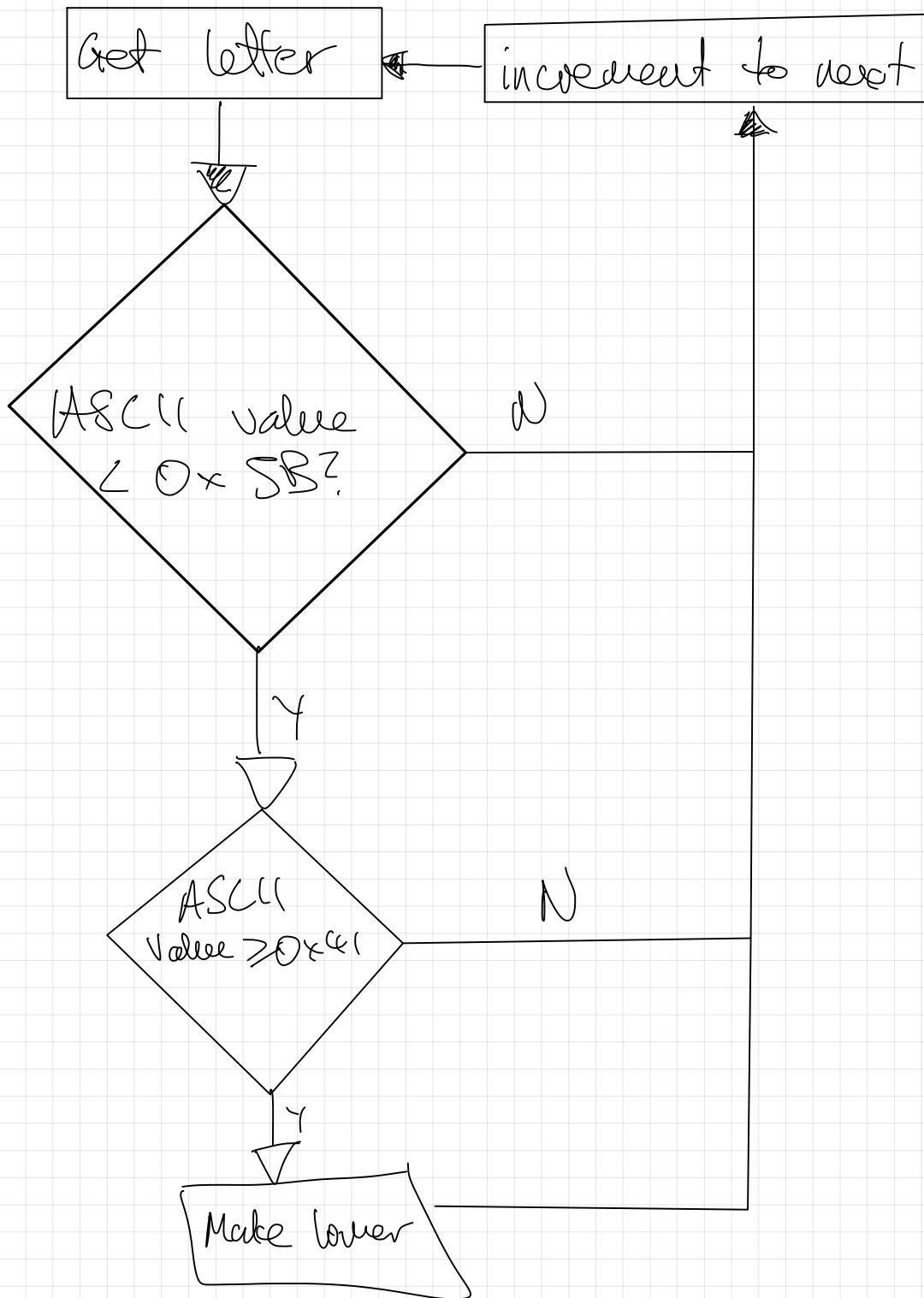


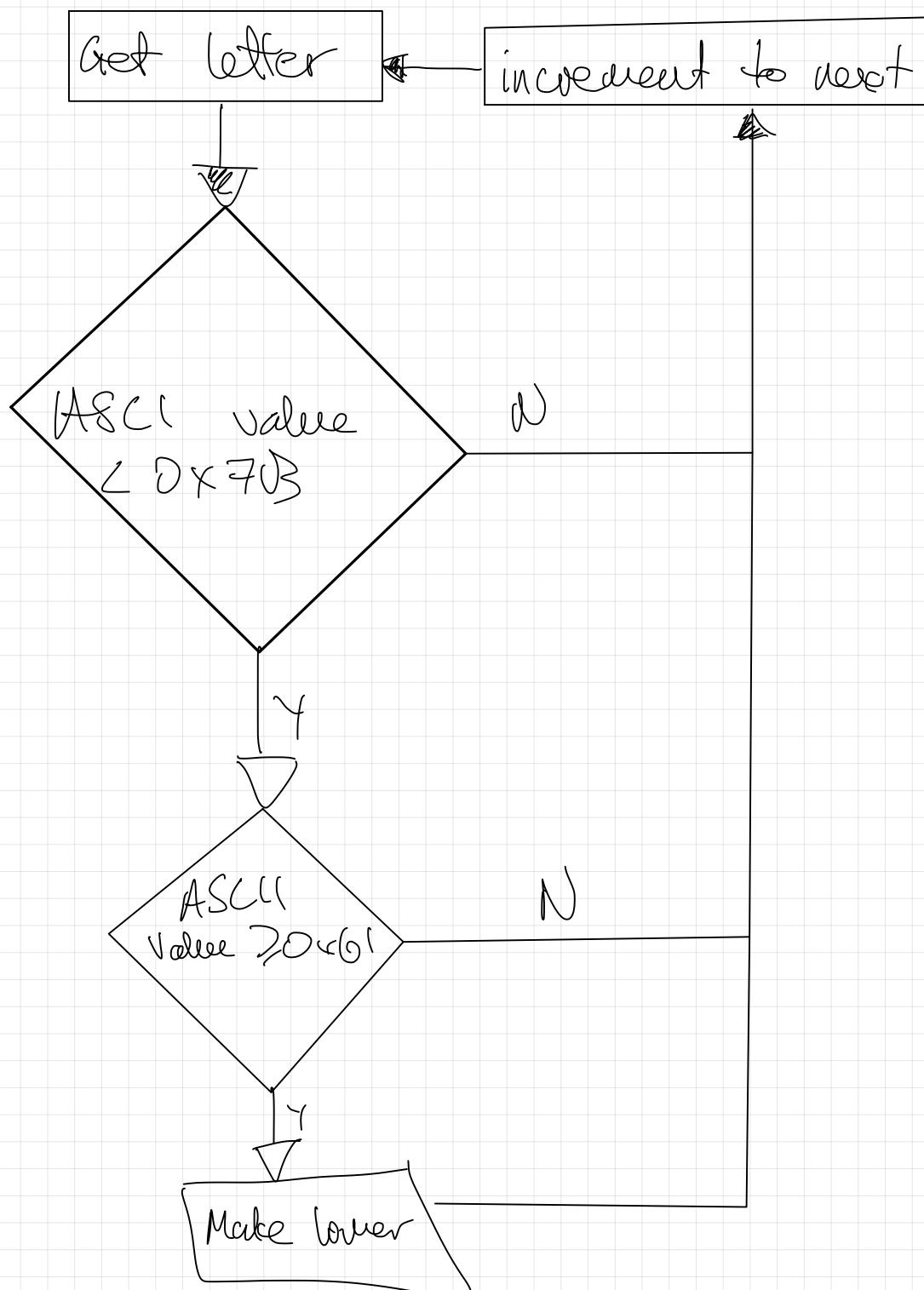
# Logical flow diagrams:

## Task 1:

a) All lowercase:

