



CSCI 6461 SPRING 2019

SIMULATOR VERSION 3.1

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SIMULATOR INSTRUCTION

On this version, we use new User Interface for easy of use

Please read through user manual to make the best out of our simulator

I. START THE PROGRAM

Please navigate to CSCI 6461 Spring 2019 3.1 and look for .Jar file

Alternative way is CSCI 6461 Spring 2019 3.1 /src/GUI/FrontEnd.java and Run the program from here.

A window
in appear

CSCI 6461 SIMULATOR PROJECT

IPL 1. Please click IPL to start.

MESSAGE

Set PC = 000000010000

PROGRAM I

a. Please enter 20 numbers (0 to 65,535) into the box in following sample:
123,224,23,87,0,1,535,.....,12

b. Hit SEND first, you will be asked to enter another number, example:
34

c. Hit FIND and we will show the closet number to that number

1. Send 2. Find

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
PC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	000000010000
CC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000
IR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
MAR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
MBR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
MFR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000
X1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
X2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
X3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
CUSTOM INSTRUCTION	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

2. Following steps help customizing each bit for registers:

a. Choose bits to set 1.

b. Non Chosen bit represents 0.

c. After choosing bits, click on register name (PC, IR, R3, etc) to set bits for that register

3. To Run Custom instruction, set above bits and click CUSTOM INSTRUCTION

II. TO START THE COMPUTER

Please click on IPL to initialize all registers and memory location.

CSCI 6461 SIMULATOR PROJECT

Please click IPL to start.

IPL

2. Following steps help customizing each bit for registers:

a. Choose bits to set 1.

b. Non Chosen bit represents 0.

c. After choosing bits, click on register name (PC, IR, R3, etc) to set bits for that register

3. To Run Custom instruction, set above bits and click CUSTOM INSTRUCTION

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
PC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	000000010000
CC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000
IR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
MAR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
MBR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
MFR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000
X1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
X2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
X3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
R3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0000000000000000
CUSTOM INSTRUCTION	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

MESSAGE

Set PC = 000000010000

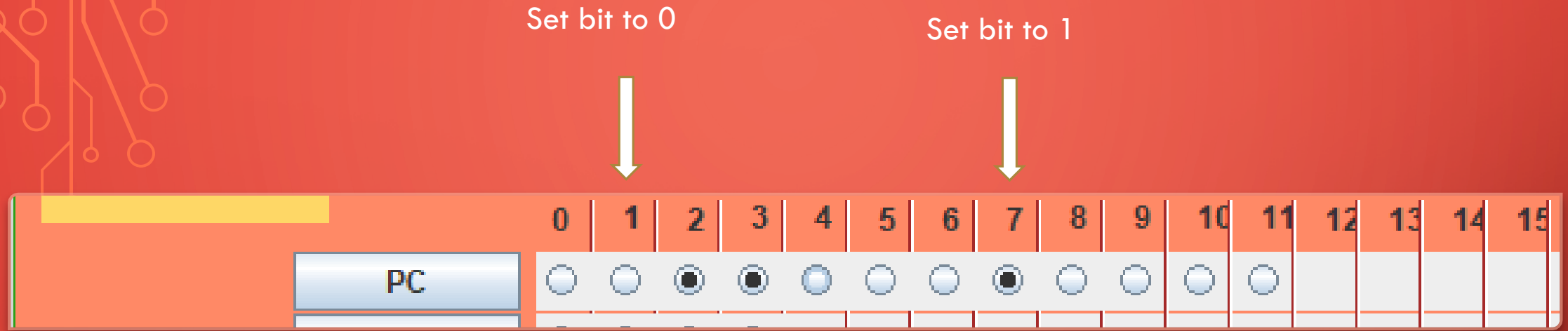
PROGRAM I

a. Please enter 20 numbers (0 to 65,535) into the box in following sample:
123,224,23,87,0,1,535,.....,12

