TASK 2 (6*2=12 marks)

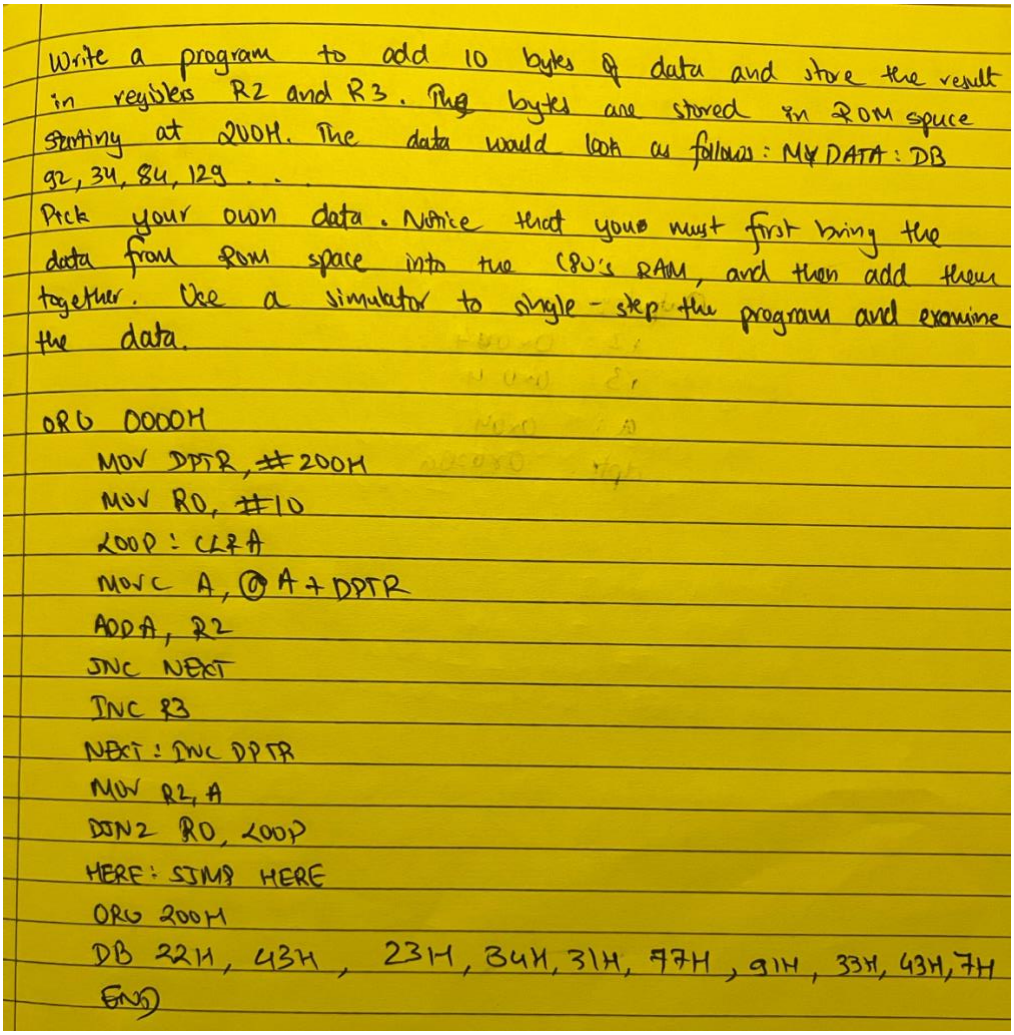
Program 1

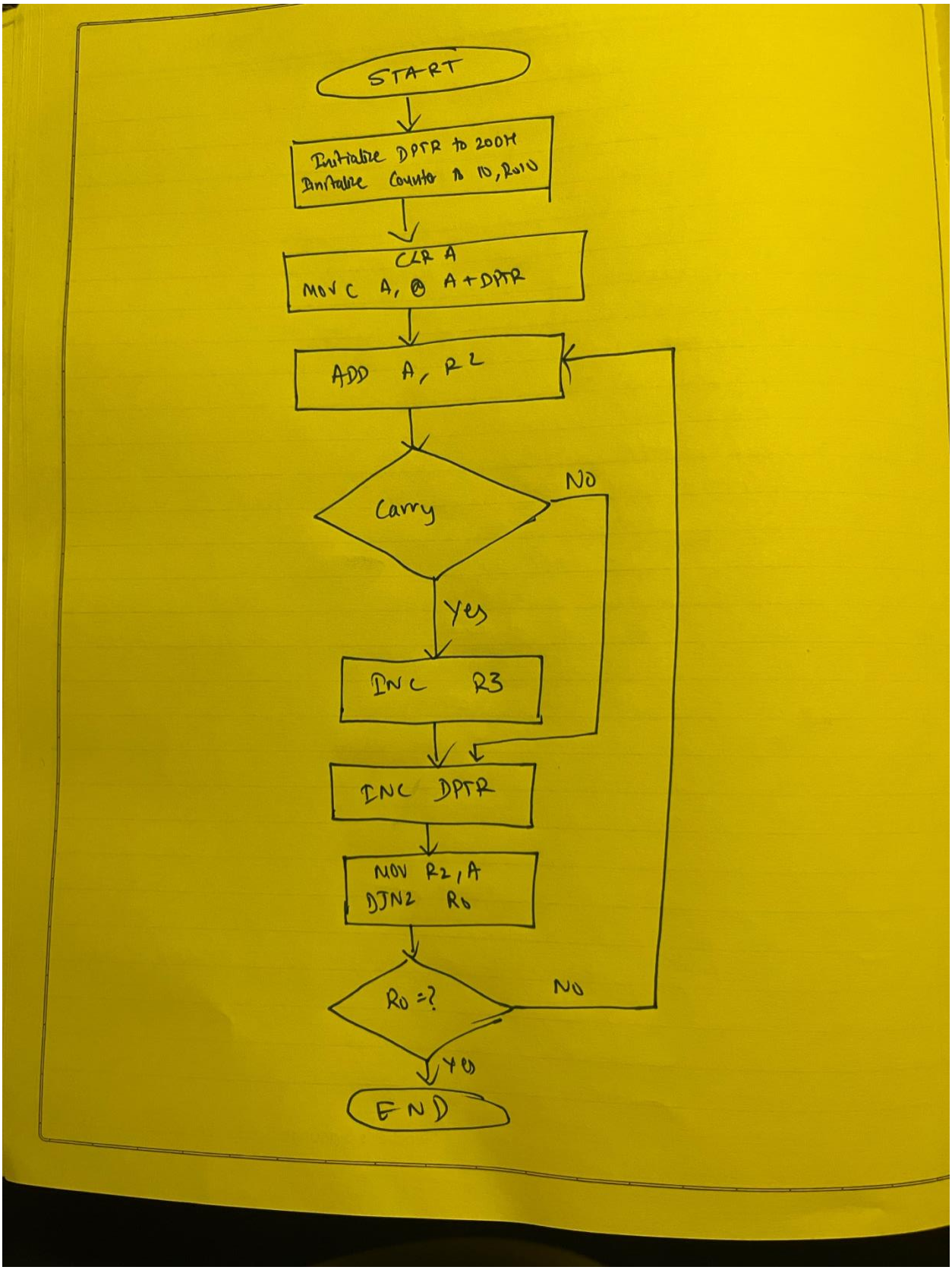
Write a program to add 10 bytes of data and store the result in registers R2 and R3. The bytes are stored in the ROM space starting at 200H. The data would look as follows:

MYDATA: DB 92, 34, 84, 129, ... ;

Pick your own data. Notice that you must first bring the data from ROM space into the CPU's RAM, and then add them together. Use a simulator to single-step the program and examine the data.

