Milestone 1: Design of a Vending Machine

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Abstract

This document presents the very first milestone in the course, which requires students to design a vending machine using SystemVerilog. Also, they must follow some specific coding guidelines and write reports. In case you meet an error or have any improvement in this document, please email the TA: cxhai.sdh221@hcmut.edu.vn with the subject "**[COMPARCH203 FEEDBACK]**"

1 Objectives

- Understand some coding guidelines
- Review understanding of basic logic design and FSM
- Design a Vending Machine using SystemVerilog

2 Coding Guidelines

While coding, you must remind yourself that you do **NOT** see your codes only once but several times for several reasons, such as debugging or improving. A clean code file will enormously save your valuable time. However, a "dirty code" file will pollute your eyes and sabotage your head, or worse, make you wonder what have you done.

In this course, you could (or must) follow the coding guideline in this link.

3 Problem

Vending Machine is a dispenser machine that receives coins or bills and dispenses soft drinks or snacks.

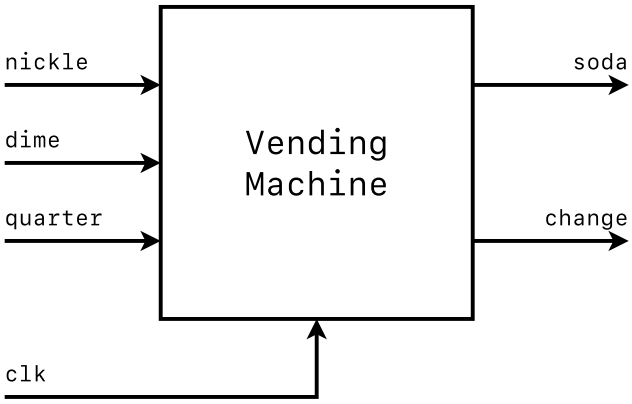

Figure 1: Vending machine's ports

In this problem, you will design a vending machine that satisfies the requirements below:

1. It accepts coins: ¢5 (Nickel), ¢10 (Dime), ¢25 (Quarter), but only one coin at a time (or clock).
2. When the deposit exceeds ¢20, it dispenses a soda and a change.
3. Change is a 3-bit data

   000 ¢0

   001 ¢5

   010 ¢10

   011 ¢15

   100 ¢20

In this example, if a customer put a dime and then a quarter, in the next cycle, he received a soda and a change of ¢15.

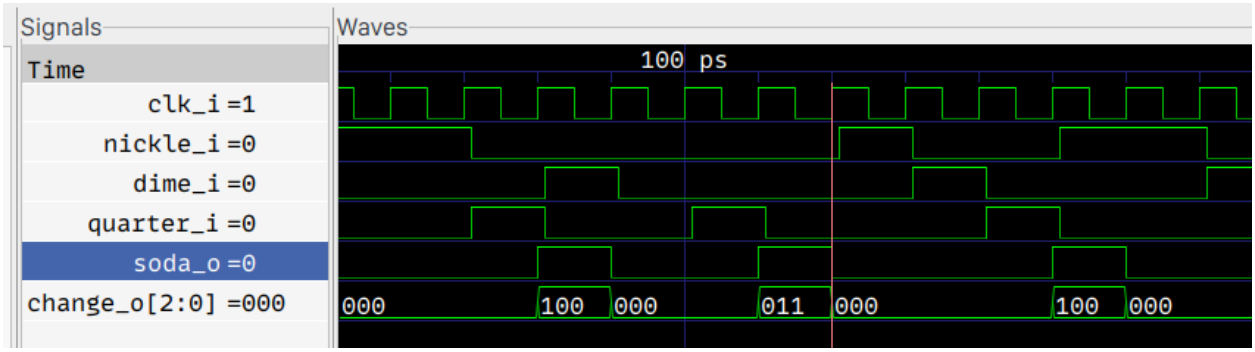

Figure 2: Waveform of an example vending machine