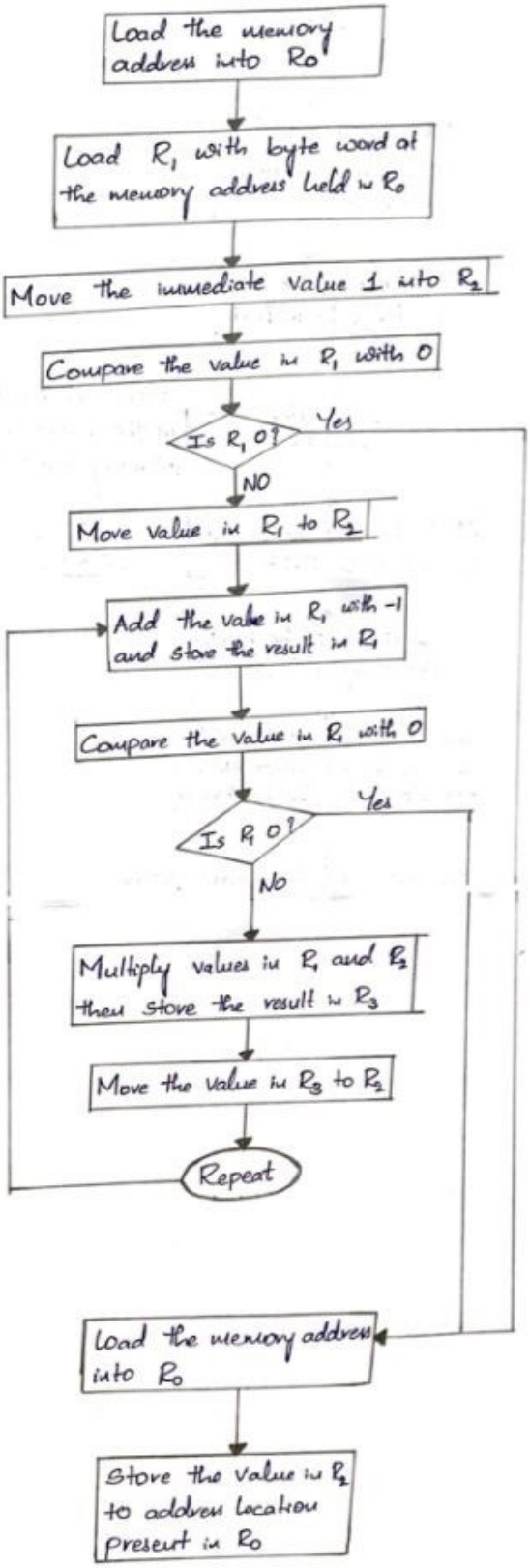
Experiment 3: Assembly language programming using ARM architecture

Target of the experiment:

- Learning the architecture of ARM processor
- Learning the basics of ARM instruction set, especially the ARM instructions related to computation
- Finally, writing the assembly language programs for the given questions

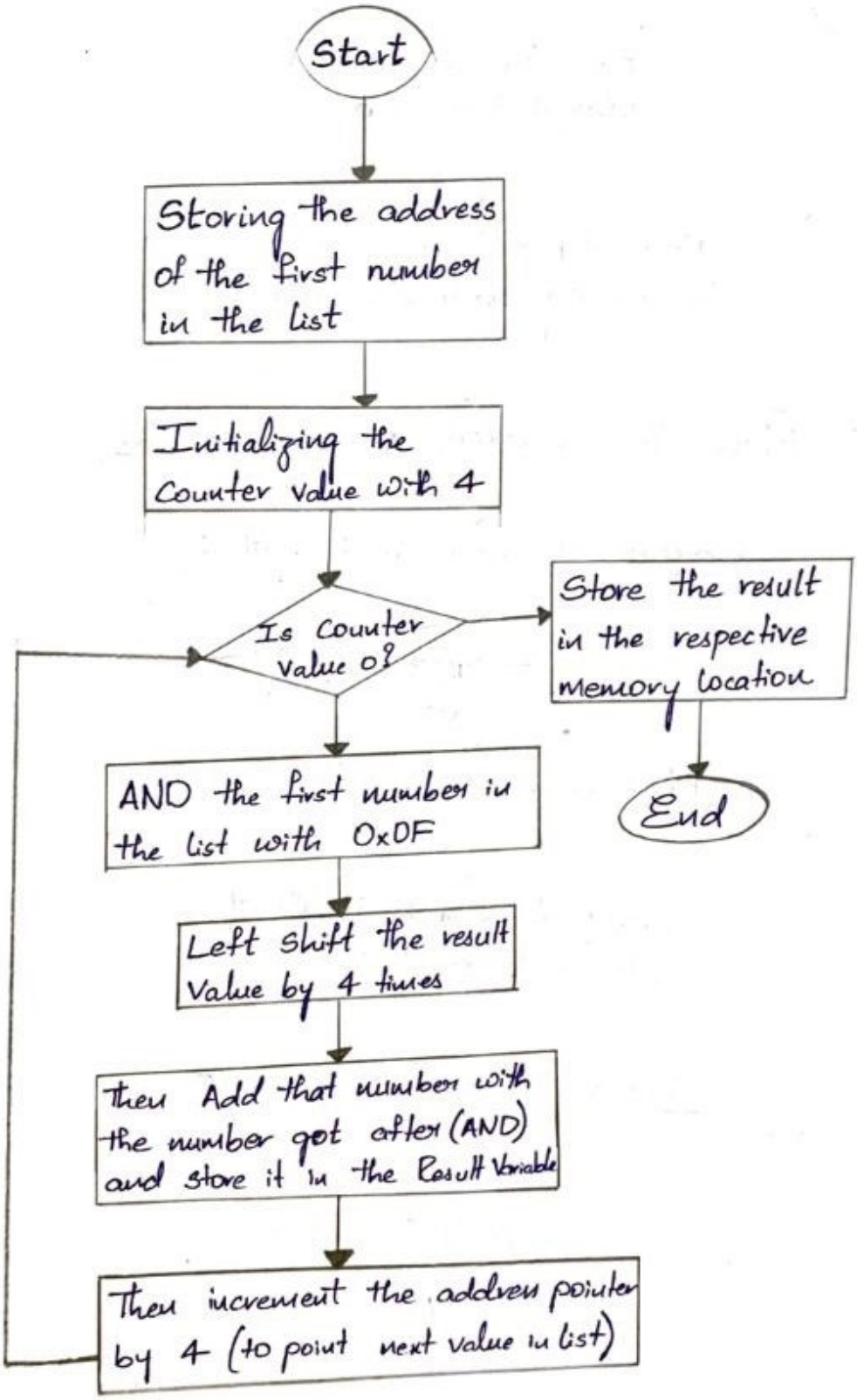
Flow chart code -1



```
AREA Program,CODE,READONLY
 ENTRY
            LDR  R0,MEMORY
            LDRB R1,[R0]
            MOV  R2,#1
            CMP  R1,#0
            BEQ  STORE
            MOV  R2,R1
UP     ADD  R1,R1,#-1
            CMP  R1,#0
            BEQ  STORE
            MUL  R3,R2,R1
            MOV  R2,R3
            B    UP
STORE  LDR  R0,RESULT
            STR  R2,[R0]
HERE   B    HERE

MEMORY DCD 0x40000000
RESULT DCD 0x40000010
            END
```

