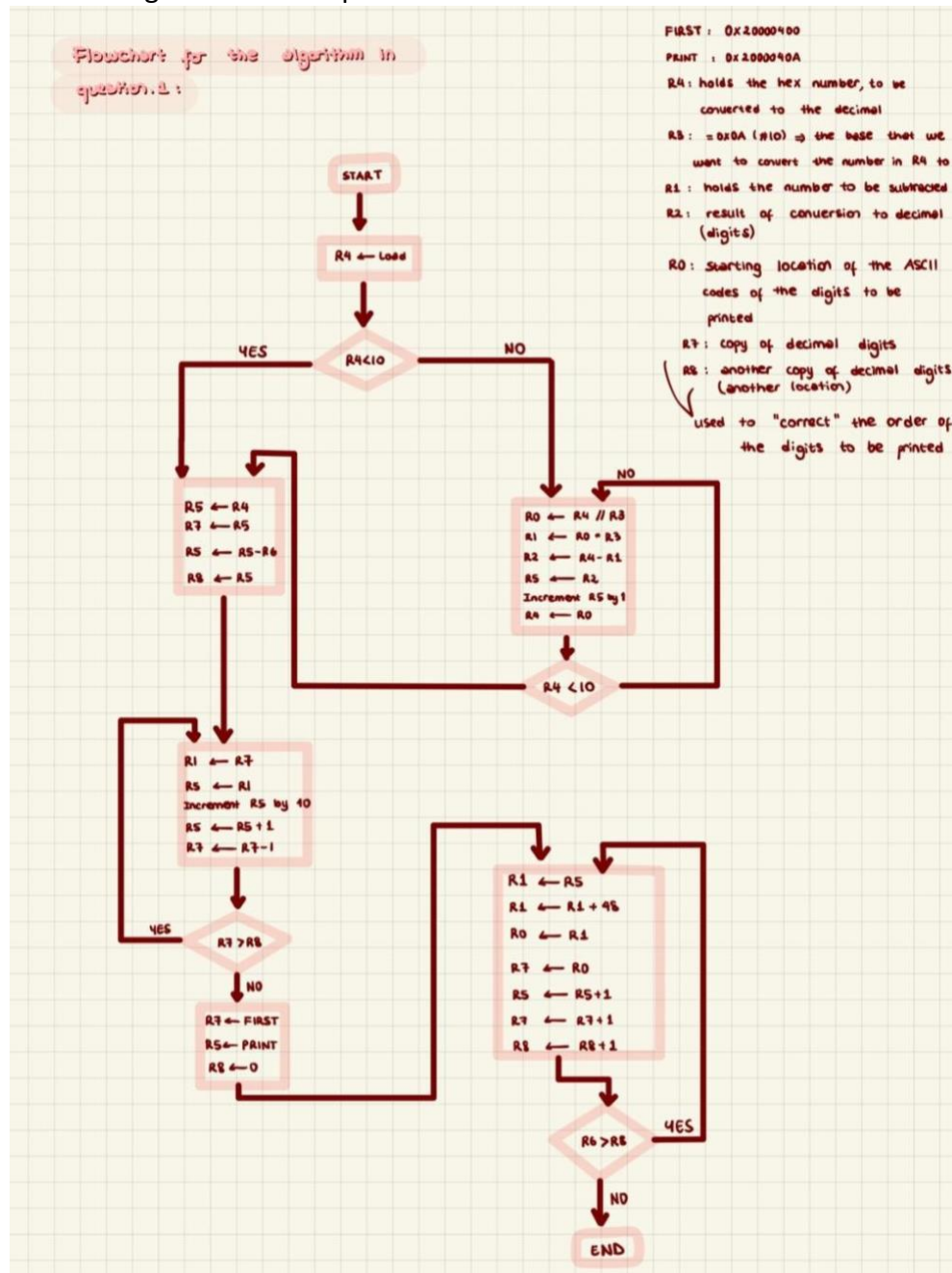


## EE447 Introduction to Microprocessors

### Laboratory Work – 2 Preliminary Report

#### Question-1

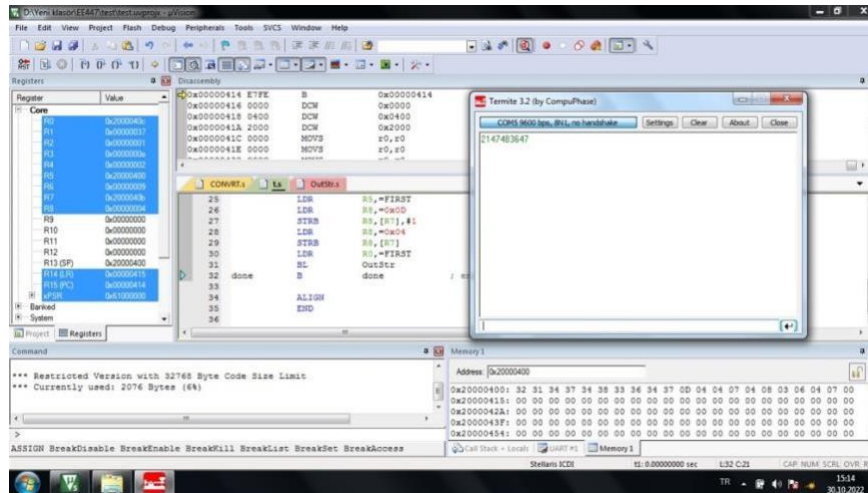
Flow chart for the algorithm in this question is as follows:



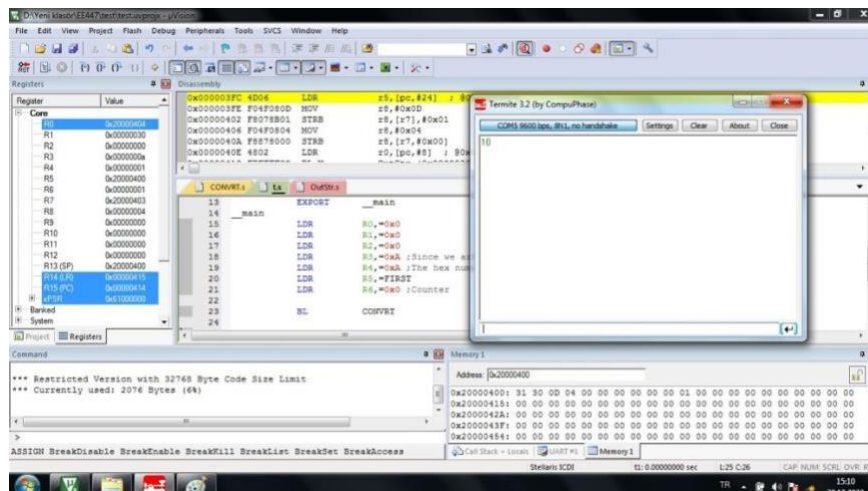
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30.10.2022

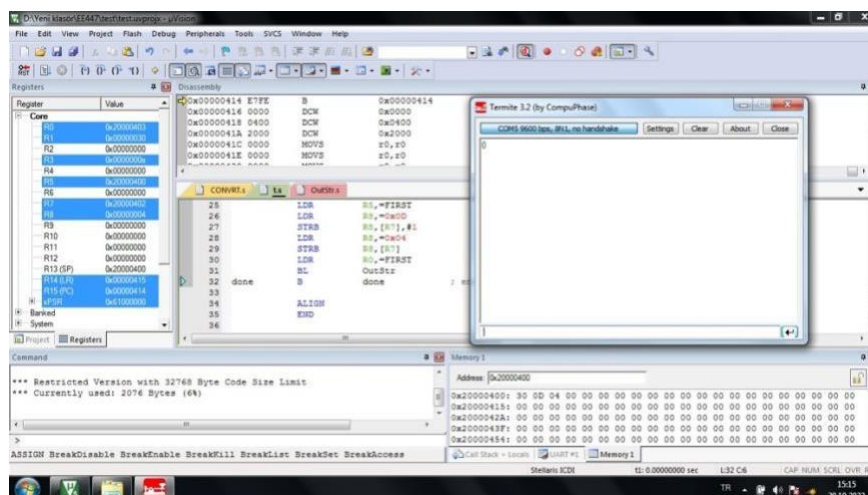
The screenshot of the example printings:



Max value:  
R4 : 0x7FFFFFFF  
2147483647 printed



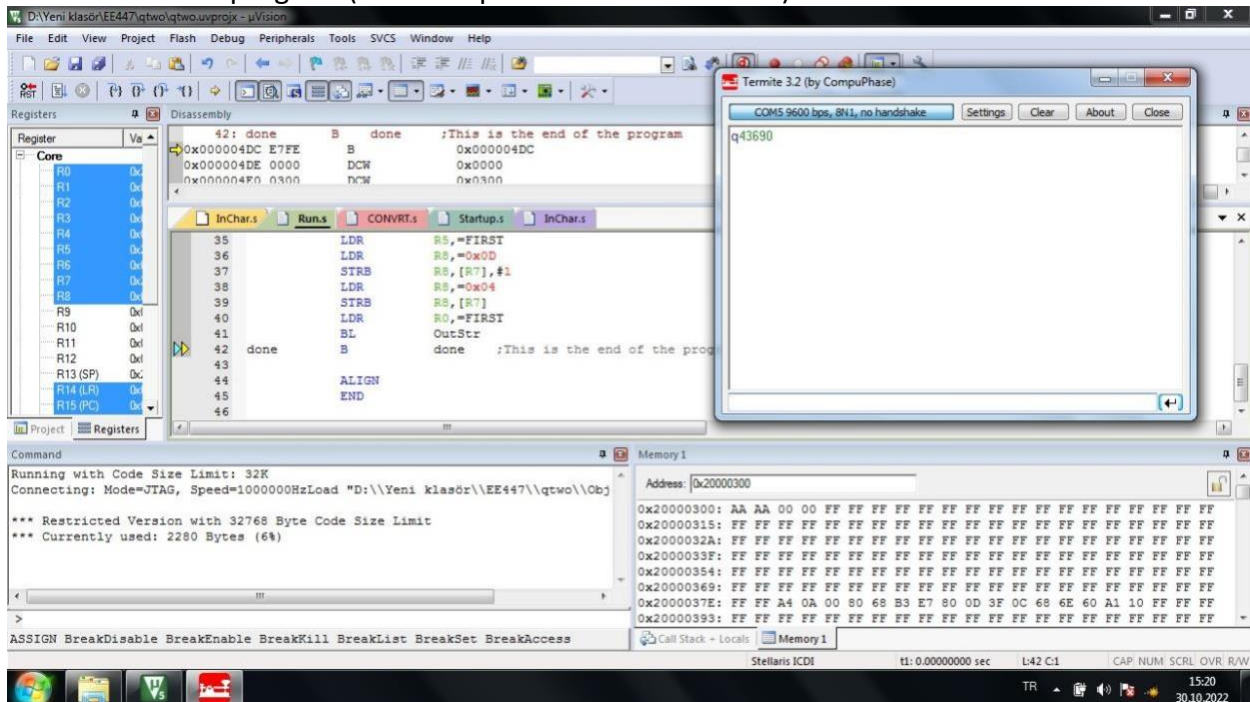
R4: 0x0000000A  
10 printed



Min value  
R4: 0x00000000  
0 printed

## Question-2

The result of our program (the example of 0xAAAA is stored):



Note that “q” is pressed in the Terminate for the decimal number to be printed.

