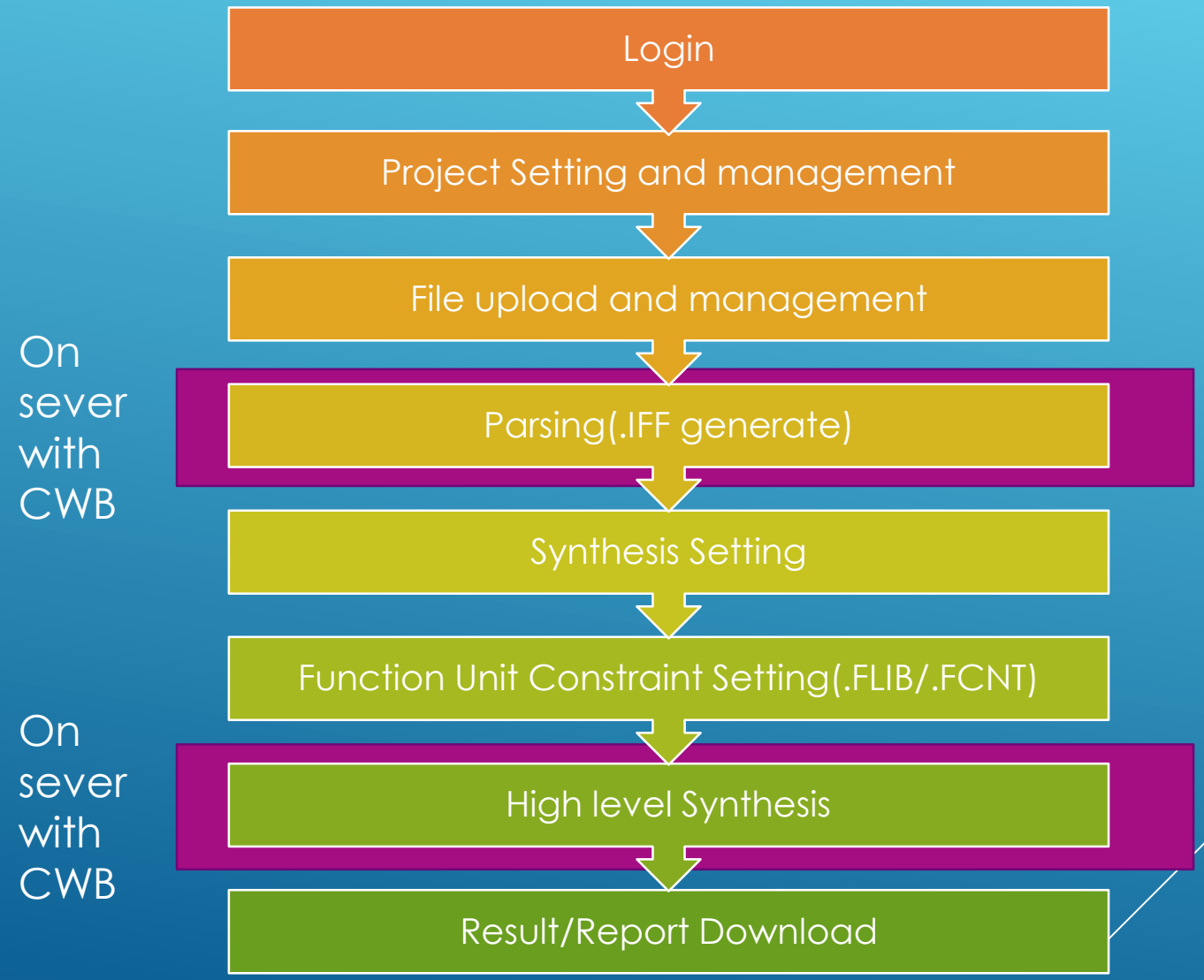
WHAT TECHNIQUE IS USED?

