

8-ADDITION

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for an 8-bit addition program. The registers and flags are shown on the left, and the memory dump is on the right.

Registers:

Register	Value
A	08
BC	03 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 00
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	0
Z	0
AC	0
P	0
C	0

Assembly Code:

```
1 LDA 8500
2 MOV B, A
3 LDA 8501
4 ADD B
5 STA 8502
6 RST 1
```

Memory Dump:

Address (Hex)	Address	Data
2134	8500	3
2135	8501	5
2136	8502	8
2137	8503	0
2138	8504	0
2139	8505	0
213A	8506	0
213B	8507	0
213C	8508	0
213D	8509	0
213E	8510	0
213F	8511	0

Assembler Message:

```
0 Program assembled successfully
```

8-BIT SUBTRACTION

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for an 8-bit subtraction program. The registers and flags are shown on the left, and the memory dump is on the right.

Registers:

Register	Value
A	FF
BC	05 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 00
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	1
Z	0
AC	0
P	1
C	1

Assembly Code:

```
1 LDA 8500
2 MOV B, A
3 LDA 8501
4 SUB B
5 STA 8502
6 RST 1
```

Memory Dump:

Address (Hex)	Address	Data
2134	8500	5
2135	8501	4
2136	8502	1
2137	8503	0
2138	8504	0
2139	8505	0
213A	8506	0
213B	8507	0
213C	8508	0
213D	8509	0
213E	8510	0
213F	8511	0

Assembler Message:

```
0 Program assembled successfully
```

8-BIT MULTIPLICATION

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	06
BC	02 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 1A
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Load me at

```
1 LDA 8500
2 MOV B, A
3 LDA 8501
4 MOV C, A
5 CPI 00
6 JZ LOOP
7 XRA A
8 LOOP1: ADD B
9 DCR C
10 JZ LOOP
11 JMP LOOP1
12 LOOP: STA 8502
13 RST 1
```

Start 8500 OK

Address (Hex)	Address	Data
2134	8500	2
2135	8501	3
2136	8502	6
2137	8503	0
2138	8504	0
2139	8505	0
213A	8506	0
213B	8507	0
213C	8508	0
213D	8509	0
213E	8510	0
213F	8511	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

8-BIT DIVISION

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	02
BC	04 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 1B
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	1
Z	0
AC	0
P	0
C	1

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Load me at

```
1 LDA 8501
2 MOV B, A
3 LDA 8500
4 MVI C, 00
5 LOOP: CMP B
6 JC LOOP1
7 SUB B
8 INR C
9 JMP LOOP
10 STA 8503
11 DCR C
12 MOV A, C
13 LOOP1: STA 8502
14 RST 1
```

Start 8500 OK

Address (Hex)	Address	Data
2134	8500	2
2135	8501	4
2136	8502	2
2137	8503	0
2138	8504	0
2139	8505	0
213A	8506	0
213B	8507	0
213C	8508	0
213D	8509	0
213E	8510	0
213F	8511	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

16-BIT ADDITION

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for a 16-bit addition program. The registers and flags are shown on the left, and the memory dump is on the right. The program is running, and the status bar indicates "Simulator: Program running".

Registers:

Register	Value
A	03
BC	01 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 16
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	0
Z	0
AC	0
P	1
C	0

Assembly Code:

```
1 LDA 3050
2 MOV B,A
3 LDA 3051
4 ADD B
5 STA 3052
6 LDA 3053
7 MOV B,A
8 LDA 3054
9 ADC B
10 STA 3055
11 HLT
```

Memory Dump:

Address (Hex)	Address	Data
0BEA	3050	2
0BEB	3051	7
0BEC	3052	9
0BED	3053	1
0BEE	3054	2
0BEF	3055	3
0BF0	3056	0
0BF1	3057	0
0BF2	3058	0
0BF3	3059	0
0BF4	3060	0
0BF5	3061	0

Assembler Message:

```
Line No | Assembler Message
0 | Program assembled successfully
```

16-BIT SUBTRACTION

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for a 16-bit subtraction program. The registers and flags are shown on the left, and the memory dump is on the right. The program is idle, and the status bar indicates "Simulator: Idle".

Registers:

Register	Value
A	00
BC	00 00
DE	00 06
HL	00 03
PSW	00 00
PC	42 11
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Assembly Code:

```
1 LHLD 8200
2 XCHG
3 LHLD 8202
4 MOV A,L
5 SUB B
6 MOV L,A
7 MOV A,H
8 SUB D
9 MOV H,A
10 SHLD 8204
11 HLT
```

Memory Dump:

Address (Hex)	Address	Data
2008	8200	6
2009	8201	0
200A	8202	3
200B	8203	0
200C	8204	3
200D	8205	0
200E	8206	0
200F	8207	0
2010	8208	0
2011	8209	0
2012	8210	0
2013	8211	0

Assembler Message:

```
Line No | Assembler Message
0 | Program assembled successfully
```

16-BIT MULTIPLICATION

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for a 16-bit multiplication program. The registers and flags are shown on the left, and the memory window on the right displays the data being multiplied.