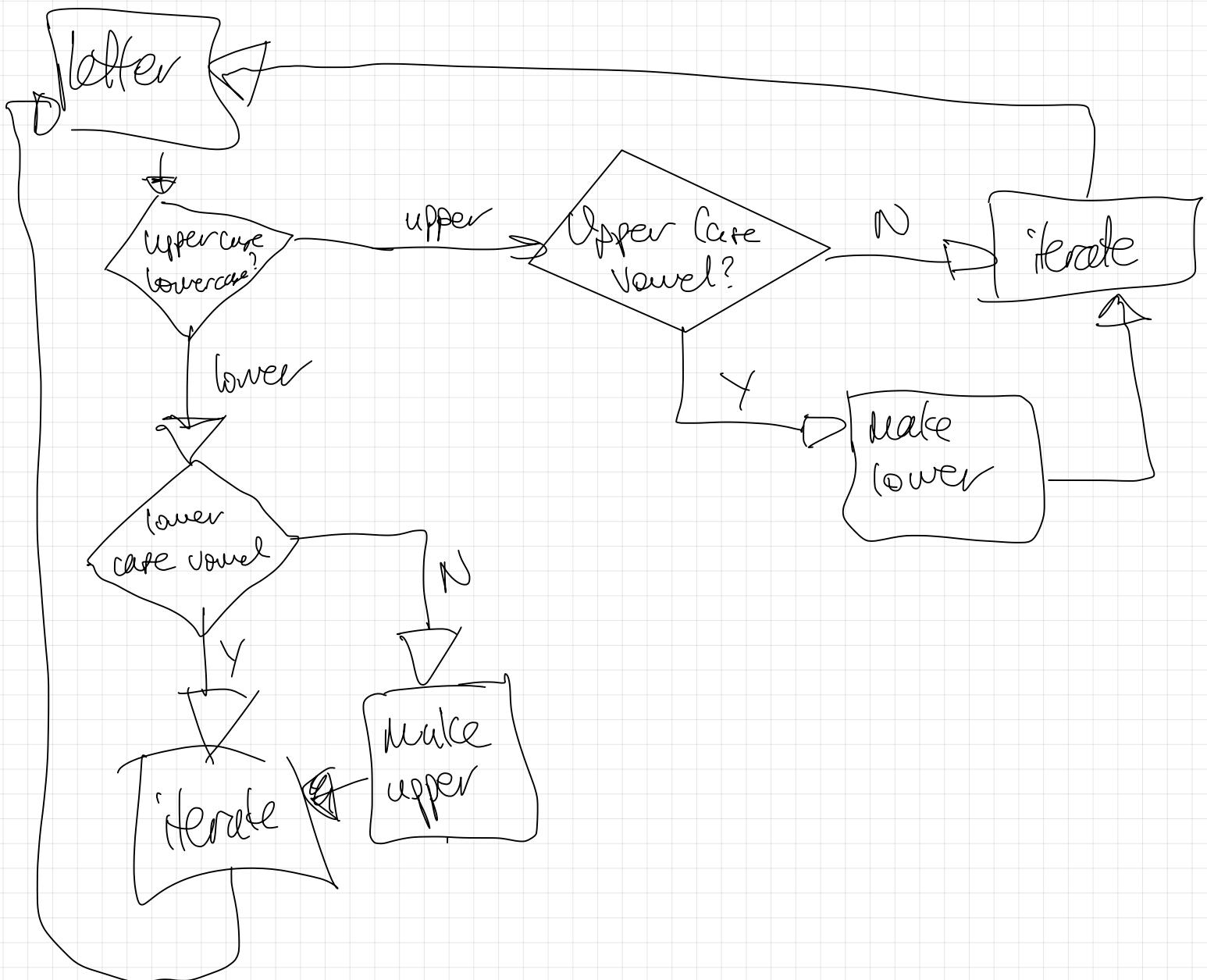


# All upper case :

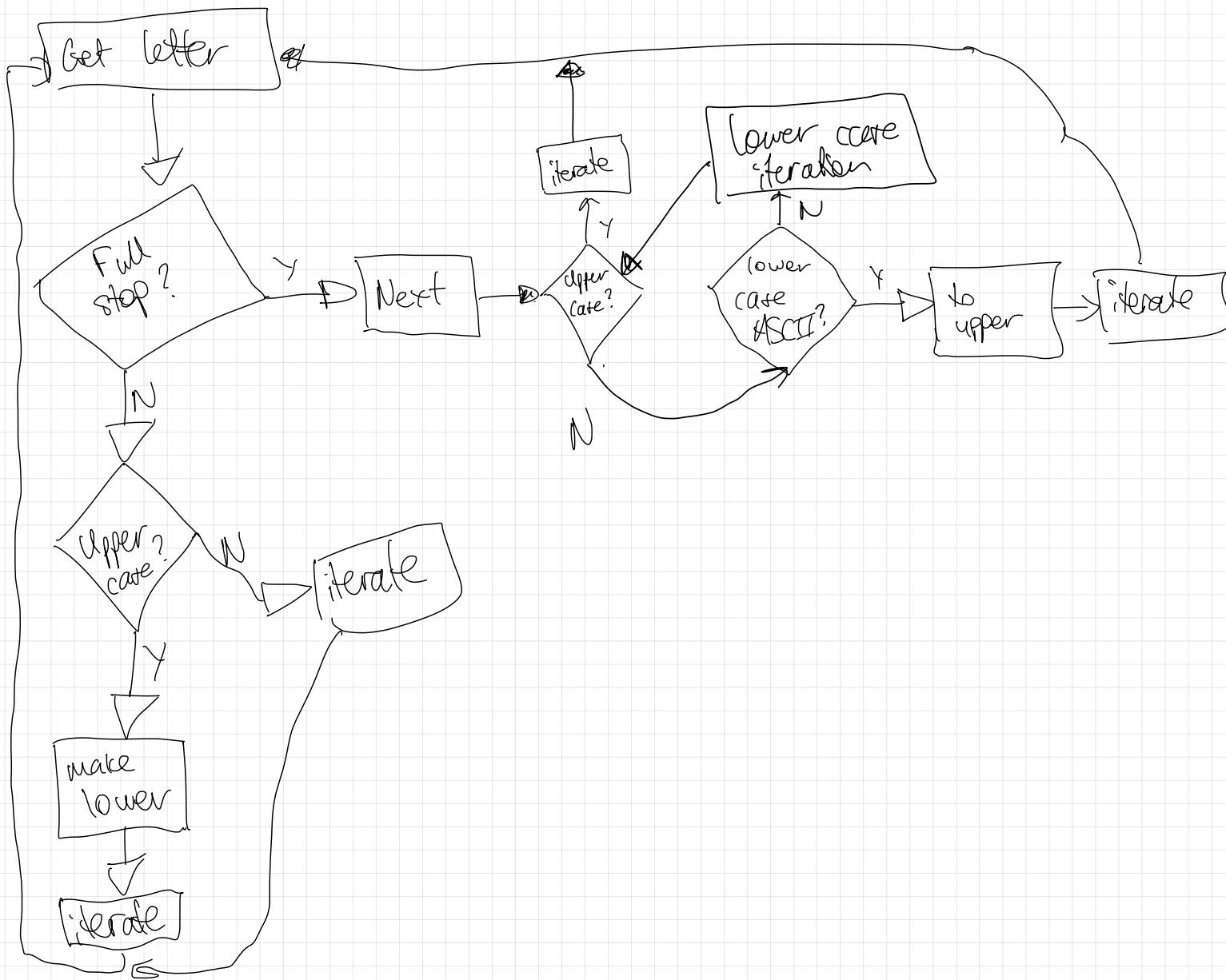


Dec	Hex	Oct	Char	Dec	Hex	Oct	Char
64	40	100	@	96	60	140	d
65	41	101	A	97	61	141	a
66	42	102	B	98	62	142	b
67	43	103	C	99	63	143	c
68	44	104	D	100	64	144	d
69	45	105	E	101	65	145	e
70	46	106	F	102	66	146	f
71	47	107	G	103	67	147	g
72	48	110	H	104	68	150	h
73	49	111	I	105	69	151	i
74	4A	112	J	106	6A	152	j
75	4B	113	K	107	6B	153	k
76	4C	114	L	108	6C	154	l
77	4D	115	M	109	6D	155	m
78	4E	116	N	110	6E	156	n
79	4F	117	O	111	6F	157	o
80	50	120	P	112	70	160	p
81	51	121	Q	113	71	161	q
82	52	122	R	114	72	162	r
83	53	123	S	115	73	163	s
84	54	124	T	116	74	164	t
85	55	125	U	117	75	165	u
86	56	126	V	118	76	166	v
87	57	127	W	119	77	167	w
88	58	130	X	120	78	170	x
89	59	131	Y	121	79	171	y
90	5A	132	Z	122	7A	172	z

b)