b. Hit SEND first, you will be asked to enter another number, example: 34

c. Hit FIND and we will show the closet number to that number

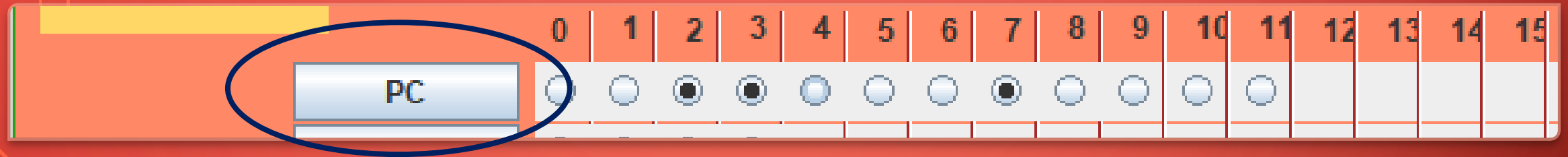
1. Send **2. Find**



III. TO SET VALUES FOR ANY REGISTER

CHOOSE ANY BIT THAT YOU WOULD LIKE TO SET TO 1, ANY BIT THAT IS NOT CHOSEN IS CONSIDER 0

Click button
when finish
setting for
this register



III. TO SET VALUES FOR ANY REGISTER(CONT)

HIT BUTTON OF REGISTER YOU WOULD LIKE TO SET VALUE

Updated value of
register will be
displayed

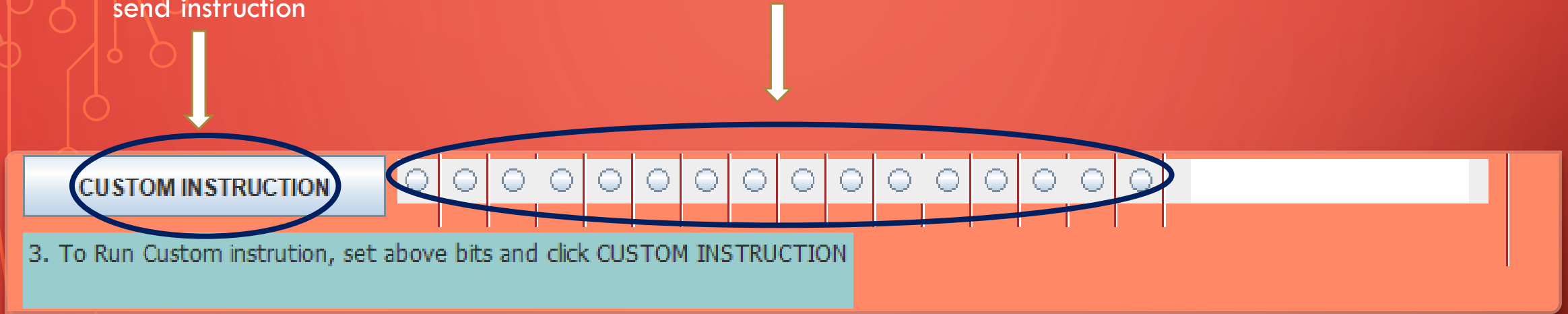


III. TO SET VALUES FOR ANY REGISTER(CONT)

The updated value (in binaries) will be displayed on the text box next to each line

2. Click CUSTOM INSTRUCTION to send instruction

1. Set bits



IV. CUSTOMIZE INSTRUCTION

FOR CUSTOMIZED INSTRUCTION, PLEASE USE CUSTOM INSTRUCTION BUTTON

MESSAGE

```
Halt instruction  
Set PC = 001100010000  
Set CC = 0000  
Set IR = 0000100100000000  
Set MAR = 0000100000000000  
Set MBR = 0000000100010000  
Set MFR = 0000  
Set X1 = 0000001001000000  
Set X2 = 0000001010000000  
Set X3 = 0000000010110000  
Set R0 = 0000010001000000  
Set R1 = 0000010001001000  
Set R2 = 0000101010001000  
Set R3 = 0000100100100000  
Instruction: 0000110000000000  
LDA instruction, R: 00, IX: 00, address: 00000, I: 0
```

All instructions
call, Set bit, and
message will be
displayed here

V. SCREEN OUTPUT

OUR SCROLLABLE OUTPUT SCREEN WILL SHOW WHAT IS RUNNING BEHIND THE SCENCE.

