ASSIGNMENT - 3

Familiarization of 8086 microprocessor kit/simulator and assembly language programming using 8086A microprocessor /simulator for :

c) Shifting a block of data from one memory location to another

Address	Mnemonics	Comments
4000	MOV CL, 0A$_H$	Load CL Reg. with 0A$_H$.
4002	MOV SI, 2000	Load SI Reg. with Content of mem loc. 2000$_H$.
4005	MOV DI, 3000	Load DI Reg. with Content of mem loc. 3000$_H$.
4008	MOV SB	Load DI Reg. with the Content of SI Reg on the straing byte of SI Reg
4009	Loop 4008	Jump to 4008$_H$ if CL Reg. Content is nonzero.
400C	INT 3	Stop execution.

INPUT:

2000$_H$: 11$_H$

2001$_H$: 22$_H$

2002$_H$: 33$_H$

2003$_H$: 44$_H$

2004$_H$: 55$_H$

2005$_H$: 66$_H$

2006$_H$: 77$_H$

2007$_H$: 88$_H$

2008$_H$: 99$_H$

2009$_H$: AA$_H$

OUTPUT:

3000$_H$: 11$_H$

3001$_H$: 22$_H$

3002$_H$: 33$_H$

3003$_H$: 44$_H$

3004$_H$: 55$_H$

3005$_H$: 66$_H$

3006$_H$: 77$_H$

3007$_H$: 88$_H$

3008$_H$: 99$_H$

3009$_H$: AA$_H$

Teacher's Signature ....

2) Add two 32 bit Hex numbers with thelp of 8086 µpr

Address	Mnemonics	Comments
3000	MOV AX, 0001H	Load Reg. Ax with 0001H
3003	MOV BX, FFFFH	Load Reg. Bx with FFFFH
3006	MOV CX, FFFFH	Load Reg. Cx with FFFFH
3009	MOV DX, 0004H	Load Reg. Dx with 0004H
300C	ADD AX, CX	Add the content of Ax and Cx
300E	ADC BX, DX	Add the Content of Bx and Dx
3010	JNC 3014H	Jump if no Carry to 3014H
3012	INC DH	Increase the value of DH Reg.
3014	INT 3	Stop execution -

INPUT:-

$AX \leftarrow 0001_H$ $CX \leftarrow FFFF_H$ } 2nd No.
$BX \leftarrow FFFF_H$ $DX \leftarrow 0004_H$ }

1st No.

OUTPUT:-

$AX \leftarrow 0000_H \rightarrow$ Lower bit

$BX \leftarrow 0003_H \rightarrow$ Higher bit

$DH \leftarrow 01_H \rightarrow$ Carry

4) Find the Largest number from an array with the help of a 8086 µp.

Address	Mnemonics	Comments
3000	MOV CL, 09	Load CL Reg. with 09H
3002	MOV SI, 2000	load SI Reg. with content of mem loc. 2000H.
3005	MOV AH, [SI]	Move the content of SI Reg to AH Reg
3007	INC SI	Increase the CorLoad SI Reg. with Content of next mem loc.
3008	CMP AH,[SI]	Compare the content of SI and AH Reg.
300A	JNC 300E	If no carry Jump to 300E+mem
300C	MOV AH,[SI]	MOV [SI] Reg content to AH Reg.
300E	DEC CL	Decrease the Content of CL Reg
300F	JNZ 3007	If non zero jump to 3007 loc.
3011	INT 3	Stop execution.

INPUT:-

2000H : 00H · 2001H : 11H 2002H : 22H   2003H : 55H 2004H : 44H

OUTPUT:-

AH ∈ 55H

Note:- To

ADC 0809 is interfaced with μpr 8086 via PPI 8255A.

Address	Mnemonics	Comments
3000	Mov AL, 91	Load AL Reg with 91₁₁
3002	Mov Dx, 0067	Dx Reg is pointing to 0067 add location CWR
3005	OUT Dx, AL	AL Reg. Content is copied to Dx Reg.
3006	Mov AL, 05	Load AL Reg with 05₁₁.
3008	Mov Dx, 0063	Dx Reg is pointing to 0063 mem.loc.
300B	OUT Dx, AL	AL. Reg Content is Copied on to port B
300C	Mov AL, 04	Load AL Reg with 04₁₁.
300E	Mov Dx, 0063	Dx Reg. is pointing to 0063 mem.loc.
3011	OUT Dx, AL	AL Reg content is copied on to port B
3012	Mov Dx, 0065	Dx Reg is pointing to 0065 mem loc.
3015	IN AL, Dx	Content of Port c is now available of AL
3016	RoR AL, 1	Rotate night the content of AL Reg 1 time
3018	JNC 3015	If no Carry move to 3015
301A	Mov AL, 06	Load AL Reg with 06
301C	Mov Dx, 0063	Dx Reg is pointing to 0063 mem loc
301F	OUT Dx, AL	Content of AL Reg is copied onto port B
3020	Mov Dx, 0061	Dx Reg is pointing to 0061 mem loc
3023	IN AL, Dx	Port A content is now available in AL Reg
3024	INT 3	End of execution.

