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FEUP FACULDADE DE ENGENHARIA
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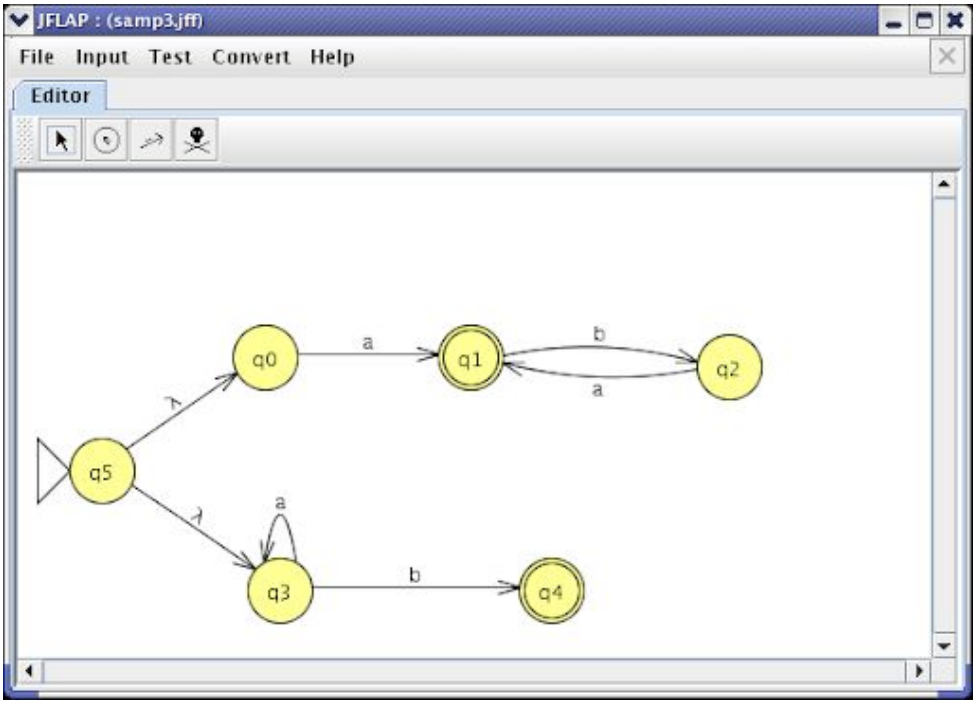
Project Specification

CFLAP

(Collaborative Finite Languages and Automata Package)



Laboratório de Computadores 2020/2021

T7G01

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Program Description

This project is based on the "JFLAP" program (http://www.jflap.org/), where it is possible to interact with computer science topics, such as formal languages and automata theory.

The objective is to develop a program that allows the user to create a finite automata (deterministic or non-deterministic) and to check if a given string is in the language recognized by the FA.

The user will be able to select the various options for building and editing FA's with the mouse, using the corresponding buttons, or with the keyboard, using shortcut keys, and will use the keyboard to write transitions between states and strings that he wants to test as input.

When the program is opened, a small menu will be shown, in which it will be possible to create a new FA, open an existing one (saved in a file), join a session, allowing collaboration between two computers, and exit, closing the program.

Devices

We intend to use the following I / O devices:

- Timer:
  Keep fixed frame rate.
- Keyboard:
  Enter a letter associated with a given transition, write a string to be tested and use shortcuts.
- Mouse:
  Choose functionality through the toolbar, create / move / delete states and transitions between them and navigate the menu.
- Video Card:
  Show menu and program interface.
  Utilization of double buffering and page flipping techniques, if supported by MINIX.
- RTC:
  Inform the user of the current date and time in the corner of the screen, generate interrupts periodically and account for the time spent building the FA.
- Serial Port:
  Synchronize the current state of the program between two computers in real time.

Modules to Implement

We intend to implement the following modules:

01. Keyboard
02. Mouse
03. KBC
04. State machine
05. Graphics
06. i8042
07. i8254
08. Timer
09. RTC
10. UART
11. Menu
12. Main
13. CFlap
14. FA

Development Plan

First Week: FA, Keyboard, Graphics

Second Week: Mouse, State Machine, Timer, Graphics

Third Week: CFlap

RTC and UART will be implemented subsequently.