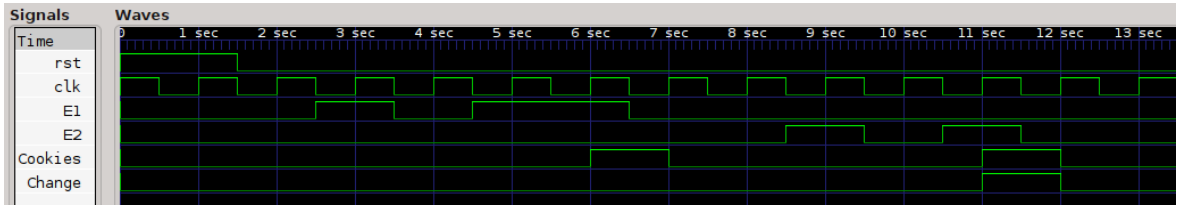
Vending machine X77254_en

We have to design the control of a vending machine that dispenses a bag of cookies for 3€. The machine only accepts 1€ and 2€ coins. The machine has a coin slot that detects the insertion of a coin and distinguishes between 1€ and 2€ coins. Each time a coin is inserted, a 1-cycle pulse is generated on signal *E1* or *E2*, depending on the type of coin. Since the machine only has one coin slot, no two coins can be inserted simultaneously.
After the insertion of 3€, the machine must dispense a bag of cookies by activating a signal called *Cookies* for one cycle. Additionally, if the customer has inserted 4€, the machine will dispense a 1€ change by activating the signal *Change* on the same cycle the cookies are dispensed.
The machine will not accept more coins while the cookies and the change are dispensed.
The following figure illustrates a possible waveform of the vending machine control.



Specification

module *Vending_Machine*(*E1*, *E2*, *Cookies*, *Change*, *clk* , *rst*);
input *E1*, *E2*, *clk* , *rst* ;
output *Cookies* , *Change*;

Hint

The state machine can be implemented with 5 states.

Input

- *E1* is the input indicating the insertion of a 1€ coin.
- *E2* is the input indicating the insertion of a 2€ coin.
- *clk* is the clock signal.
- *rst* is the synchronous reset signal.

Output

- *Cookies* is the output that activates the delivery of cookies.
- *Change* is the output that activates the return of change.

Problem information

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