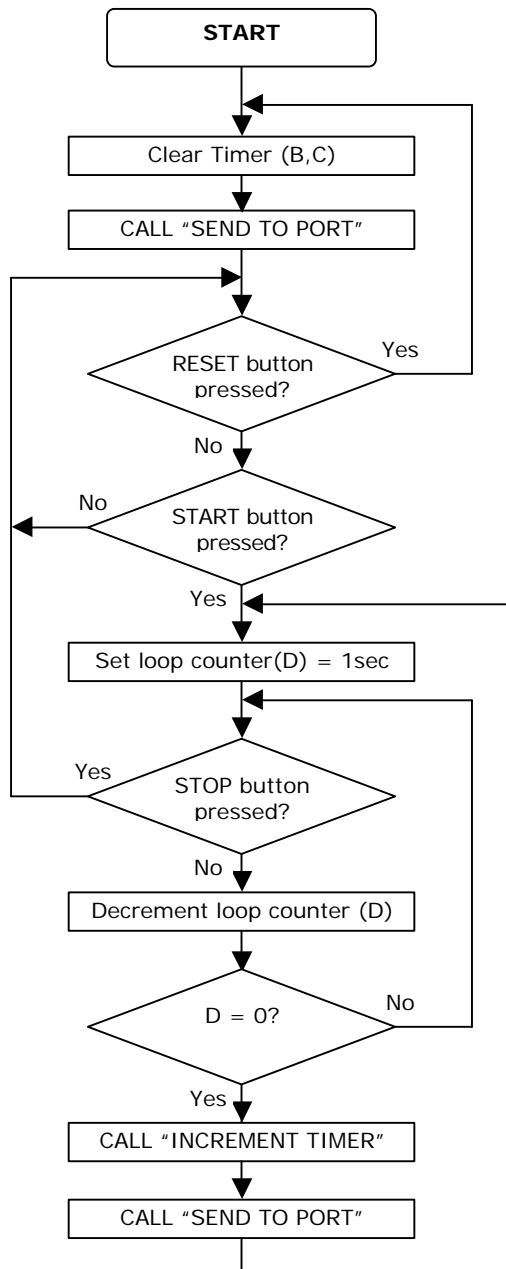


EZ-CPU CONTROL SYSTEM			
DRIVING DISPLAYS – 6a			
PROGRAM:	99 SECOND START/STOP/RESET TIMER	IP MODULE:	DAIP or switch inputs
DESCRIPTION:	Start/stop/reset timer from 90 to 99 seconds	OP MODULE:	Q2DD
		CPU SPEED:	1KHz

This version has start, stop and reset functions using either the input module DAIP or external switches connected directly to the input port. The listing uses the "Back"/"Next"/"Mode" keys on the EZCPU as start/stop/reset.

This program can be adapted to measure the speed of a moving object by using photo sensors and connecting them to the analogue inputs on the DAIP input module (eg. Start=D4, Stop=D5). You can change the start/stop inputs by altering the MASK values in the button tests. Remember the input port address is 255 (Eg. D4 input mask = 0x10, D5 input mask = 0x20)

The stop input is sampled in a loop that takes 24cycles. To increment and display the timer takes 40 cycles per increment. So the inputs are scanned $(1-0.04)/24 = 40$

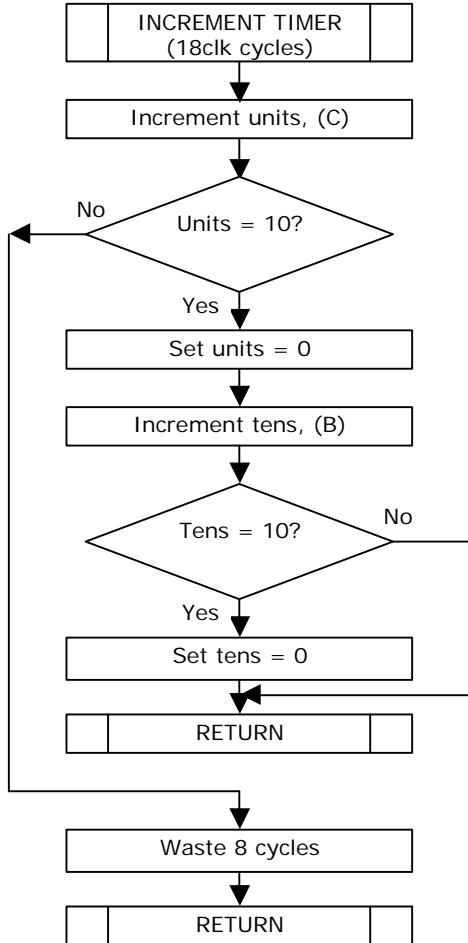


ADDR	INSTRUCTION	CODE
00	LD BC,0	01 00 00
03	CALL SENDPORT	CD F4 00
06	IN A,(254)	DB FE
08	AND A,0x04	E6 04
0A	JR NZ -12	20 F4
0C	IN A,(254)	DB FE
0E	AND 0x01	E6 04
10	JR Z -12	28 F4
12	LD D,40	16 28
14	IN A,(254)	DB FE
16	AND 0x02	E6 02
18	JR NZ -20	20 EC
1A	DEC D	15
1B	JR NZ -9	20 F7
1D	CALL INCTIMER	CD D8 00
20	CALL SENDPORT	CD F4 00
23	JR -19	18 ED

EZ-CPU CONTROL SYSTEM DRIVING DISPLAYS – 6b

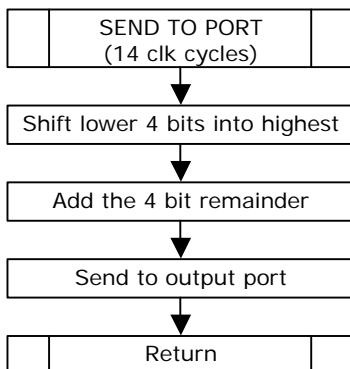
PROGRAM: INCREMENT TIMER Routine	IP MODULE: -
DESCRIPTION: Increments a counter stored in BC using BCD format	OP MODULE: -
	CPU SPEED: 1KHz

This routine takes exactly 18 cycles. The extra code at 0xF3 is to waste 8 cycles so the routine always takes the amount of time to execute.



ADDR	INSTRUCTION	CODE
D8	INC C	0C
D9	LD A,C	79
DA	CP 10	FE 0A
DC	JR NZ +11	20 0B
DE	LD C,0	0E 00
E0	INC B	04
E1	LD A,B	78
E2	CP 10	FE 0A
E4	JR NZ +3	20 02
E6	LD B,0	06 00
E8	RET	C9
E9	PUSH AF	F1
EA	OR A,0	F6 00
EC	POP AF	F5
ED	RET	C9

PROGRAM: SEND TO PORT Routine	IP MODULE: -
DESCRIPTION: Converts 2 BCD bytes into one packed byte and sends to O/P port	OP MODULE: Q2DD
	CPU SPEED: 1KHz



F4	LD A,B	78
F5	RLCA	07
F6	RLCA	07
F7	RLCA	07
F8	RLCA	07
F9	AND 0xF0	E6 F0
FB	ADD A,B	81
FC	OUT (255),A	D3 FF
FE	RET	C9