Registers:

Register	Value
A	0C
BC	00 00
DE	00 04
HL	00 0C
PSW	00 00
PC	42 1D
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Assembly Code:

```
1 LHL 2001
2 XCHG
3 LHL 2020
4 MOV C,H
5 MVI A,00H
6 LOOP: ADD D
7 DCR C
8 JNZ LOOP
9 MOV H,A
10 MOV B,L
11 MVI A,00H
12 LP: ADD E
13 DCR B
14 JNZ LP
15 MOV L,A
16 SHLD 2050
17 HLT
```

Memory Window:

Address (Hex)	Address	Data
0802	2050	12
0803	2051	0
0804	2052	0
0805	2053	0
0806	2054	0
0807	2055	0
0808	2056	0
0809	2057	0
080A	2058	0
080B	2059	0
080C	2060	0
080D	2061	0

Assembler Message:

```
Line No Assembler Message
0 Program assembled successfully
```

16-BIT DIVISION

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for a 16-bit division program. The registers and flags are shown on the left, and the memory window on the right displays the data being divided.

Registers:

Register	Value
A	00
BC	04 02
DE	00 08
HL	01 02
PSW	00 00
PC	42 1F
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Assembly Code:

```
1 LHL 2001
2 MVI B,0
3 LHL 2005
4 MOV B,D
5 MOV B,H
6 MVI C,00H
7 LOOP: INR C
8 SUB B
9 JNS LOOP
10 MOV B,C
11 MOV A,E
12 MOV B,L
13 MVI C,00H
14 LP: INR C
15 SUB B
16 JNS LP
17 MOV L,A
18 SHLD 2008
19 HLT
```

Memory Window:

Address (Hex)	Address	Data
07D1	2001	8
07D2	2002	0
07D3	2003	0
07D4	2004	0
07D5	2005	4
07D6	2006	0
07D7	2007	0
07D8	2008	2
07D9	2009	1
07DA	2010	0
07DB	2011	0
07DC	2012	0

Assembler Message:

```
Line No Assembler Message
0 Program assembled successfully
```

FACTORIAL

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for a factorial program. The registers and flags are shown on the left, and the memory window on the right shows the program's execution memory.

Registers:

Register	Value
A	18
BC	00 05
DE	00 18
HL	00 00
PSW	00 00
PC	42 1B
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Assembly Code:

```
1 LDA 2001
2 MOV B,A
3 MVI C,#01
4 MVI E,#01
5 LOOP: MOV D,C
6 MVI A,0FH
7 LP: ADD E
8 DCR D
9 JNZ LP
10 MOV E,A
11 INR C
12 DCR B
13 JNZ LOOP
14 MOV A,E
15 STA 2010
16 HLT
```

Memory Window:

Address (Hex)	Address	Data
07D1	2001	4
07D2	2002	0
07D3	2003	0
07D4	2004	0
07D5	2005	0
07D6	2006	0
07D7	2007	0
07D8	2008	0
07D9	2009	0
07DA	2010	24
07DB	2011	0
07DC	2012	0

Assembler Message:

```
0 Program assembled successfully
```

LARGEST NUMBER IN AN ARRAY

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window displays the assembly code for a program that finds the largest number in an array. The registers and flags are shown on the left, and the memory window on the right shows the program's execution memory.

Registers:

Register	Value
A	14
BC	00 00
DE	00 00
HL	09 03
PSW	00 00
PC	42 15
SP	FF FF
Int-Reg	00

Flags:

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Assembly Code:

```
1 LXI H,2050
2 MOV C,M
3 DCR C
4 INX H
5 MOV A,M
6 LOOP1: INX H
7 CMP M
8 JNC LOOP
9 MOV A,M
10 LOOP: DCR C
11 JNZ LOOP1
12 STA 2058
13 HLT
```

Memory Window:

Address (Hex)	Address	Data
0802	2050	1
0803	2051	20
0804	2052	0
0805	2053	3
0806	2054	0
0807	2055	0
0808	2056	0
0809	2057	0
080A	2058	20
080B	2059	0
080C	2060	0
080D	2061	0

