Chapter 3 - Opening

RT Level Modeling with C/C++

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RT Level Modeling with C/C++

This chapter discusses RTL design simulation with C/C++ programming language. We start with defining *bus* class that tries to mimic SystemC library, followed by overloading operators and functions for that. Then, we describe C++ *bus*-based models for combinational and sequential hardware components that are put together to build a higher-level structure like LRU or exponential circuit.

RT Level Modeling with C/C++

+ RTL Principles
  Bus Communications
  Utility Functions
+ Bus Operations
+ Basic Elements of RTL
+ RTL Design Examples
  Summary

A BIRD'S-EYE VIEW OF OUTLINE

RT Level Modeling with C/C++

- RTL Principles
  - Elements of datapath
  - Elements of control unit
  - Bus Communications
  - Utility Functions
- Bus Operations
  - Array Attributes
  - Logical Operations
  - Adding Operations
  - Relational Operations
  - IO Operations
- Basic Elements of RTL
  - Combinational Elements
  - + Registers and Counters
  - Memory Structure
  - Controller FSM
  - Controller 11011
- RTL Design Examples
  - + LRU Circuit
  - + Exponential Circuit
  - Summary

RT Level Modeling with C/C++

- In this chapter, we will be addressing the following outcomes:
  - Modeling RT level components in C++
  - Describing state machines in C++
- Relation to the previous chapter:
  - The previous chapter explained object oriented logic modeling
- Relation to the next chapter:
  - The next chapter will discuss SystemC RT level modeling
- Is an assignment due for this chapter? Which one?
  - Yes, Homework 3 - C++ RT-level design and modeling