

Sharp R16

What is Sharp R16?

Sharp R16 is a 16-bit sophisticated special-purpose RISC computer with 1Kib RAM, and 3 I/O modules (a Robot arm, an LCD screen, a keyboard). Its sole purpose is to provide the user with a simple text editor in which the user can write and execute programs for the Sharp R16's robot arm.

The machine is capable of displaying the program on its HD44780 LCD module in human-readable instructions. The machine uses this LCD module to display a simple text editor in which the user can scroll through the text, navigate to specific characters with a cursor, and delete or overwrite them.

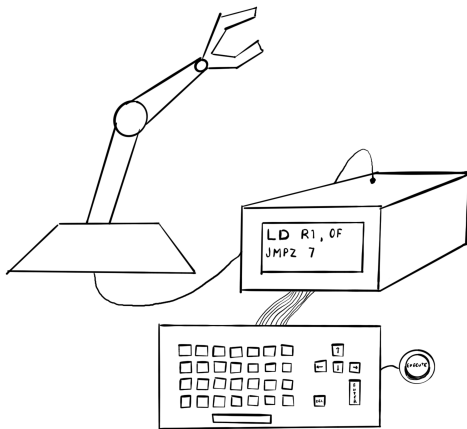


Figure 1: Sharp R16

Objective of Project

The objective of this project is to learn computer architecture and organization. Rather than simply reading a book, I thought I ought to build a computer myself to better comprehend the concepts and reasons behind computer design.

Sharp R16 is not meant to be a highly efficient or well-built computer. That is not my goal. I am not trying to optimize anything. I am merely trying to understand computer architecture and organization.