VLSI DESIGN
CSE460
SECTION: Lab
LAB REPORT 4

Problem 1:

You have to design a vending machine in Quartus for a **15 Tk product**. User's money, returned money by the machine, and product bought condition is represented as **cash_in (2-bit input), chg (output), and buy (1-bit output)** respectively.

The vending machine can only accept **three** inputs: no money (**cash_in** = 00), Tk 10 (**cash_in** = 01), and Tk 20 (**cash_in** = 10). Once an acceptable input is more than or equal to 20 Tk, the machine immediately generates an output (**buy=1**), goes back to the initial state, and gives back the change (if required).

Requirements:

A. Draw the state diagram.
B. How many types of changes (return) will the machine produce? How many bit/bits should **chg** output have to represent the returned money in the code?
C. Write the state-assigned table.
D. Write the Verilog code.
E. Run the simulation, and verify your answer. Add two ss (full screen and zoomed). Describe it briefly.