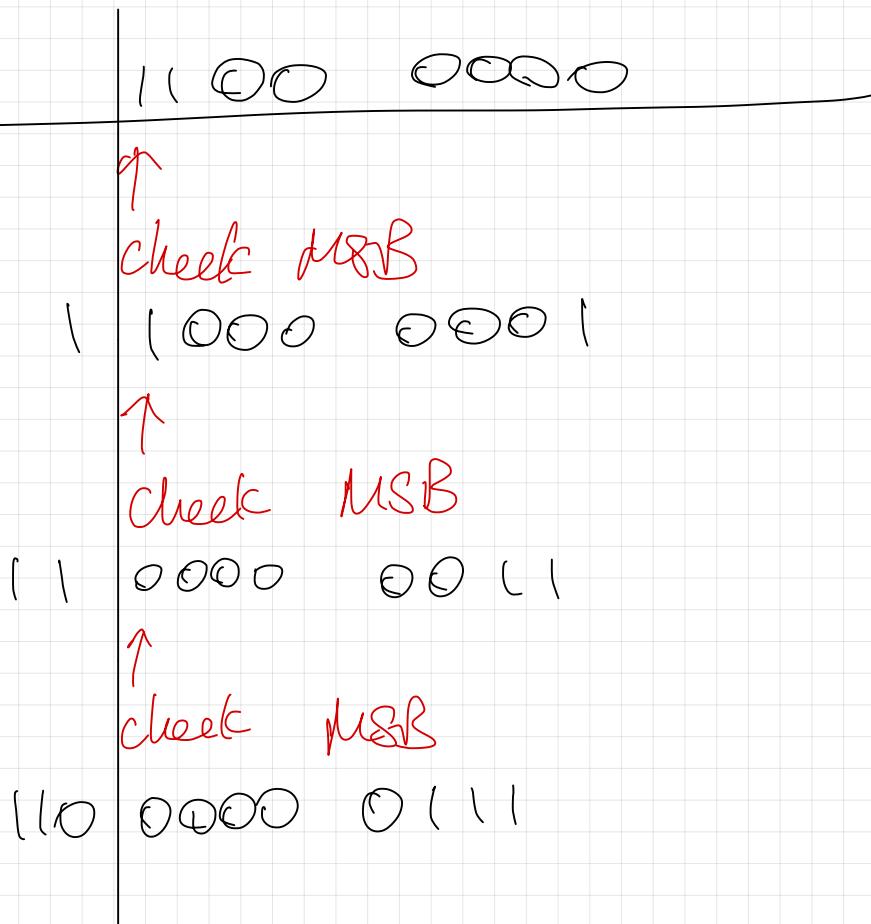


c)

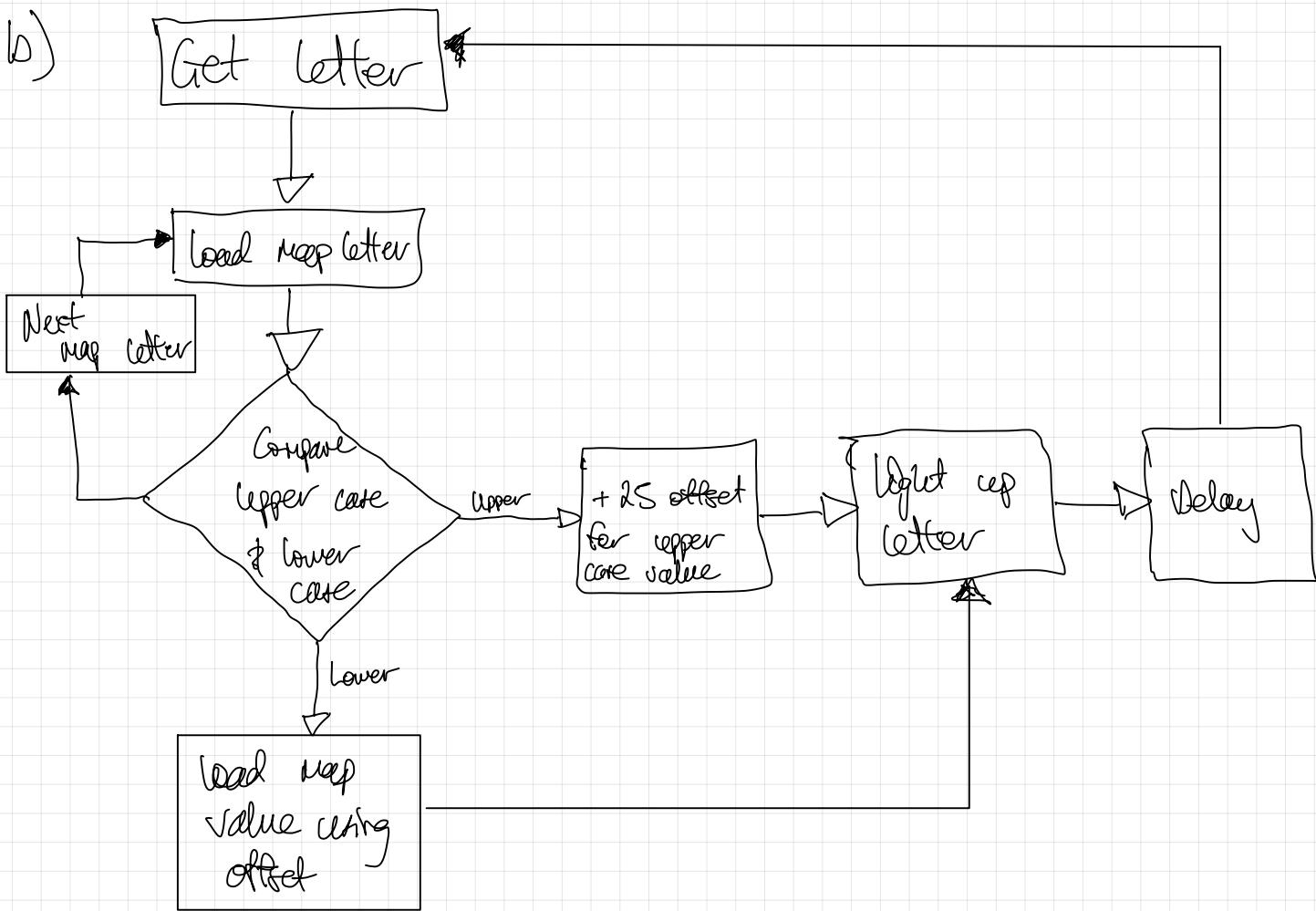


## Task 2:

a)



b)