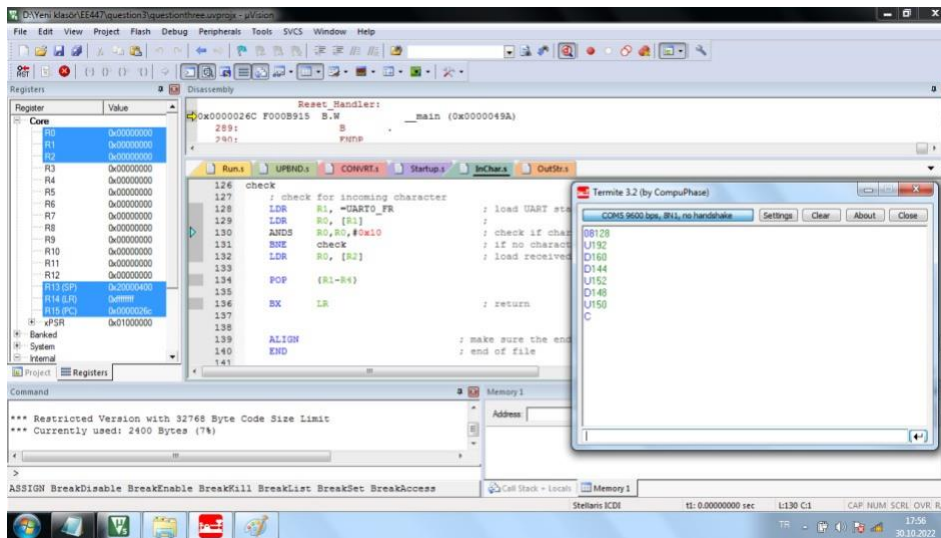
Explanation of the arguments passed: The arguments of the stored number’s location and the value of the number in that location are passed in our subroutine.