Flow chart code-2



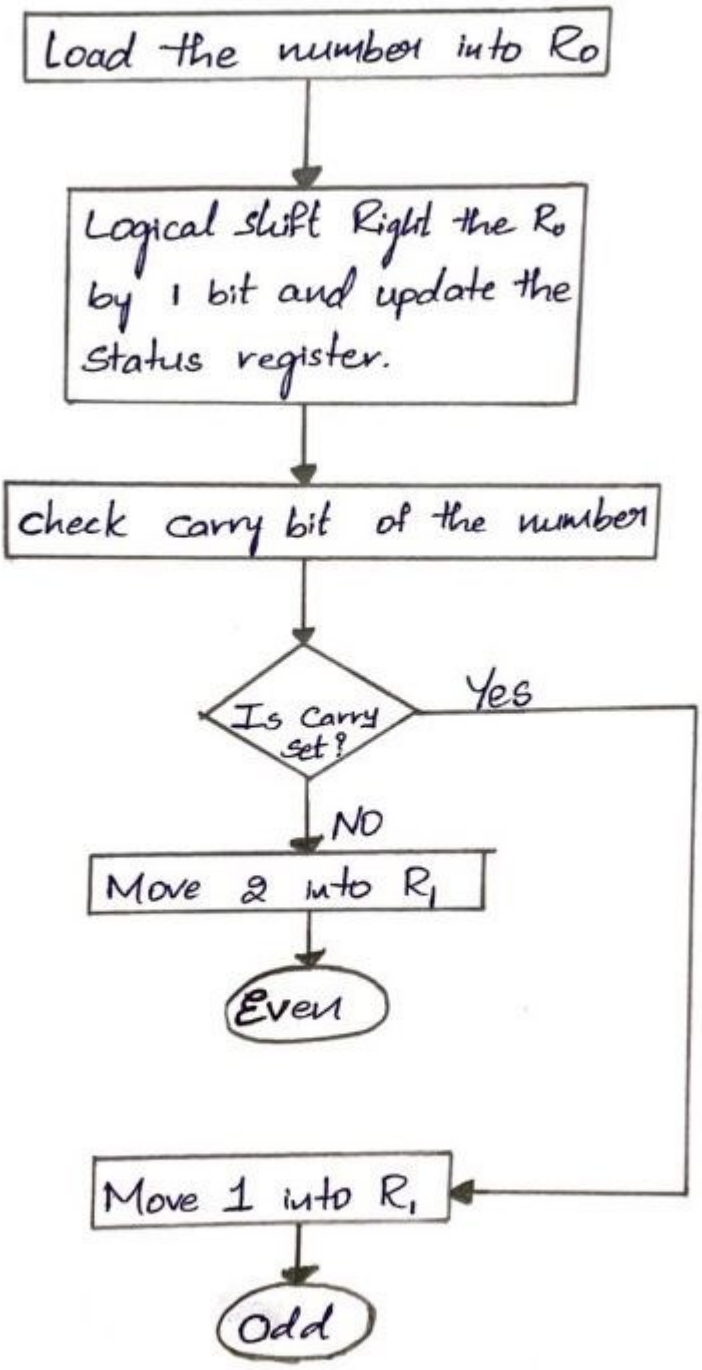
```
AREA lab3pblm2,CODE,READONLY
ENTRY

        LDR R0,List
        LDR R1, [R0], #4
loop
        LDR R3, [R0], #4
        AND R3, R3, #0x0F
        ADD R2, R2, R3
        LSL R2, #4
        SUBS R1, R1, #1
        BNE loop
        LSR R2, #4
        SWI &11

Start DCD &4
        DCD &4C,&1B,&3F,&36

list  DCD  SRART
        END
```

Flow chart code-3



```
AREA evenodd,CODE,READONLY
 ENTRY
                MOV  R0,#46
                LSRS R0,#1
                BCS  ODD
                MOV  R1,#0
                B    STOP
ODD     MOV  R1,#1
STOP    B    STOP
      END
```

Learnings from this experiment:

- Leart the basics about keil
- To write basic codes using keil