2.4.2 b)

\* Anything that isn't an alphabetical character  
if it is not important and all LED's  
light up.

a b c d e f g h i j k l m n o p ...  
1 2 3 4 5 6 7 8 9 10 .. 12 13 14 15 16 ...

N.B.: LED's from MSB  $\rightarrow$  LSB  
are 6, 8, 10, 9, 7, 5, 3, 4

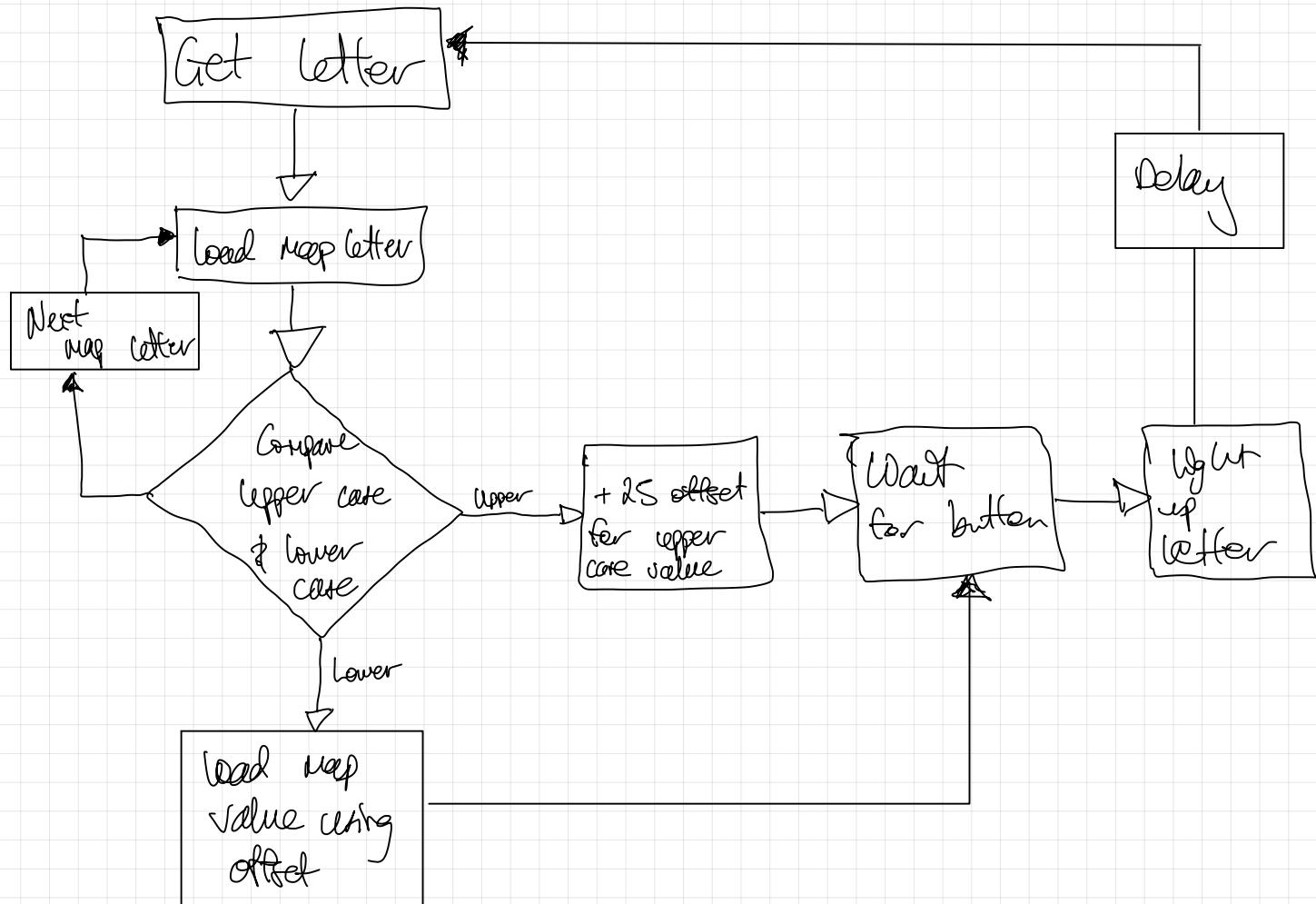
Test string of "Hello world! \0"

H : is 8 + 25 long as its uppercase  
 $\Rightarrow$  33 in binary is 00100001  
 $\Rightarrow$  LED 0 & 4 are lit.

