

**EE214 - Report 7**

# **Multiple String Detector**

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# Introduction

## 0.1 Objective

The aim of the assignment was to implement a string detector using a **Mealy type FSM** which outputs '1' when input sequence of letters given thus far contains the following sub-sequences:

- run
- cry
- broom

This was to be implemented using Behavioural modelling.

Following that, we also had to perform RTL simulation and Scanchain to ensure that the design was correct.

## 0.2 Overview

In this report, I have presented my work done on Quartus using VHDL during the seventh lab.

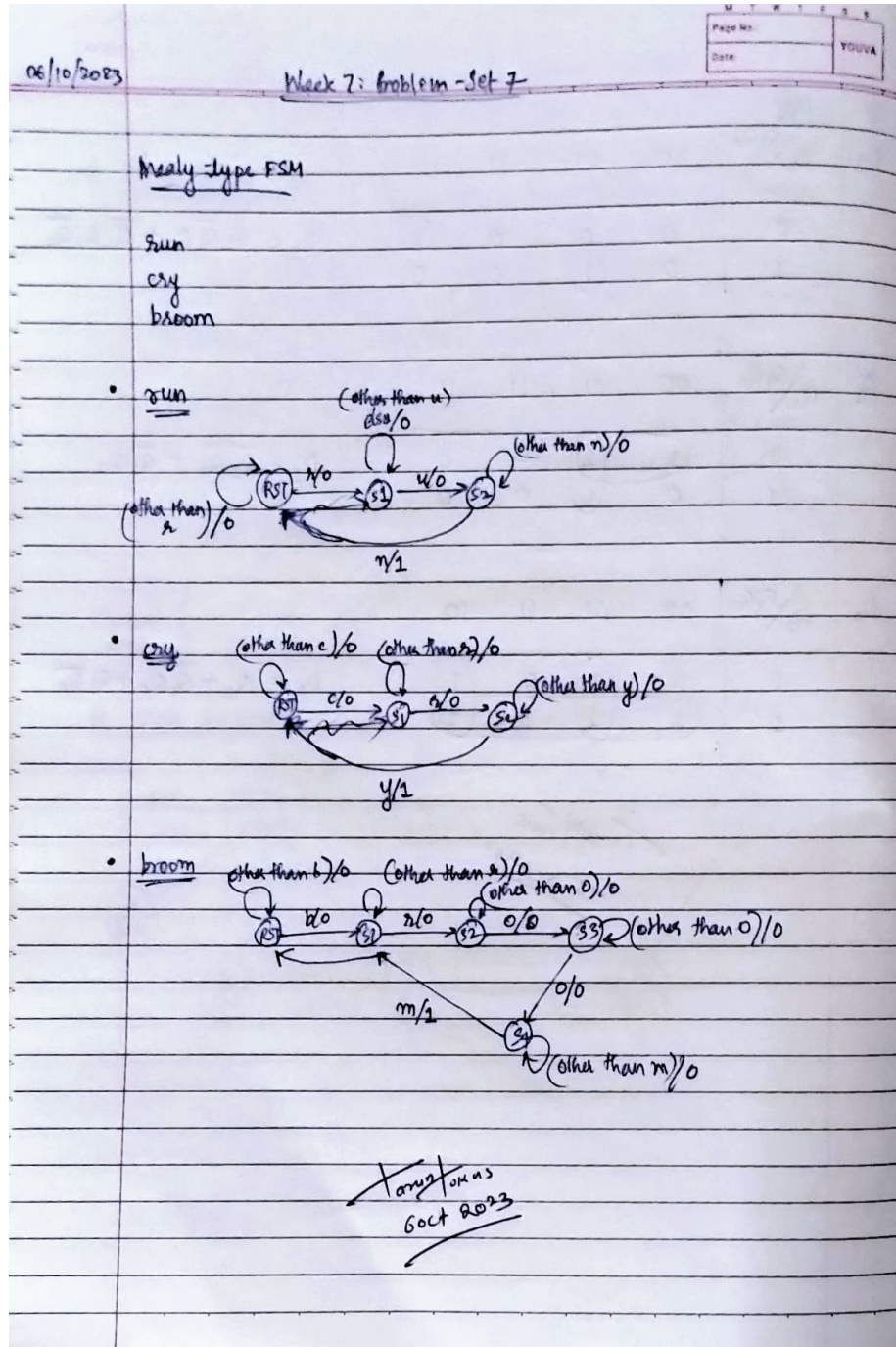
I have also done design verification using ScanChain tool on Xen-10 FPGA board and verified my design. The ScanChain output is also shown in the report.

The circuit presented in the report has the RTL Viewer followed by the ModelSim Waveform and Transcript obtained from Quartus.

## Chapter 1

# State Diagrams

This section contains the outline of the Mealy type FSM made in the lab for the words `run`, `cry`, and `broom`.