- AJAX (Asynchronous JavaScript and XML)
  - Communicate between Brower and server
- Javascript and Jquery
  - Dynamic Webpage response and animation
- REST (Representational State Transfer)
  - Calling Java servlet
- Java
  - Execute CyberworkBench, Create runtime environment
- PHP
  - Main frame work for the server side structure
  - Response to most of the browser requests
- XML (eXtensible Markup Language)
  - Store Function library, file management
- MySQL
  - Store users' information
- CSS
  - Interface beautify

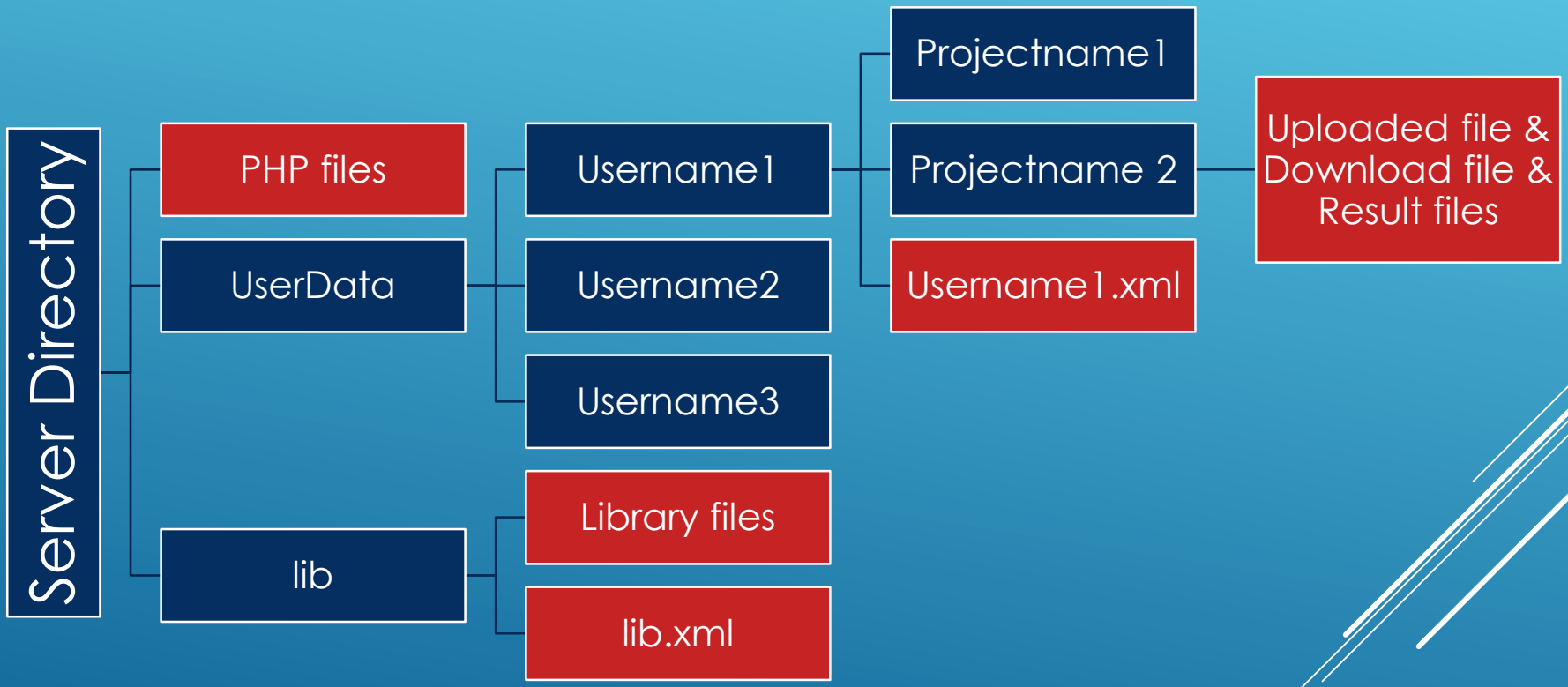
PROJECT CHARACTERISTIC

- Atomic transaction
- Strict User Input checking
- Flexible File Management system

FLOW CHART


Login
Project Setting and management
File upload and management
On sever with CWB
Parsing(.IFF generate)
Synthesis Setting
Function Unit Constraint Setting(.FLIB/.FCNT)
On sever with CWB
High level Synthesis
Result/Report Download

SERVER STRUCTURE



FAST DEMONSTRATION

POSSIBLE FUTURE IMPROVEMENT

- Edit C code directly in browser
- Identification Code
- File upload checking
- Additional functions
- Multithreading
- Linux system runtime support

SUMMARY

- In my opinion, this project can really spread out the idea of high level synthesis and reduce the time and cost to access such a service. In one word, the project is both practical and useful.

Q & A