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DESIGN OF ELECTRONIC TICKETING MACHINE USING VERILOG

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ABSTRACT

UTS ticketing is done through the online. Anyone can reserve the ticket and track the status of the reserved ticket through online. Booking the tickets through ticket counters is time consuming process. So to avoid this we need an automatic electronic ticket machine like ATM machine. If we place this machine in railway station anyone can buy the ticket as like we are taking money from ATM. this paper is regarding the solutions to the problems related in consumption of time during the Ticketing Process in Indian Railways. The project is designed by using Verilog and synthesized in XILINX ISE tool.

Keywords: Electronic Ticket Machine, FSM, Verilog, Xilinx ISE simulator.

I. INTRODUCTION

At ticketing counter of Railway's we usually face problem of exact currency to be paid while booking the reservation or unreserved tickets. This is because the ticket fare may be any value of the form 628, 325, 456, 555 etc. which are not the multiples of 10, 50, 100, 500 or 1000. And sometimes passenger doesn't have a sufficient money to book a ticket, even though he/she has debit card, they have to visit nearby ATM and withdraw money and then he/she has to go for the booking the ticket. The above two problems i.e. exact money to be paid and insufficient money with the customers are the unresolved problems and consume lot of time of railway passengers. Many a times the passenger may be in a hurry to get the train and he/she may drop the train in which they wish to travel due to the above said problem.

To overcome these problems we designed electronic ticketing machine by using Verilog. It will work as same as ATM machine. This machine is flexible and reliable compare to microcontroller based design machines. The project contains the FSM (Finite State Machine) especially Moore state machine. The different states in the FSM define the each operation of the electronic ticket machine. For future work we can increase the number of states for different applications like accepting card payments, including more number of destination options and accepting all possible currencies.

II. OPERATION OF ELECTRONIC TICKETING MACHINE

Initially the passenger has to select the proper destination.

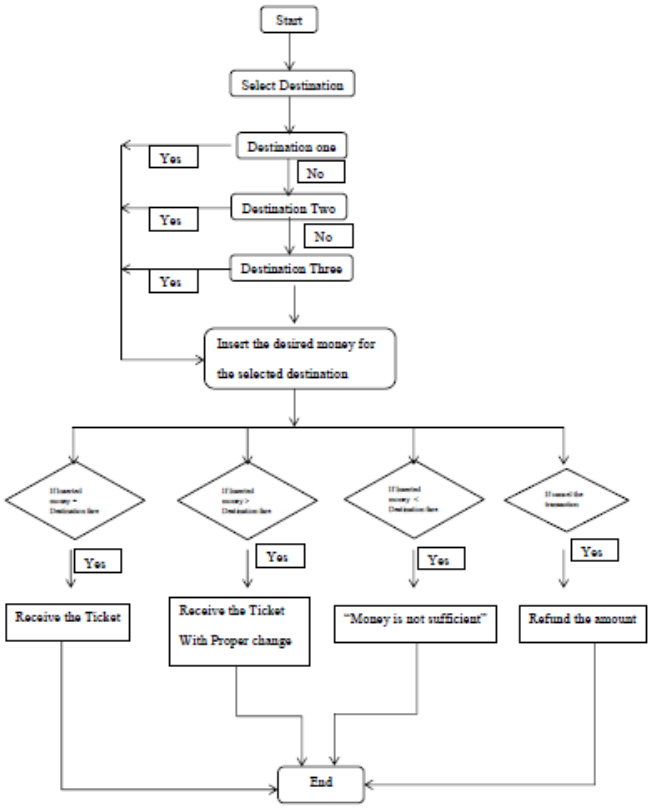
1. He has to insert the desired currency.
2. If he inserts currency equal to the selected destination fare, then he will receive the ticket for his journey.
3. If he inserts currency more than the selected destination fare, then he will receive the ticket for his journey as well as change.

4. If he inserts currency less than the selected destination fare, then message "money is not sufficient" will be displayed.
5. If he inserts balance amount he will receive the ticket, otherwise he can press cancel button so that the inserted amount will be refunded back to passenger.
6. Before receiving the ticket, at any point of transaction if he wants cancel the transaction the inserted amount will be refunded back to passenger.

III. DESIGN METHODOLOGY

In this paper a Moore finite state machine is designed for the proposed machine which can vend tickets for the three different destinations. A two bit input select line is used to select the different destinations (01:destination1, 10:destination2, 11:destination3). A note input signal is used for indicating different currencies. We are considering its decimal equivalent values for the value of the currencies so that it will be easy to analyze the waveforms. Our design accepts only 10, 20 and 50 rupee notes. A cancel input signal is used to decline the transaction.

The proposed design works on the positive edge of the signal clk and returns to initial state when rst button is pressed. tkt1, tkt2, and tkt3 are the one bit output signals represent the tickets for destination1, destination2 and destination3 respectively. Change is an output signal which returns the excess amount inserted while purchasing the ticket. Refund is an output signal returns the inserted amount on the cancellation of the transaction. The proposed machine is designed using FSM modelling and is coded in Verilog HDL language.



IV. MPLEMENTATION OF ELECTRONIC TICKET MACHINE

Serial number	Destination	Ticket	cost
1	Destination 1	tkt1	20
2	Destination 2	tkt2	30
3	Destination 3	tkt3	50

INPUT SIGNALS:

clk: clock input to the board

rst: to reset the machine

notes: to insert the currency.

Acceptable currencies: 10rs, 20rs and 50rs.

cancel: to cancel the transaction

sel: to select the desired destination.

OUTPUT SIGNALS:

tkt1: ticket for the destination1

tkt2: ticket for the destination 2

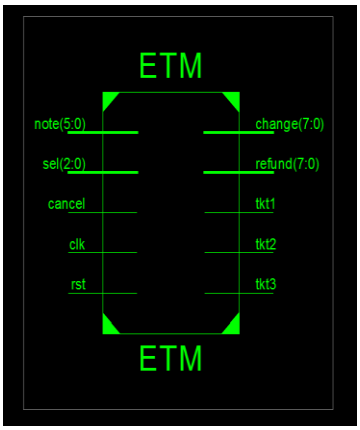
tkt3: ticket for the destination 3

change: returns the excess amount inserted

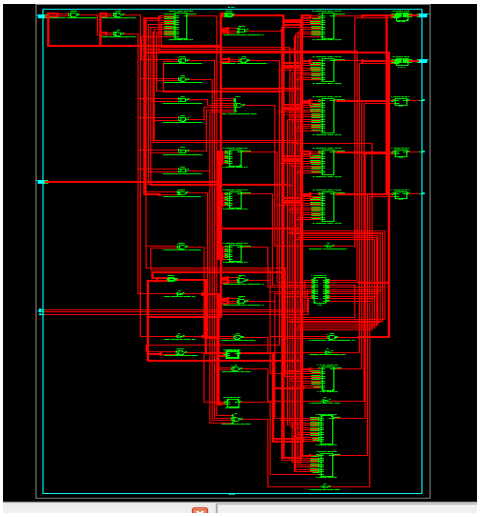
refund: to refund the amount if the transaction is cancelled

V. SIMULATION RESULTS

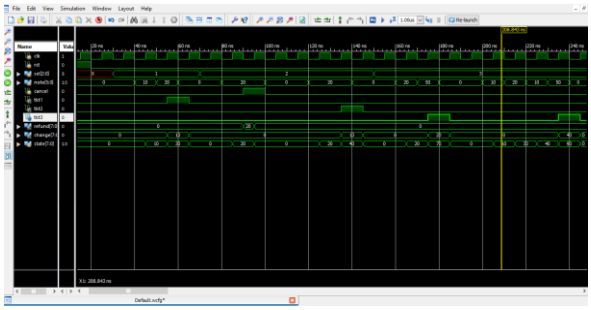
1. The block diagram of Electronic Ticketing machine after synthesis.



2. The RTL schematic of Electronic Ticket Machine which displays gates and elements used in digital circuitry.



3. The simulation wave form shows the operation of Electronic Ticket machine with different scenarios.



VI. CONCLUSION AND FUTURE WORK

The system avoids the queue, saves the time and speedup the ticketing process. It has much more enhanced qualities like cancellation of ticket in between the transaction and machine will refund the money if tickets are not available.

Its design is very flexible and reliable. For future we can easily enhance the algorithm for more number of destinations and we can incorporate some of the following features - card payment facility and capability to queue & process a set of orders on FIFO basis.

REFERENCES

[1] B. Caulfield & M.O Mahony , "Passenger Requirements of a Public Transport Ticketing System", Proceedings of the 8th International. IEEE Conference on Intelligent Transportation Systems Vienna, Austria, pp- 32-37,2005.

[2] Fauziah Zainuddin, Norlin Mohd Ali, Roslina Mohd Sidek, AwanisRomli, NooryatiTalib&Mohd. Izham Ibrahim "Conceptual Modeling for Simulation: Steaming frozen Food Processing in Vending Machine", International Conference on Computer Science and Information Technology, University Malaysia Pahang, pp.145-149 ,2009

[3] Ana Monga, Balwinder Singh, "Finite State Machine based Vending Machine Controller with Auto-Billing Features", International Journal 7. of VLSI design & Communication Systems (VLSICS) Vol.3, No.2, pp 19-28, 2012.

[4] M. Zhou, Y. J. Son, & Z. Chen, "Knowledge Representation for Conceptual Simulation Modeling", Proceedings of the 2004 Winter Simulation Conference, pp. 450 – 458,2004

[5] VarunVaid, "Comparison of different attributes in modelling a FSM based vending machine in 2 different styles", International conference on Embedded system ICES,2014.

[6] Ben Ammar Hatem Hamam Habib ," Bus Management System Using RFID In WSN",European and Mediterranean Conference on Information Systems 2010(EMCIS2010) April 12-13 2009, Abu Dhabi, UAE

[7] Md. Foisal Mahedi Hasan, Golam Tangim, Md. Kafiul Islam, Md. Rezwanul Haque Khandokar,Arif Ul Alam," RFID-based Ticketing for Public Transport System: Perspective MegacityDhaka".

[8] Ameer H. Morad," GPS Talking For Blind People", Journel of emerging technologies in web intelligence, Vol. 2, No. 3, augest 2010.

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