Linker-Loader

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Overview:

This special program is a simulator to the memory in two different loader types:

1. Absolute Loader for SIC programs
2. Linker Loader for SIC/XE programs

it uses python-based high-level language to take HDRTME records from the user as an input file (‘input.txt’) and allow the user to choose whether is load using absolute loader or linker loader.

In case of Absolute Loader option:

* The program stores the T records in a separated file (‘intermediate.txt’) then loads the T records into corresponding cells in memory.

In case of Linker Loader:

* The program asks the user to specify the starting address of the program to determine the starting of each control section
* Then it asks to enter the order of the sub-programs separated by spaces

Design issues:

* Retrieving data from an Entry (edit text) and passing it to different functions
  + we solved it by introducing global variables
* converting hex to signed integer and reverse
  + we used new identified functions for operations instead of the built-in functions as it returns unsigned numbers
* storing all the M records of all programs in a single file without using the program address
  + we modified the address in each M records by adding the program address to the M record address before storing them in the file
* accessing a specific byte in memory to modify it
  + we use the address of the byte to get its index
    - to get the row we replaced the LSB with zero
    - the column is the LSB

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 1 | … |
| 2050 | 2050 | 2051 | … |
| … | … | … | … |

ex: in 2051

Sample run:

Graphical user interface

Description automatically generated

Start page

Table

Description automatically generated

Memory output of SIC program

In SICXE

Chart, waterfall chart

Description automatically generated

Starting address window

Graphical user interface, text, application

Description automatically generated

Entering the order of programs

A screenshot of a computer

Description automatically generated with low confidence

Memory output of SICXE program