VI. KEYBOARD

- Located below screen output is editable keyboard
- Once program is loaded, you can send input to the machine through this box

Input numbers and words can be sent through this box



MESSAGE

```
Halt instruction
Set PC = 001100010000
Set CC = 0000
Set IR = 0000100100000000
Set MAR = 0000100000000000
Set MBR = 0000000100010000
Set MFR = 0000
Set X1 = 0000001001000000
Set X2 = 0000001010000000
Set X3 = 0000000010110000
Set R0 = 0000010001000000
Set R1 = 0000010001001000
Set R2 = 0000101010001000
Set R3 = 0000100100100000
Instruction: 0000110000000000
LDA instruction, R: 00, IX: 00, address: 00000, I: 0
```

VII. PROGRAM I

- This program read 20 numbers (0 to 65,535) and read the target number x
- It will return closest number among 20 numbers sent that is closest to x

- For example:

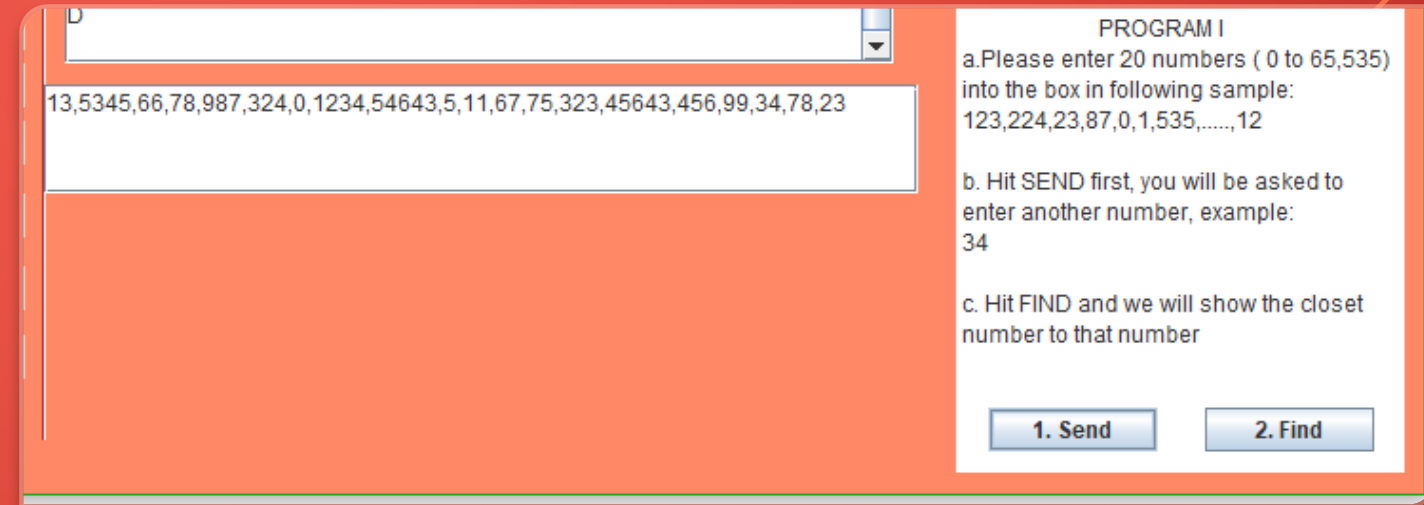
13,5345,66,78,987,324,0,1234,54643,5,11,67,75,323,45643,456,99,34,7
8,23

- And $x = 99$
- Return: 99

VII. PROGRAM I (CONT.)

Follow instruction on the panel
program 1

- A. Enter 20 numbers into input box, separated by comma
- B. Hit Send to save 20 numbers into memory
- C. Enter number that you want set as target number
- D. Hit Find for find the closet number