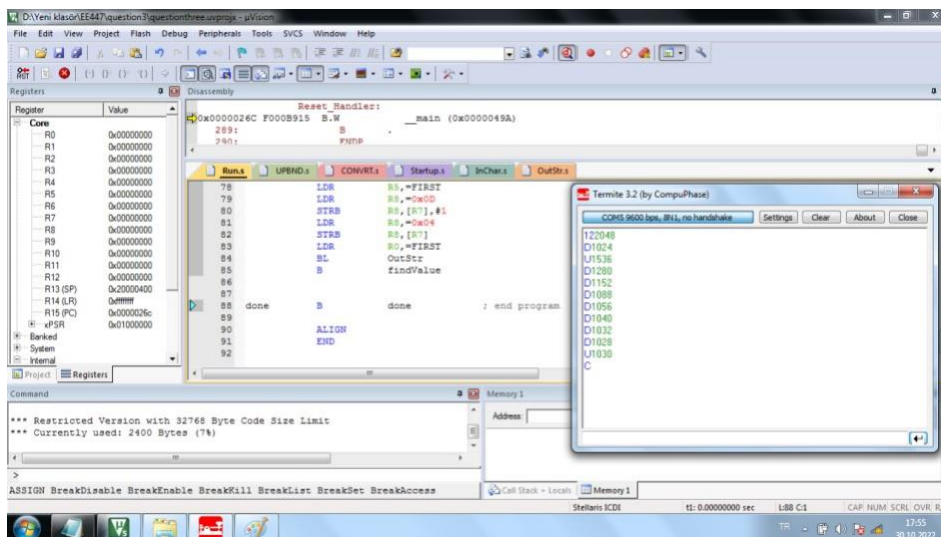


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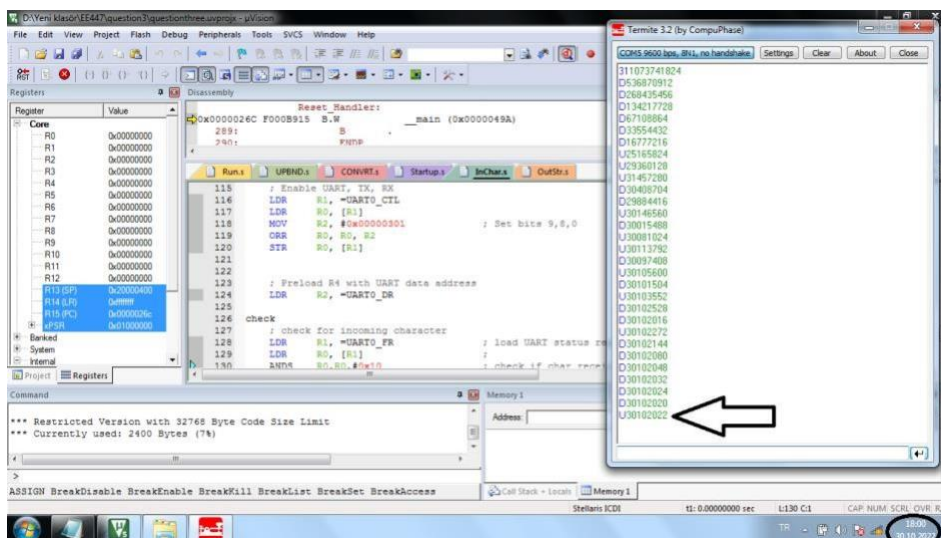
30.10.2022



