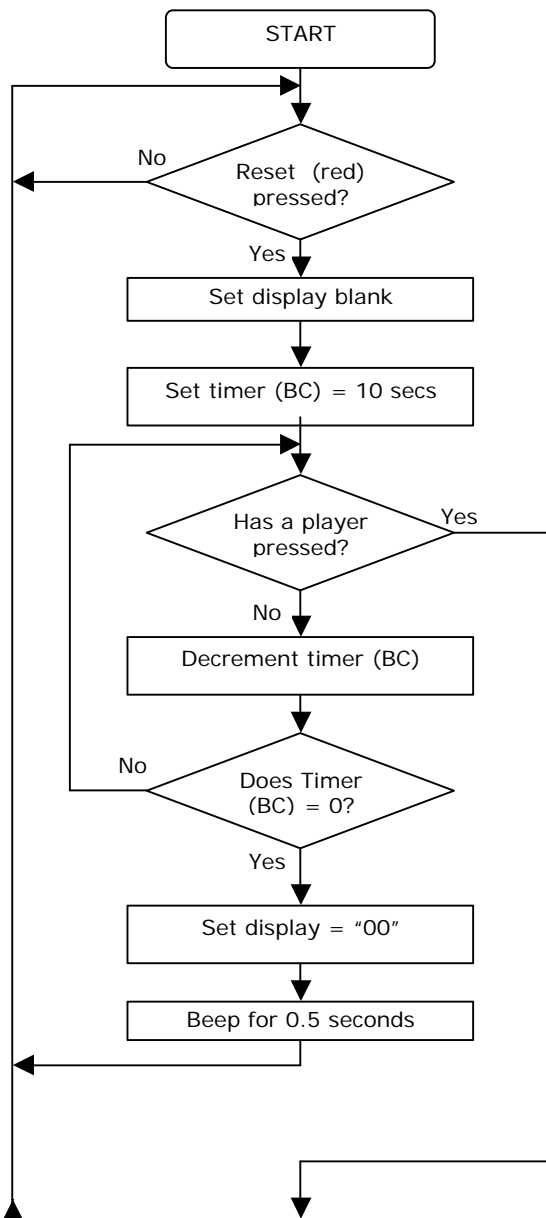


EZ-CPU CONTROL SYSTEM			
CONTROLLING OUTPUTS – 4a			
PROGRAM:	QUIZ MASTER	IP MODULE:	DAIP or ext. switches
DESCRIPTION:	Displays on 2 digit display indication of who pressed a button first within a certain time. DO-3 inputs can be used.	OP MODULE:	Q2DD
		PULL-UPS:	High
		CPU SPEED:	1 KHz

When you start reading a question, press the Reset (red) button. This starts a 5 second timer for contestants to answer the question. The B and C registers are used together to form a 16bit register which can count from 0 to 65535. This will allow a longer delay time. This counter starts decrementing BC while monitoring the contestant inputs. The loop time takes 16 cycles so 5 seconds would be $5,000\text{cycs} / 16 = 312$

The instruction DEC BC does not affect the flags, so the contents of B and C are 'OR'ed together and tested for zero.

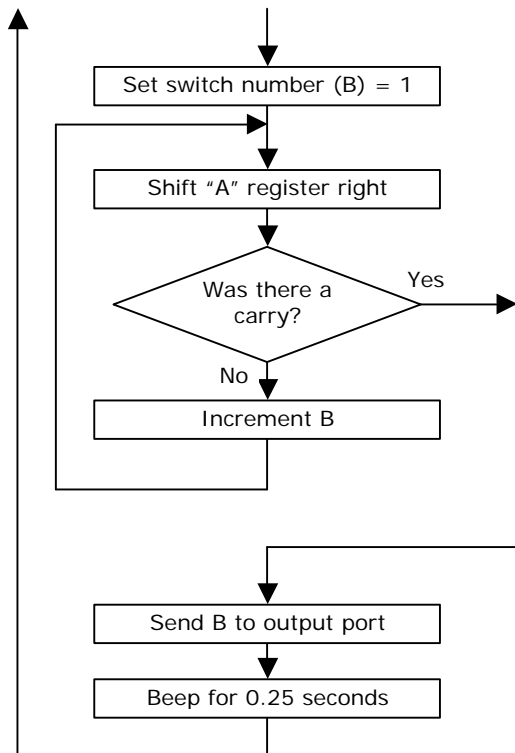
Note pull-ups are high, so a low input is required from contestant switches. When testing the inputs, the bits are flipped (XOR'ed) so that the zero flag is affected by the result.



ADDR	INSTRUCTION	CODE
00	IN A,(254)	DB FE
02	AND A,0x04	E6 04
04	JR Z, -6	28 FA
06	LD A,FF	3E FF
08	OUT (255),A	D3 FF
0A	LD BC,312	01 38 01
0D	IN A,(255)	DB FF
0F	XOR A,255	EE FF
11	AND A,0x0F	E6 0F
13	JR NZ +16	20 10
15	DEC BC	0B
16	LD A,B	78
17	OR A,C	B1
18	JR NZ -13	20 F3
1A	LD A,0	3E 00
1C	OUT (255),A	D3 FF
1E	LD D,125	16 7D
20	CALL BEEP	CD F0 00
23	JR - 37	18 DB

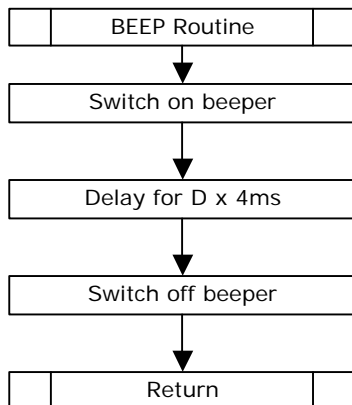
EZ-CPU CONTROL SYSTEM			
CONTROLLING OUTPUTS – 4b			
PROGRAM:	QUIZ MASTER	IP MODULE:	DAIP or ext. switches
DESCRIPTION:	Ctd:	OP MODULE:	Q2DD
		PULL-UPS:	High
		CPU SPEED:	1 KHz

This section selects the correct display output dependent on the input switch pressed. A holds the input switch data. A "1" signifies the corresponding switch was pressed. The A register is shifted right while incrementing B until a carry occurs, the value in B is the switch input pressed.



<u>ADDR</u>	<u>INSTRUCTION</u>	<u>CODE</u>
25	LD B,1	06 01
27	RRA	1F
28	JR C +3	38 03
2A	INC B	04
2B	JR -6	18 FA
2D	LD A,B	78
2E	OUT (255),A	D3 FF
30	LD D,62	16 3E
32	CALL BEEP	CD F0 00
35	JR -55	18 C9

This subroutine will switch on the on-board beeper for D x 4ms



F0	LD A,1	3E 01
F2	OUT (254),A	D3 FE
F4	DEC D	15
F5	JR NZ -3	20 FD
F7	LD A,0	3E 00
F9	OUT (254),A	D3 FE
FB	RET	C9