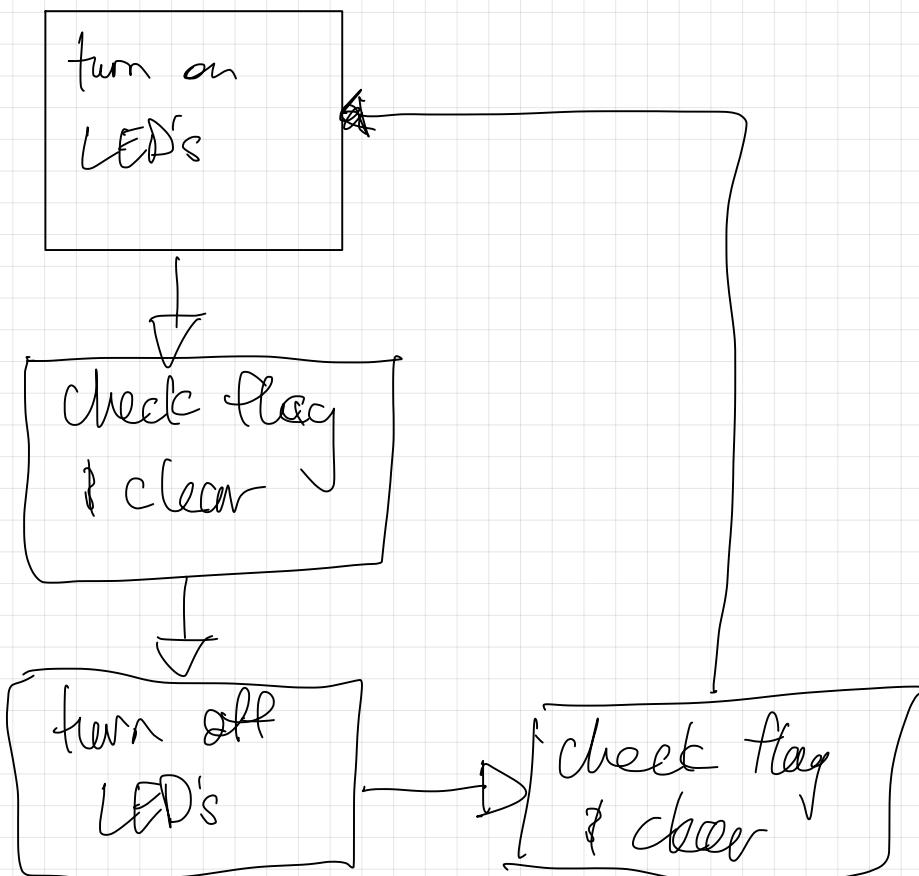
e : is 5, 00000101  
 $\Rightarrow$  LED 5 & 4 are lit.

etc.

c)

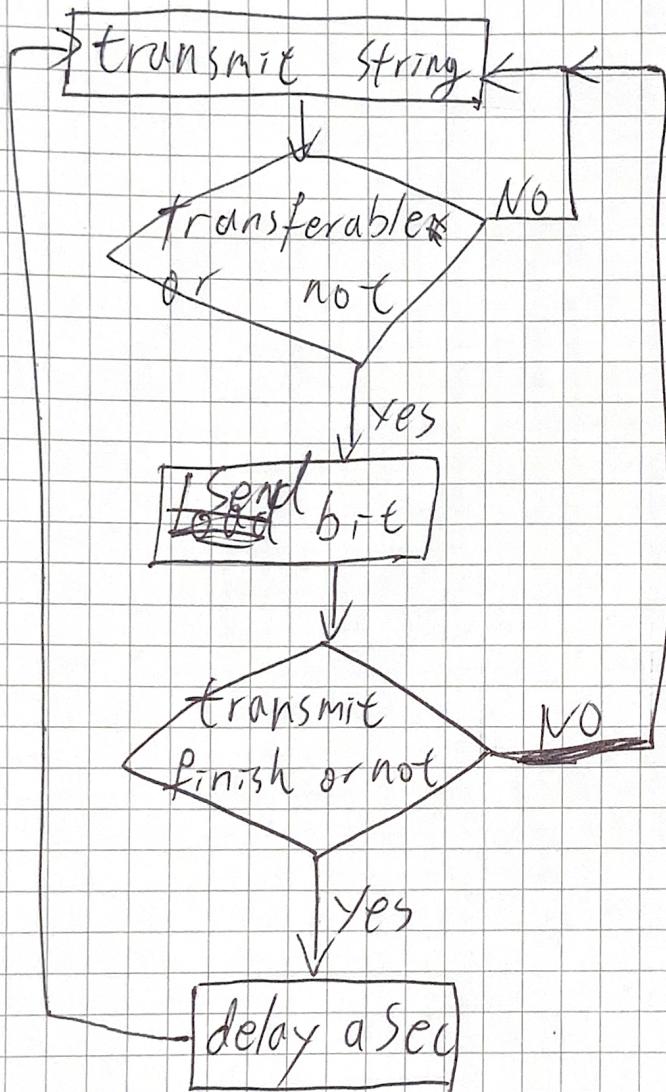


Task 4:

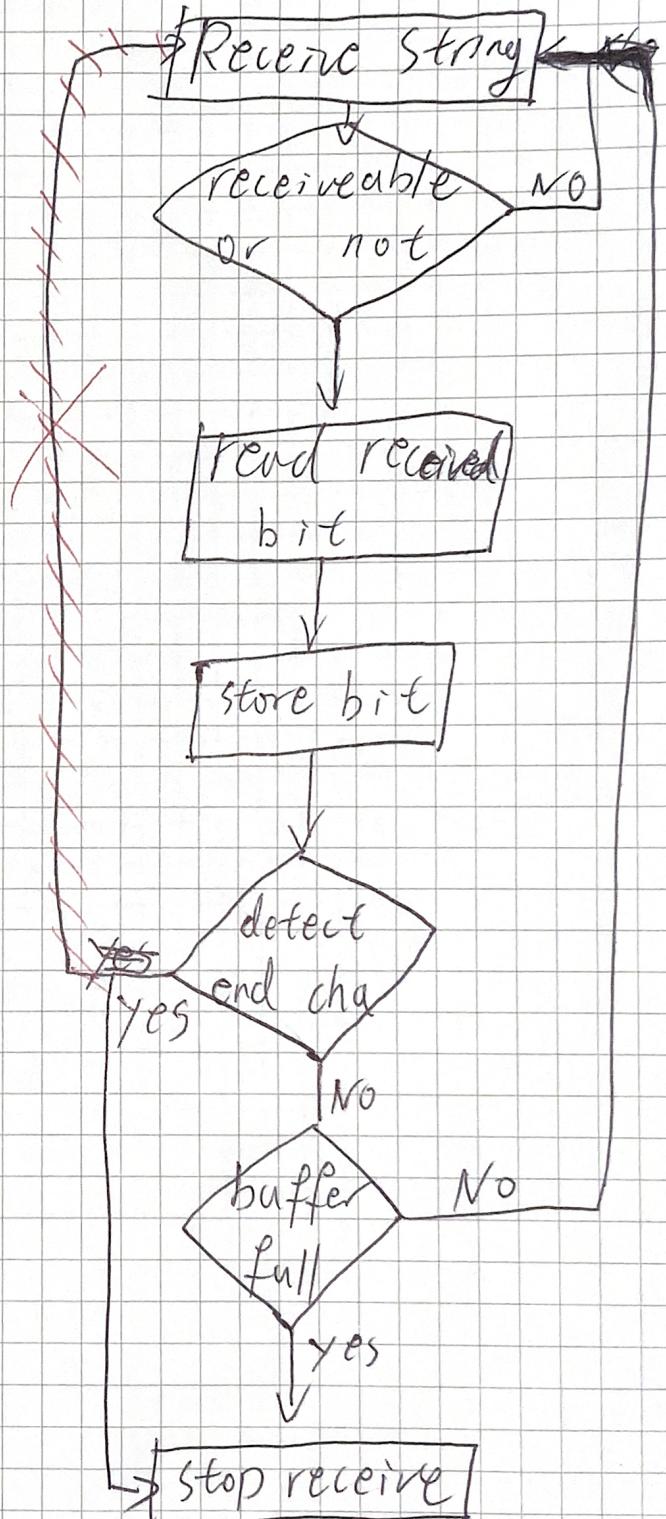


# Task 3

part a

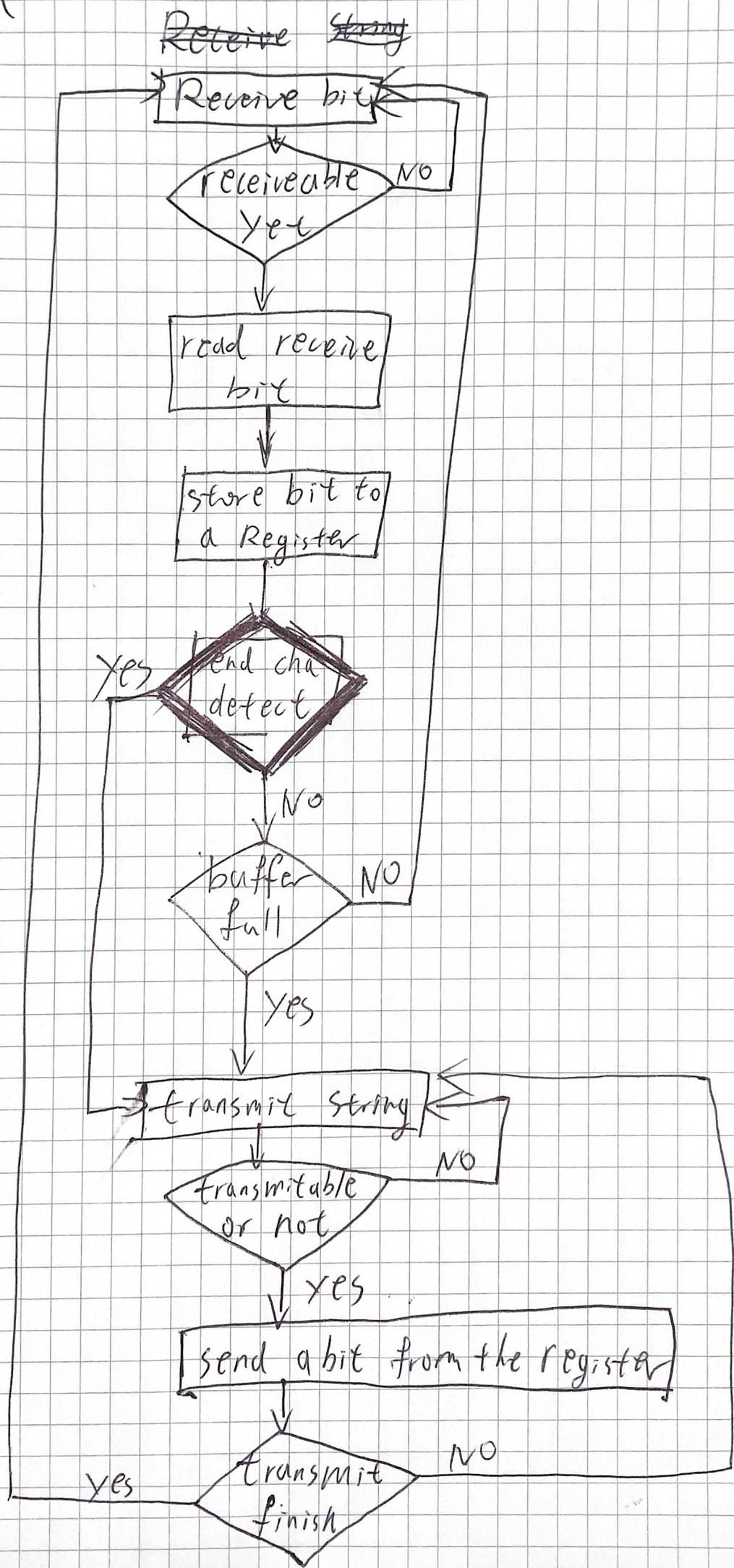


part b