INPUT	OUTPUT
2.5 V	80₁₁
4 V	C3₁₁
5 V	F3₁₁
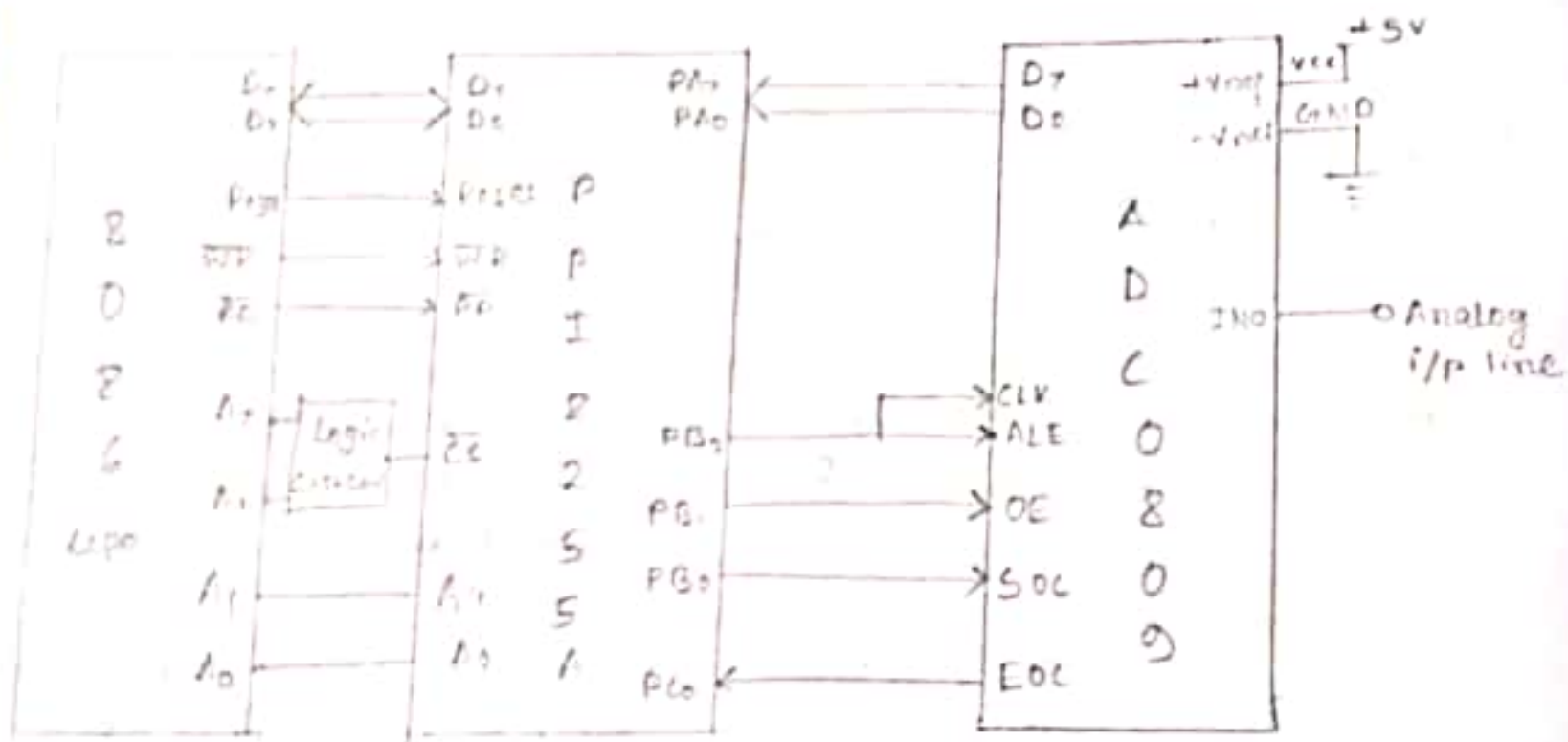
Fig : Adc 0109 is interfaced with µp 8086
via PPI 8255A

Flowchart

Start

↓

Initialize port set 8255A

↓

Generate clk & soc signal via port B

↓

Monitor EOC via port c

↓

EOC==1 ?