Assembler Message:

```
0 Program assembled successfully
```

SMALLEST NUMBER IN AN ARRAY

Registers

A

00

BC

00 00

DE

00 00

HL

09 03

PSW

00 00

PC

42 15

SP

FF FF

Int-Reg

00

Flag

S

0

Z

1

AC

0

P

1

C

0

Decimal - Hex Conversion

Decimal

0

→ To Hex

Hex

0

← To Dec

I/O Ports

0

-

+

00

Update Port Value

Memory

0

-

+

00

Update Memory

Load me at

1 LXI H, 2050

2 MOV C, M

3 DCR C

4 INX H

5 MOV A, M

6 LOOP1: INX H

7 CMP M

8 JC LOOP

9 MOV A, M

10 LOOP: DCR C

11 JNZ LOOP1

12 STA 2058

13 HLT

Data

Stack

Keypad

Memory

I/O Ports

Start

2050

OK

Address (Hex)

Address

Data

0802

2050

1

0803

2051

20

0804

2052

2

0805

2053

3

0806

2054

10

0807

2055

3

0808

2056

5

0809

2057

30

080A

2058

30

080B

2059

0

080C

2060

0

080D

2061

0

Line No

Assembler Message

0

Program assembled successfully

Simulator: Idle

ASCENDING

Registers

A

00

BC

00 00

DE

00 00

HL

00 B1

PSW

00 00

PC

42 1E

SP

FF FF

Int-Reg

00

Flag

S

0

Z

1

AC

0

P

1

C

0

Decimal - Hex Conversion

Decimal

0

→ To Hex

Hex

0

← To Dec

I/O Ports

0

-

+

00

Update Port Value

Memory

0

-

+

00

Update Memory

Load me at

1 LOOP: LXI H, 3500

2 MVI D, 00

3 MVI C, 05

4 LOOP1: MOV A, M

5 INX H

6 CMP M

7 JC LOOP2

8 MOV B, M

9 MOV M, A

10 DCX H

11 MOV M, B

12 INX H

13 MVI D, 01

14 LOOP2: DCR C

15 JNZ LOOP1

16 MOV A, D

17 RRC

18 JC LOOP

19 HLT

Data

Stack

Keypad

Memory

I/O Ports

Start

3500

OK

Address (Hex)

Address

Data

0D4C

3500

0

0D4D

3501

5

0D4E

3502

6

0D4F

3503

7

0D50

3504

8

0D51

3505

9

0D52

3506

0

0D53

3507

0

0D54

3508

0

0D55

3509

0

0D56

3510

0

0D57

3511

0

Line No

Assembler Message

0

Program assembled successfully

Simulator: Idle

DESCENDING

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	00
BC	06 00
DE	00 00
HL	00 B1
PSW	00 00
PC	42 1E
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Load me at

```
1 LOOP: LXI H, 3500
2 MVI D, 00
3 MVI C, 05
4 LOOP1: MOV A, M
5 INX H
6 CMP M
7 JNC LOOP2
8 MOV B, M
9 MOV M, A
10 DCX H
11 MOV M, B
12 INX H
13 MVI D, 01
14 LOOP2: DCR C
15 JNZ LOOP1
16 MOV A, D
17 RRC
18 JC LOOP
19 HLT
```

Start 3500 OK

Address (Hex)	Address	Data
00AC	3500	6
00AD	3501	5
00AE	3502	4
00AF	3503	3
00B0	3504	2
00B1	3505	1
00B2	3506	0
00B3	3507	0
00B4	3508	0
00B5	3509	0
00B6	3510	0
00B7	3511	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

SWAP

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	02
BC	02 04
DE	00 00
HL	00 00
PSW	00 00
PC	42 10
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	0
Z	0
AC	0
P	0
C	0

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Load me at

```
1 LDA 2001
2 MOV B, A
3 LDA 2002
4 MOV C, A
5 STA 2003
6 MOV A, B
7 STA 2004
8 HLT
```

Start 2001 OK

Address (Hex)	Address	Data
07D1	2001	2
07D2	2002	4
07D3	2003	4
07D4	2004	2
07D5	2005	0
07D6	2006	0
07D7	2007	0
07D8	2008	0
07D9	2009	0
07DA	2010	0
07DB	2011	0
07DC	2012	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

SUM OF N NUMBERS

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	01
BC	00 00
DE	00 00
HL	1F 48
PSW	00 00
PC	42 17
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Load me at

```
1 LXI H, 8000
2 MOV C, M
3 MVI A, 00
4 MOV B, A
5 LOOP: ADD C
6 JNC SKIP
7 INR B
8 SKIP: DCR C
9 JNZ LOOP
10 LXI H, 8007
11 MOV M, A
12 INX H
13 MOV M, B
14 HLT
```

Start 8000 OK

Address (Hex)	Address	Data
1F40	8000	1
1F41	8001	2
1F42	8002	1
1F43	8003	3
1F44	8004	6
1F45	8005	0
1F46	8006	0
1F47	8007	13
1F48	8008	0
1F49	8009	0
1F4A	8010	0
1F4B	8011	0

