Design Note

Group-7

Instructions are as follows:

STR r0, addr0

SMR r0, addr0

STR r0, addr0

LDR r2, addr0

AIR r2, 10

STR r2, addr1

LDR r3, addr0

AIR r3, 20

STR r3, addr2

LDR r0, addr0

NOT r0

SRC r0, 1, 0, 1

STR r0, addr4

LDA r0, 10

LDA r0, addr8

AIR r0, 3

STR r0, addr8

STR r0, addr9

LDR r0, addr0

STR r0, [addr9]

JMP 2

Label1: CHK r0, devid0

JZ r0, label1

Label2: IN r1, devid0

JZ Label3

STR r1, addr3

SIR r1, 58

JGE label3

LDR r1, addr3

SIR R1, 48

JLE label3

STR r1, addr3

LDR r0, [addr9]

MUL r0, r2

AMR r1, addr3

STR r1, [addr9]

JMP label2

Label3: LDA r0, [addr9]

AIR r0, 1

STR r0, [addr9]

SOB r3, label1

LDR r2, addr1

LDR r3, adde2

LDA r0, [addr8]

STR r0, addr9

LDR r0, addr0

STR r0, adde31

JMP 4

Label4: CHK r0, devid0

JZ r0, label1

Label5: IN r1, devid0

JZ r1, label6

STR r1, adr3

SIR r1, 58

JRE r1, label6

LDR r1, addr3

SIR r1, 48

JLE r1, label6

STR r1, addr3

LDR r0, addr31

MUL r0, r2

AMR r1, addr3

STR r1, addr31

JMP label5

Label6: JMP 6

In program I, we first input 20 integers from the keyboard. Before entering characters, we check the status of device. If the status code equals 0, the program will wait for the device to get ready. After the simulator tests that the status code set to 1, the program will start to input integers. For each integer, there are several characters stored with ASCII code. The program converts its every character with ASCII code to binary code and assembles the integer. Then the system orderly stores all the integers into memory.

After storing all of the 20 integers in memory, the user inputs another integer and stores it in another part of memory. To find the closet number, the program applies subtraction. For each of the 20 integers, program calculates the difference between itself and the current number. The program detects which pair has the least difference in order to find out which integers are closet to the current number.

Finally, the program prints these closet integers. The selected integers are converted to several characters and print them one by one. Also, the program needs to check the status of device.