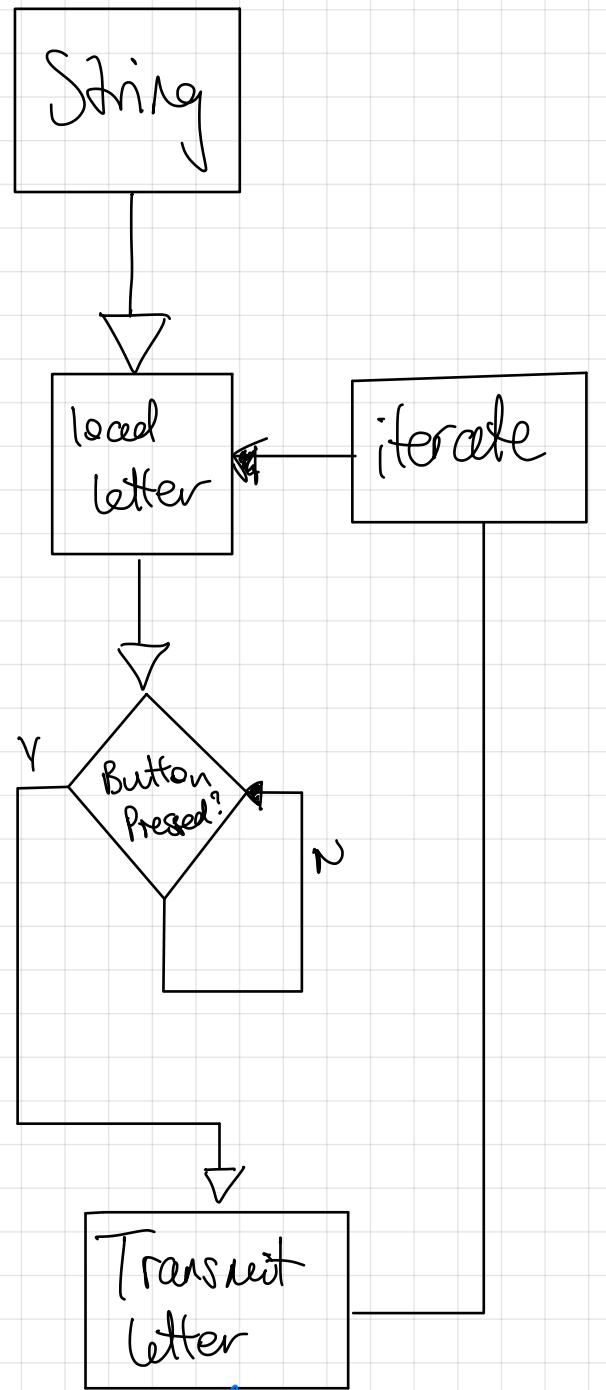


Part C

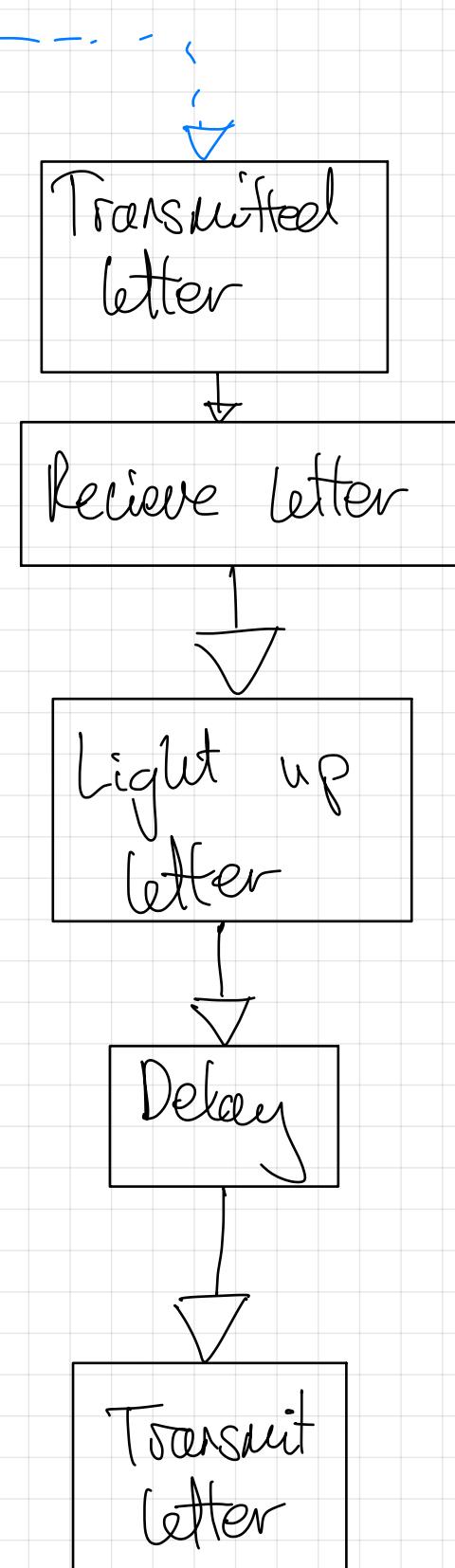
part d



Board 1:



Board 2:



Board 3:

