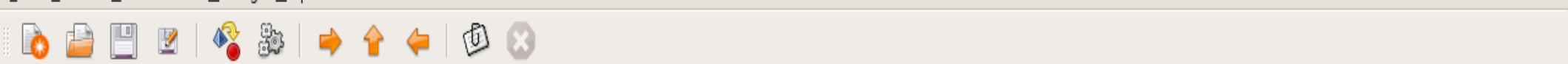


Electronics Simulation Tools

1. GNUSim 8085
2. VIPEC

GNUSim 8085

- GNUSim8085 is a graphical simulator, assembler and debugger for the Intel 8085 microprocessor.
- The 8085 μ p is frequently used in many introductory μ p courses as its instruction set is simple and highlights the basic architecture underneath.
- The Intel 8085 was an 8-bit microprocessor made by Intel in the mid-1970s and its successors are still in use in many embedded systems.



Registers

| | |
|---------|-------|
| A | 15 |
| BC | 14 00 |
| DE | 00 21 |
| HL | 00 00 |
| PSW | 00 00 |
| PC | 24 A8 |
| SP | FF FF |
| Int-Reg | 00 |

Flag

| | |
|----|---|
| S | 0 |
| Z | 0 |
| AC | 0 |
| P | 0 |
| C | 0 |

Decimal - Hex Conversion

| | |
|---------------------------------------|---------------------------------------|
| Decimal | Hex |
| <input type="text" value="0"/> | <input type="text" value="0"/> |
| <input type="button" value="To Hex"/> | <input type="button" value="To Dec"/> |

I/O Ports

| | |
|--|---------------------------------|
| <input type="text" value="1"/> | <input type="text" value="00"/> |
| <input type="button" value="Update Port Value"/> | |

Memory

| | |
|--|---------------------------------|
| <input type="text" value="0"/> | <input type="text" value="00"/> |
| <input type="button" value="Update Memory"/> | |

Load me at

```
1 |
2 | ;Program to convert BCD to binary (8-bit)
3 |
4 |
5 |     lda    bcd    ;load the bcd number
6 |     mov    e,a
7 |     ani    0f0h  ;mask
8 |
9 |     rlc
10 |    ;shift left 4 times
11 |
12 |     rlc
13 |     rlc
14 |
15 |     mov    b,a
16 |     xra    a    ;clear a
17 |
18 |     mvi    c,0ah ;initialize counter
19 | loop1:  add    b
20 |         dcr    c
21 |         jnz    loop1
```

Data Stack Keypad

Variables

| Address | Variable | Value | Value(Decimal) |
|---------|----------|-------|----------------|
| 24A9 | bin | 15h | 21 |
| 24A8 | bcd | 21h | 33 |

Line No | Assembler Message

0 | Program assembled successfully

Steps for simulation

- Write the 8085 assembly instruction code
- Assemble the code
- Execute the machine code generated
- Verify the simulation results

An Example : BCD to Binary conversion

Salient features

- Keypad : To see the 8085 instruction set
- show listing : to see the machine code of the written instructions
- Debug tools : we can add breakpoints to halt the execution for debugging purposes

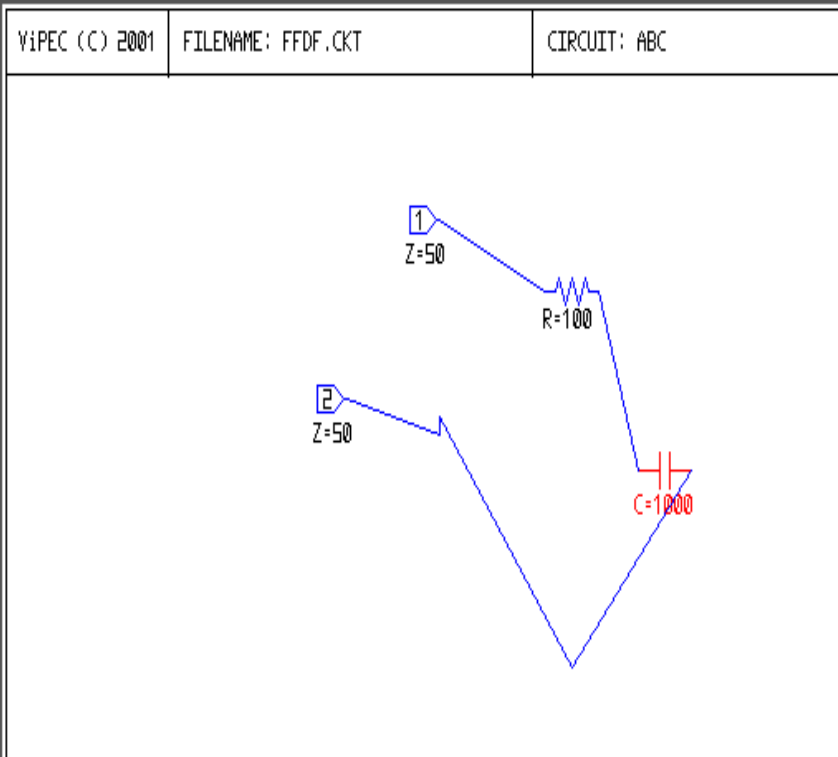
VIPEC

- VIPEC is a program that allows the user to analyze high frequency, linear, electrical networks. Analysis is performed in the frequency domain, and the results are presented to the user in the form of 2-port parameters (S, Y or Z).
- VIPEC supports various lumped elements (capacitors, resistors etc.), as well as distributed elements like transmission lines and coupled transmission lines.
- These type of simulationd are very important for RF design.



Navigation

- ffdf.ckt
- Units
 - Time us
 - Resistance Ohm
 - Length um
 - Inductance uH
 - Frequency Hz
 - Capacitance nF
 - Angle DEG
- Variables
- Schematics
 - ABC
- Project frequencies
 - Sweep type Linear
 - Start frequency 1
 - Stop frequency 1e+06
 - Number of points 150
- Graphs
 - DDS
 - Substrate definitions
 - Data files



Steps of Simulation

- Draw the Schematic using various components from the library.
- Define the frequency range for simulation.
- Define output ports.
- Define a graph type and simulation parameters (like z , s and y).
- Simulate the schametic.

**An Example : Z parameter
of RC network.**

Salient Features

- Any schematic can be used in other schematics as two port networks.
- Output can be taken as Smith Chart and as tables of data.(can be exported)
- Transmission line simulation can be done efficiently.
- Microstrip Calculator.