Component 3: Oracle

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1 Introduction

The oracle, receives the traces from the controller and in the event of detecting errors at runtime, it writes the errors in the Errors.csv file and the runtime information of each of the components in Status.csv.

Format of the output files:

- Errors.csv: the detected errors are written in each line. The first column is the information about the detected error and the second column the time of the detection.
- Status.csv: every time it receives a trace, it saves the current state of the components in this file: component identification; component current status; time.

2 TraceFile Solution: Read Traces from the Traces.csv file.

In this case, the oracle receives the traces and it writes the outputs in the Errors.csv and Status.csv files. As it is not connected to the controller, it does not start any safeProcess.

3 ICE Solution: Read Traces from the Controller at runtime

In this option the controller and the runtime checker are connected by the ICE middleware. Every time a transition is going to be performed, the controller sends a trace to the checker to confirm the transition. If the conditions are correct, the checker confirms and the transition is performed. If the transition is not correct (violates a safety contract), the checker sends a error event and initializes the systems by the defined safeProcess. To check this second version, first the oracle has to be launched and then the controller (Component 1, Option3).