No

yes ↓

Make OE high and clk high via port B

↓

Collect the digital output via port A
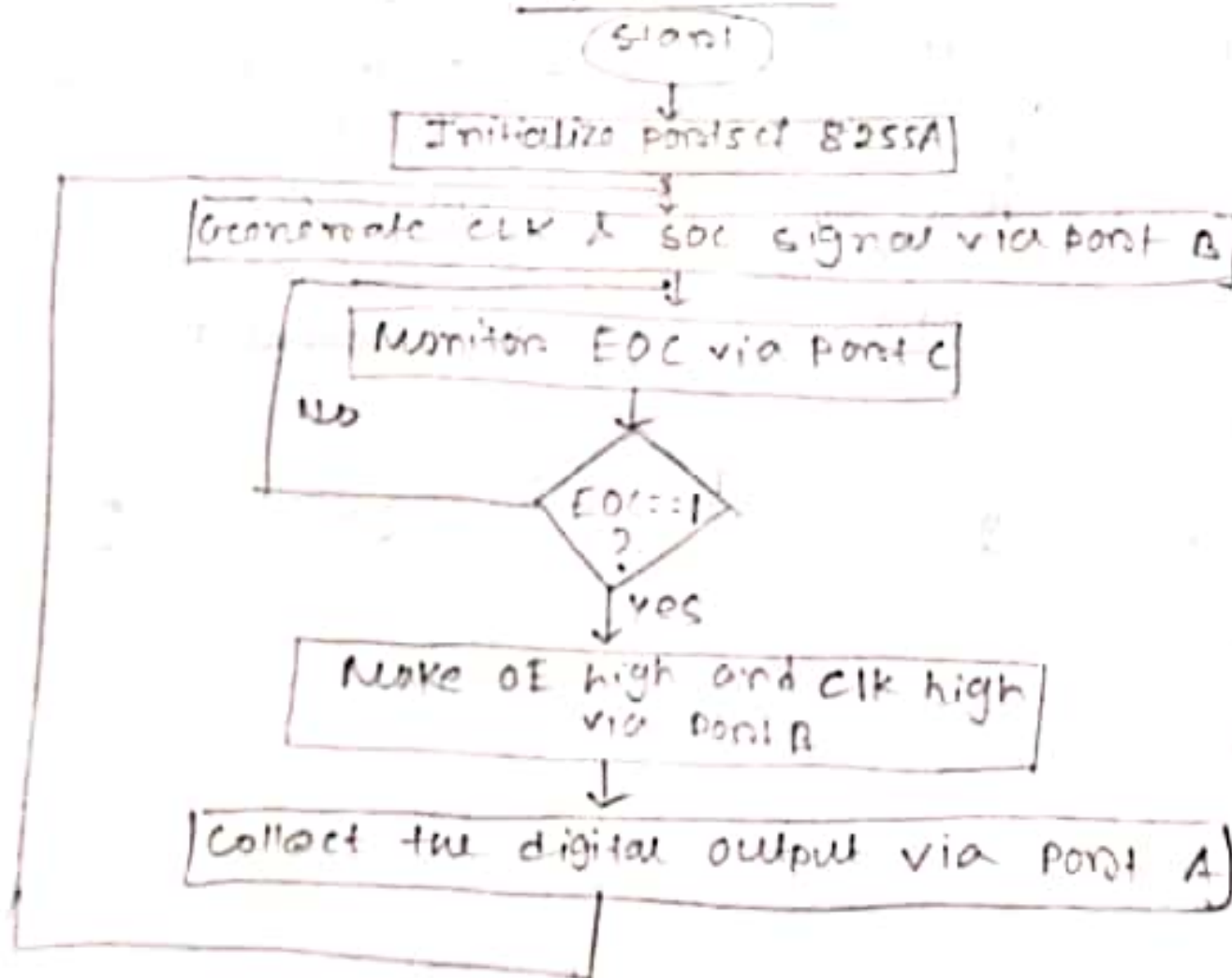
b) String Matching:

Address	Mnemonics	Comments
4000	MOV CL, 0A_H	Load CL Reg. with 0A_H.
4002	MOV SI, 2000_H	Load SI Reg. with content of mem loc 2000H.
4005	MOV DI, 3000_H	Load DI Reg. with content of mem. loc. 3000_H
4008	REPE CMPSB	Compare the string byte content of SI and DI and repeat the comparison if they are equal.
400A	INT 3	Stop execution

INPUT:

2000_H : 11_H	3000_H : 11_H
2001_H : 22_H	3001_H : 22_H
2002_H : 33_H	3002_H : 33_H
2003_H : 44_H	3003_H : 44_H
2004_H : 55_H	3004_H : 55_H
2005_H : 0D_H	3005_H : 66_H
2006_H : 77_H	3006_H : 77_H
2007_H : 88_H	3007_H : 88_H
2008_H : 99_H	3008_H : 99_H
2009_H : AA_H	3009_H : AA_H

OUTPUT :

Flag Register : F002_H