Line No Assembler Message

0 Program assembled successfully

Windows Taskbar: Type here to search, 11:01 PM, 11/19/2023

SQUARE

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	19
BC	00 00
DE	00 00
HL	1F 40
PSW	00 00
PC	42 0E
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Load me at

```
1 LXI H, 8000
2 XRA A
3 MOV B, M
4 LOOP: ADD M
5 DCR B
6 JNZ LOOP
7 STA 8001
8 HLT
```

Start 8000 OK

Address (Hex)	Address	Data
1F40	8000	5
1F41	8001	25
1F42	8002	0
1F43	8003	0
1F44	8004	0
1F45	8005	0
1F46	8006	0
1F47	8007	0
1F48	8008	0
1F49	8009	0
1F4A	8010	0
1F4B	8011	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

1'S & 2'S COMPLEMENTS

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The assembly code window contains the following code:

```
1 LDA 3000
2 CMA
3 STA 3001
4 ADI 01
5 STA 3002
6 HLT
```

The registers window shows the following values:

Register	Value
A	FF
BC	00 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 0D
SP	FF FF
Int-Reg	00

The flag window shows the following values:

Flag	Value
S	1
Z	0
AC	0
P	1
C	0

The memory window shows the following data:

Address (Hex)	Address	Data
00B8	3000	1
00B9	3001	254
00BA	3002	255
00BB	3003	0
00BC	3004	0
00BD	3005	0
00BE	3006	0
00BF	3007	0
00C0	3008	0
00C1	3009	0
00C2	3010	0
00C3	3011	0

The assembler message window shows the following message:

```
0 Program assembled successfully
```

ROTATE LEFT OPERATION

The screenshot shows the GNUSim8085 - 8085 Microprocessor Simulator interface. The assembly code window contains the following code:

```
1 MVI A, 02
2 RLC
3 RLC
4 RLC
5 RLC
6 STA 2000
7 HLT
```

The registers window shows the following values:

Register	Value
A	20
BC	00 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 0A
SP	FF FF
Int-Reg	00

The flag window shows the following values:

Flag	Value
S	0
Z	0
AC	0
P	0
C	0

The memory window shows the following data:

Address (Hex)	Address	Data
07D0	2000	32
07D1	2001	0
07D2	2002	0
07D3	2003	0
07D4	2004	0
07D5	2005	0
07D6	2006	0
07D7	2007	0
07D8	2008	0
07D9	2009	0
07DA	2010	0
07DB	2011	0

The assembler message window shows the following message:

```
0 Program assembled successfully
```

ROTATE RIGHT OPERATION

File

Reset

Assembler

Debug

Help

Registers

A

30

BC

00

00

DE

00

00

HL

00

00

PSW

00

00

PC

42

0A

SP

FF

FF

Int-Reg

00

Flag

S

0

Z

0

AC

0

P

0

C

0

Decimal - Hex Conversion

Decimal

0

Hex

0

To Hex

To Dec

I/O Ports

0

-

+

00

Update Port Value

Memory

0

-

+

00

Update Memory

Load me at

1

MVI

A,

03

2

RRC

3

RRC

4

RRC

5

RRC

6

STA

2000

7

HLT

Data

Stack

Keypad

Memory

I/O Ports

Start

2000

OK

Address (Hex)	Address	Data
07D0	2000	48
07D1	2001	0
07D2	2002	0
07D3	2003	0
07D4	2004	0
07D5	2005	0
07D6	2006	0
07D7	2007	0
07D8	2008	0
07D9	2009	0
07DA	2010	0
07DB	2011	0

Line No

Assembler Message

0

Program assembled successfully

Simulator: Idle

LOGICAL OPERATIONS

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	07
BC	06 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 09
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	0
Z	0
AC	0
P	0
C	0

Load me at

```
1 MVI A, 07
2 MVI B, 06
3 ORA B
4 STA 2000
5 HLT
```

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Start 2000 OK

Address (Hex)	Address	Data
07D0	2000	7
07D1	2001	0
07D2	2002	0
07D3	2003	0
07D4	2004	0
07D5	2005	0
07D6	2006	0
07D7	2007	0
07D8	2008	0
07D9	2009	0
07DA	2010	0
07DB	2011	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

Register	Value
A	04
BC	04 00
DE	00 00
HL	00 00
PSW	00 00
PC	42 09
SP	FF FF
Int-Reg	00

Flag

Flag	Value
S	0
Z	0
AC	1
P	0
C	0

Load me at

```
1 MVI A, 06
2 MVI B, 04
3 ANA B
4 STA 2500
5 HLT
```

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Start 2500 OK

Address (Hex)	Address	Data
09C4	2500	4
09C5	2501	0
09C6	2502	0
09C7	2503	0
09C8	2504	0
09C9	2505	0
09CA	2506	0
09CB	2507	0
09CC	2508	0
09CD	2509	0
09CE	2510	0
09CF	2511	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