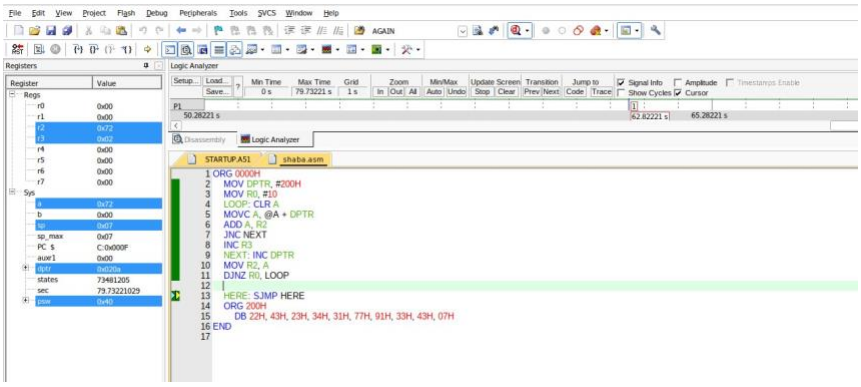
Code and Flowchart:




START
Initialize DPTR to 200H
Initialize Counter to 10, R0=10
CLR A
MOVC A, @ A+DPTR
ADD A, R2
Carry
NO
Yes
INC R3
INC DPTR
MOV R2, A
DJNZ R0
R0 =?
NO
YES
END

Code and Output

```
ORG 0
    MOV DPTR, #200H
    MOV R0, #10
LOOP:
    CLR A
    MOVC A, @A + DPTR
    MOV A, R2
    JNC NEXT
    INC R3
NEXT:
    INC DPTR
    MOV R2, A
    DJNZ R0, LOOP
HERE:
    SJMP HERE
ORG 200H
    DB 32H, 43H, 23H, 84H, 31H, 97H, 91H, 33H, 49H, 07H
END
```



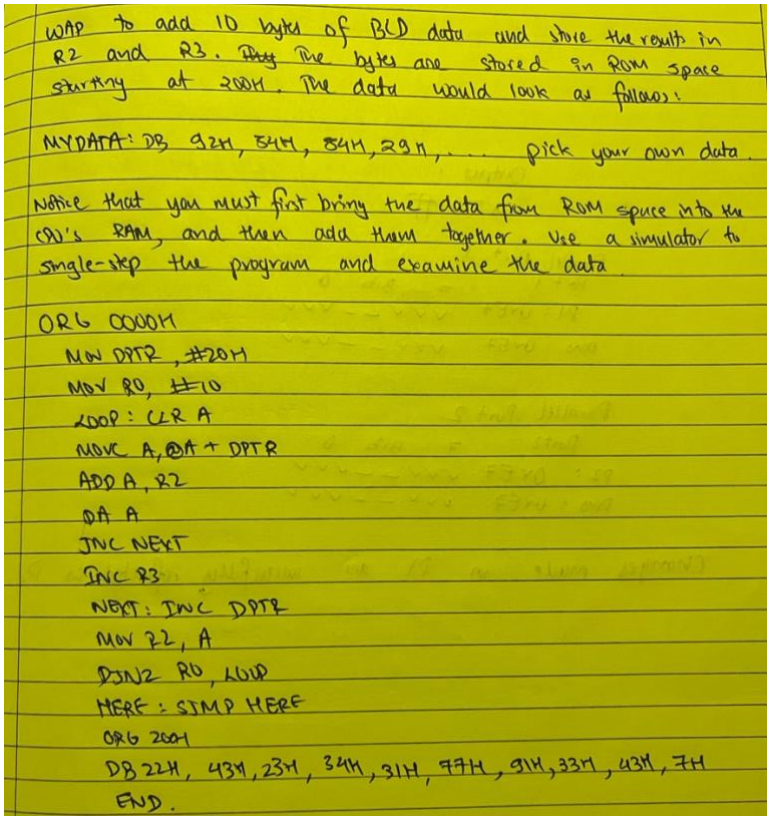
Program 2

Write a program to add 10 bytes of BCD data and store the result in R2 and R3. The bytes are stored in ROM space starting at 300H. The data would look as follows:

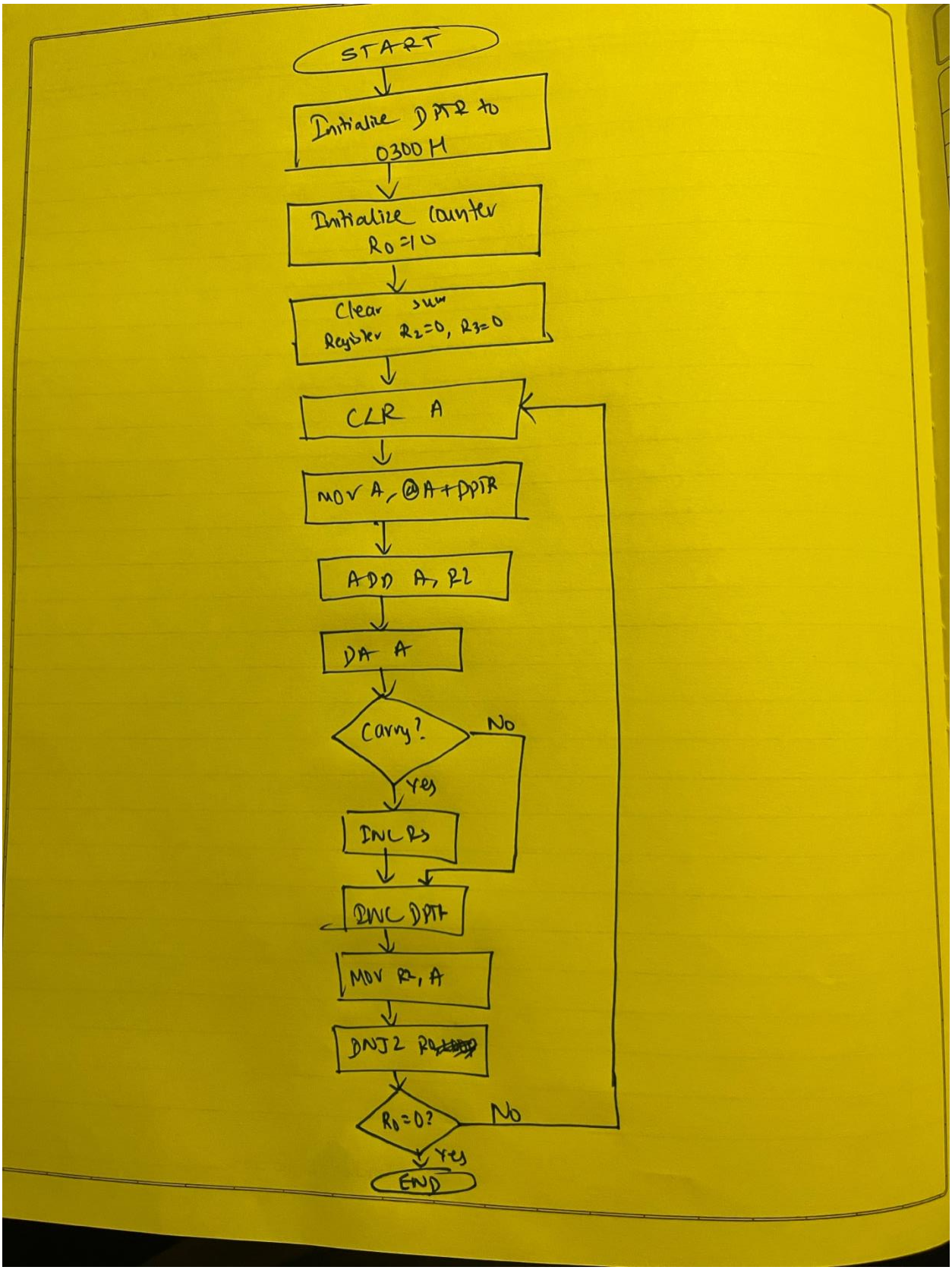
MYDATA: DB 92H, 34H, 84H, 29H, ... ; pick your own data.