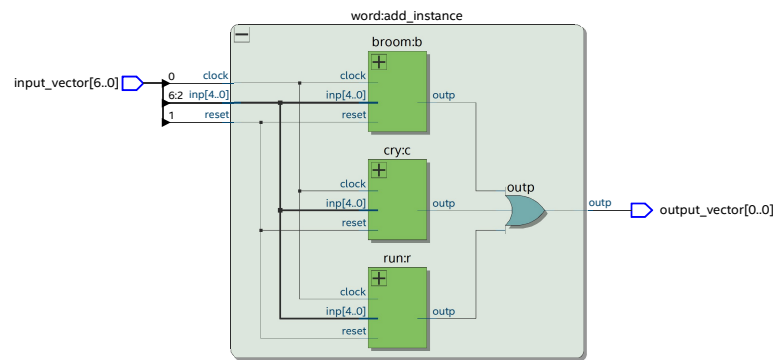
## Chapter 2

# Multiple String Detector

### 2.1 RTL Viewer

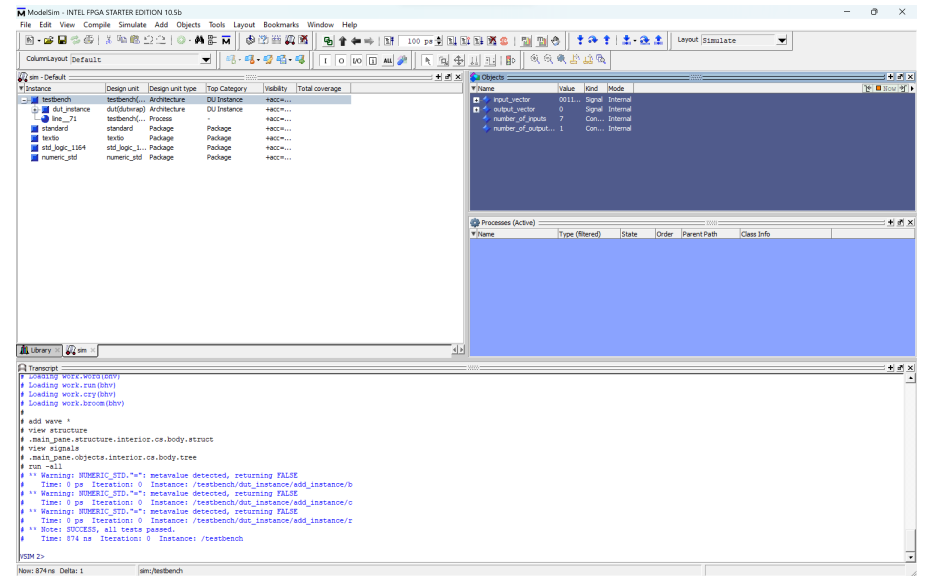
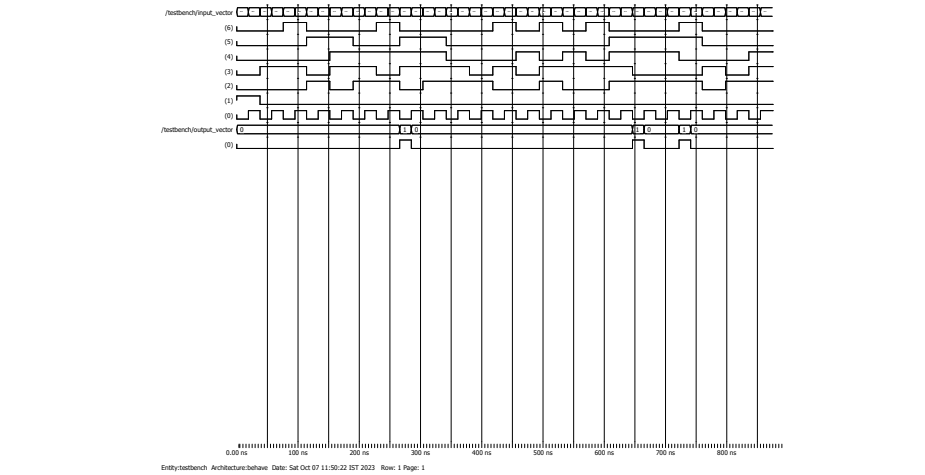
Date: October 07, 2023

Project: word\_detection



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## 2.3 ScanChain

The ScanChain after dumping the `.svf` file gave the following output in `out123.txt`

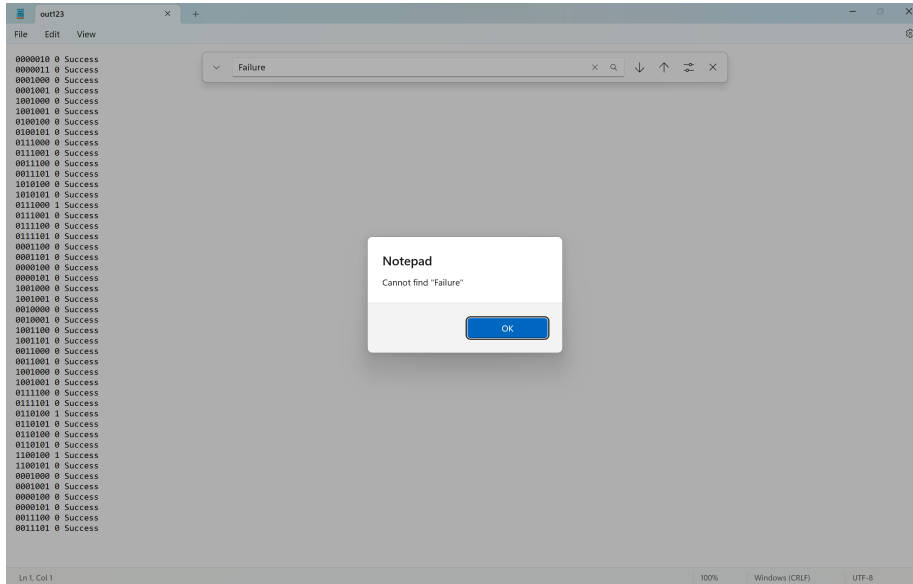


Figure 2.2: Not a single Failure in the ScanChain output.



**THANK YOU!**