PROGRAM I

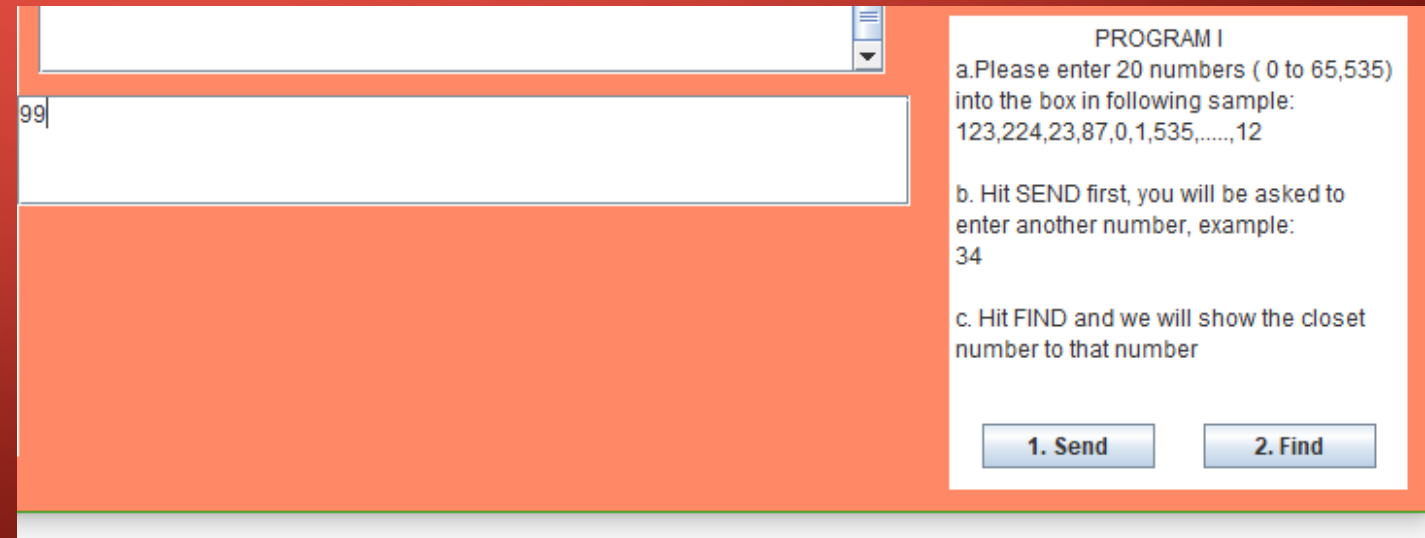
a. Please enter 20 numbers (0 to 65,535) into the box in following sample:
123,224,23,87,0,1,535,.....,12

b. Hit SEND first, you will be asked to enter another number, example:
34

c. Hit FIND and we will show the closet number to that number

1. Send 2. Find

The input box contains the following text: 13,5345,66,78,987,324,0,1234,54643,5,11,67,75,323,45643,456,99,34,78,23



PROGRAM I

a. Please enter 20 numbers (0 to 65,535) into the box in following sample:
123,224,23,87,0,1,535,.....,12

b. Hit SEND first, you will be asked to enter another number, example:
34

c. Hit FIND and we will show the closet number to that number

1. Send 2. Find

The input box contains the following text: 99

VIII. PROGRAM 2

Program 2: A program that reads a set of a paragraph of 6 sentences from a file into memory. It prints the sentences on the console printer. It then asks the user for a word. It searches the paragraph to see if it contains the word. If so, it prints out the word, the sentence number, and the word number in the sentence.

VIII. PROGRAM 2(CONT.)

To run program 2:

1. Make sure IPL button was pressed to initialize all registers and memory.
2. Press Start button on Program 2 panel.
3. A paragraph of 6 sentences will be displayed on message screen.
4. You will be prompted to enter a word you would like to find on the paragraph on the keyboard screen below the message screen.
5. After enter the word to find, hit Find button to find the word.

The image shows a software interface with a dark grey background. At the top, the word "MESSAGE" is written in bright pink. Below it is a large white rectangular area for text. Underneath the white area is a smaller white rectangular input field. At the bottom of the interface is a dark grey panel containing two sections: "PROGRAM 1" and "PROGRAM 2".

MESSAGE

PROGRAM 1

a. Please enter 20 numbers (0 to 65,535) into the box in following sample:
123,224,23,87,0,1,535,.....,12

b. Hit SEND first, you will be asked to enter another number, example:
34

c. Hit FIND and we will show the closet number to that number

1. Send 2. Find

PROGRAM 2

a. Please hit Start. The screen will display a paragraph of 6 senteces loaded from a file.

b. You will be prompted to enter a word you would like to find on the paragraph.

c. Hit FIND and we will find the word for you

1. Start 2. Find

The background is a solid red color. In the four corners, there are decorative elements resembling circuit board traces or a stylized tree structure. These elements consist of thin, light-colored lines that branch out and end in small circles, creating a symmetrical, geometric pattern.

THANK YOU!