Notice that you must first bring the data from ROM space into the CPU's RAM, and then add them together. Use a simulator to single-step the program and examine the data.

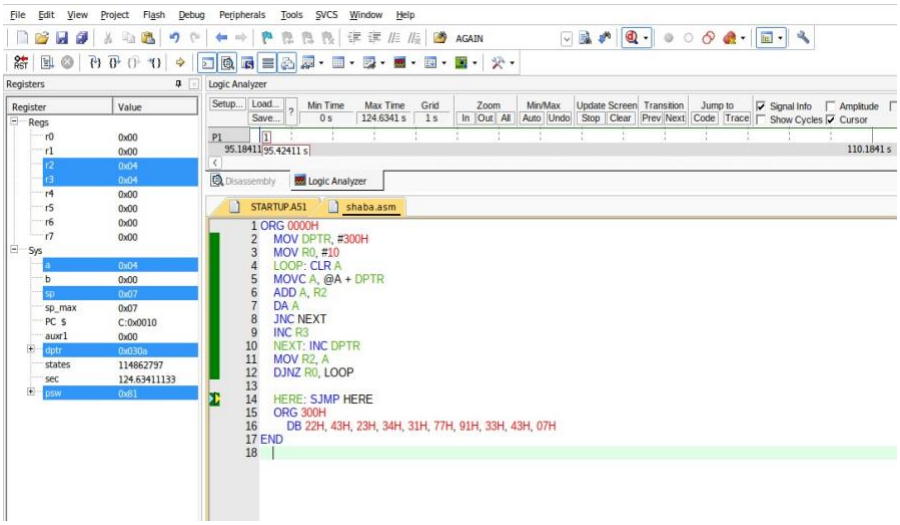
Code and Flowchart



```
WAP to add 10 bytes of BCD data and store the result in
R2 and R3. The bytes are stored in ROM space
starting at 200H. The data would look as follows:

MYDATA: DB 92H, 54H, 84H, 29H, .... pick your own data.

Notice that you must first bring the data from ROM space into the
CPU's RAM, and then add them together. Use a simulator to
single-step the program and examine the data.

ORG 0000H
  MOV DPTR, #20H
  MOV R0, #10
  LOOP: CLR A
  MOVC A, @A + DPTR
  ADD A, R2
  DA A
  JNC NEXT
  INC R3
  NEXT: INC DPTR
  MOV R2, A
  DJNZ R0, LOOP
  HERE: SJMP HERE
  ORG 200H
  DB 22H, 43H, 23H, 34H, 31H, 97H, 91H, 33H, 43H, 7H
  END.
```


START
Initialize DPTR to 0300H
Initialize counter R0=10
Clear sum Register R2=0, R3=0
CLR A
MOV A, @A+DPTR
ADD A, R2
DA A
Carry?
No
Yes
INC R3
INC DPTR
MOV R2, A
DNJZ R0
R0=0?
No
Yes
END

Snapshot of Code and Output:




```
ORG 0000H
   MOV DPTR, #300H
   MOV R0, #10
LOOP:
   CLR A
   MOVC A, @A + DPTR
   ADD A, R2
  DA A
   JNC NEXT
   INC R3
NEXT:
   INC DPTR
   MOV R2, A
   DJNZ R0, LOOP

HERE:
   SJMP HERE

ORG 300H
   DB 22H, 43H, 23H, 34H, 31H, 77H, 91H, 33H, 43H, 07H
END
```