N=8  
Guess:150

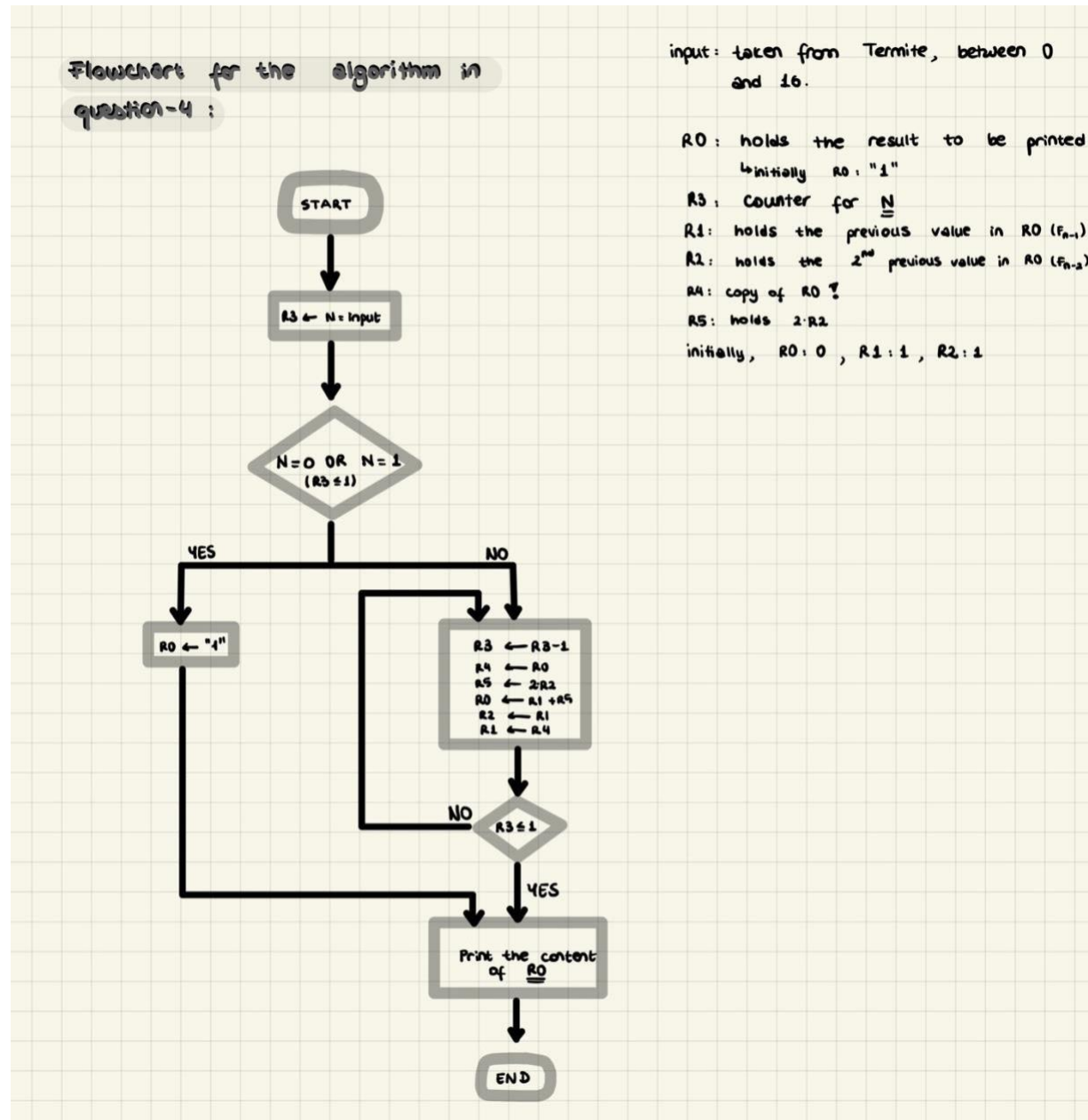


N=12  
Guess:1030



N=31  
Guess:30102022  
(today's date)

Question-4



You can find the printed sequence (in hex, not in dec) for  $N=5$ .  
By adding CONVRT, we can also print the sequence of numbers in decimal.

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The screenshot displays the Keil uVision IDE interface. The main window shows assembly code for a program named "mainq4.s". The code includes a "Reset\_Handler" and a "main" function. The "main" function initializes registers R12, R11, R2, R4, R6, R5, and R8, and then calls the "CONVRT" function. The "Registers" window on the left shows the values of the registers. The "Memory" window at the bottom shows the memory address 0x20000400. A "Termite 3.2" terminal window is open on the right, displaying the output of the program, which is a list of numbers: 151, 1, 3, 5, 11, 21, 43, 85, 171, 341, 683, 1365, 2731, 5461, 10923, and 21845.

**Registers**

Register	Value
R0	0x00000000
R1	0x00000000
R2	0x00000000
R3	0x00000000
R4	0x00000000
R5	0x00000000
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x20000400
R14 (LR)	0xffffffff
R15 (PC)	0x0000026c
xPSR	0x01000000

**Disassembly**

```
Reset_Handler:
0x0000026C F000B961 B.W      __main (0x00000532)
289:      B
290:      FNDP

Startup.s  mFibonacci.s  mainq4.s  CONVRT.s  OutStr.s
78      LDR      R12,=0xA      ;Since we are
79      LDR      R11,=FIRST
80
81      MOV      R2,R4
82      LDR      R4,=0x1
83
84      LDR      R6,=0x0 ;Counter
85      LDR      R5,=FIRST
86
87      BL       CONVRT
88      LDR      R8,=0x0D
89      STRB     R8,[R7],#1
90      LDR      R8,=0x04
91      STRB     R8,[R7]
```

**Memory**

Address: 0x20000400

0x20000400:	32 31 38 34 35 0D 04 00 00 00 02 01 08 04 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000415:	00 00
0x2000042A:	00 00
0x2000043F:	00 00
0x20000454:	00 00
0x20000469:	00 00

**Command**

Connecting: Mode=JTAG, Speed=1000000HzLoad "D:\Exp1Q4\Objects\question4.ax"

\*\*\* Restricted Version with 32768 Byte Code Size Limit  
\*\*\* Currently used: 2548 Bytes (7%)

ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess

Stellaris ICD1 t1: 0.00000000 sec L:100 C:1 CAP NUM SCRL OVR R/W

02:24 31.10.2022