MPI Tutorial-7

8086 Arithmetic & Logical Operations ALPs

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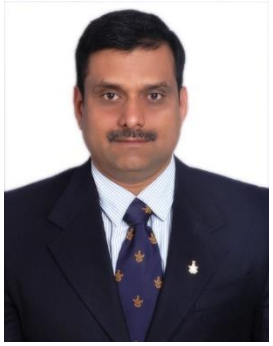


Problem-1

Write a program in 8086 microprocessor to find out the Subtraction of two address 28-bit BCD numbers, where numbers are stored from starting memory 000 : 500 and store the result into memory address 2000 : 600 and carry (borrow) in 2000 : 601.

Problem-1

Write a program in 8086 microprocessor to find out the Subtraction of two 8-bit BCD numbers, where numbers are stored from starting memory address 2000 : 500 and store the result into memory address 2000 : 600 and carry (borrow) in 2000 : 601.

400	MOV AL, [500]	AL<-[500]
404	MOV BL, [501]	BL<-[501]
408	SUB AL, BL	AL<-AL-BL
40A	DAS	DECIMAL ADJUST AL
40B	MOV [600], AL	AL->[600]
40F	MOV AL, 00	AL<-00
411	ADC AL, AL	AL<-AL+AL+cy(prev)
413	MOV [601], AL	AL->[601]
417	HLT	END

Problem-2

Write a program in 8086 microprocessor to find out the sum of series of even numbers, where numbers are stored from starting offset 500 and store the result at offset 600.

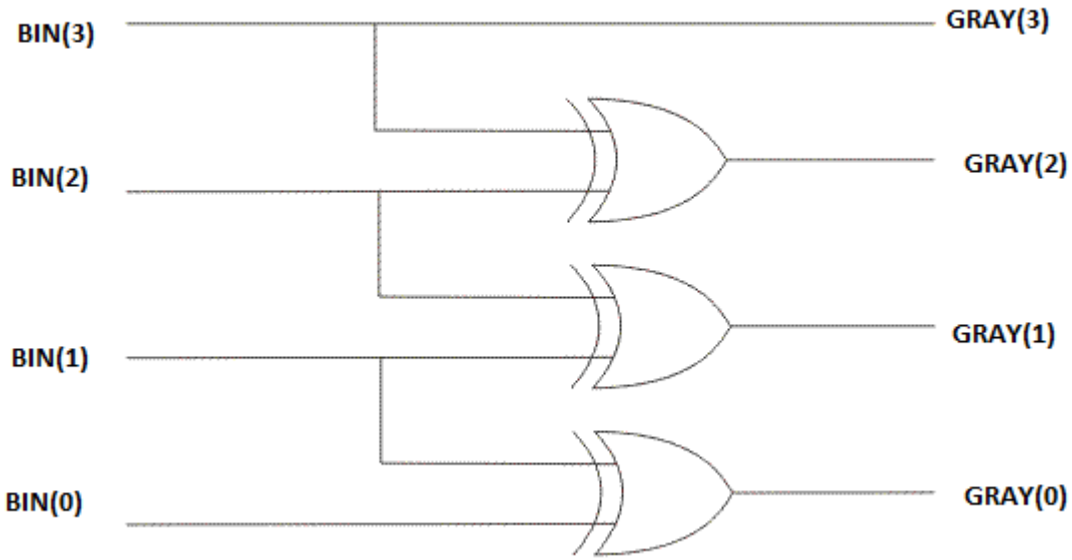
Problem-2

Write a program in 8086 microprocessor to find out the sum of series of even numbers, where numbers are stored from starting offset 500 and store the result at offset 600.

400	MOV SI, 500	SI<-500
403	MOV CL, [SI]	CL<-[SI]
405	INC SI	SI<-SI+1
406	MOV CH, 00	CH<-00
408	MOV AL, 00	AL<-00
40A	MOV BL, [SI]	BL<-[SI]
40C	TEST BL, 01	BL AND 01
40F	JNZ 413	JUMP IF NOT ZERO
411	ADD AL, BL	AL<-AL+BL
413	INC SI	SI<-SI+1
414	LOOP 40A	JUMP TO 40A IF CX NOT ZERO
416	MOV [600], AL	AL->[600]
41A	HLT	END

Problem-3

Write a program to convert Binary number to Grey code 8-bit number where the number is stored at **2500** memory address and store result into **2600** memory address.



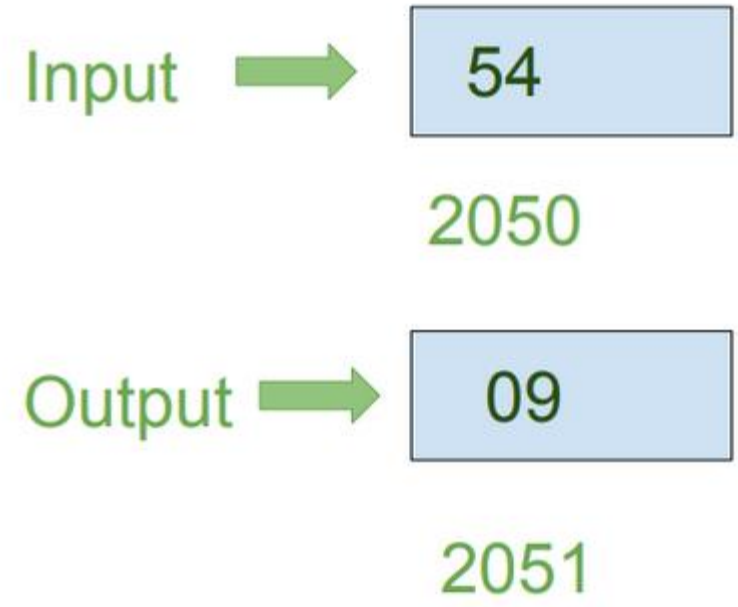
Problem-3

Write a program to convert Binary number to Grey code 8-bit number where starting address is **2000** and the number is stored at **2500** memory address and store result into **2600** memory address.

2000	MOV	AL, [2500]	[AL] <- [2500]
2004	MOV	BL, AL	[BL] <- [AL]
2006	SHR	AL, 01	Shift Right one time
2008	XOR	BL, AL	[BL] <- [BL] @ AL
200A	MOV	[2600], BL	[2600] <- [BL]
200E	HLT		Stop

Problem-4

Write an assembly language program in 8086 microprocessor to find sum of digits of an 8 bit number using 8 bit operation.



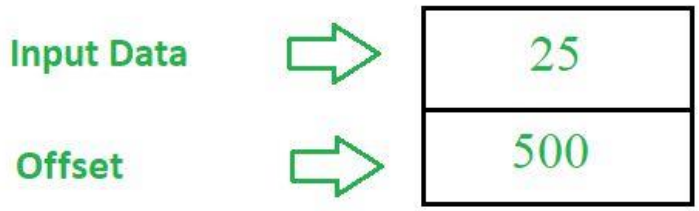
Problem-4

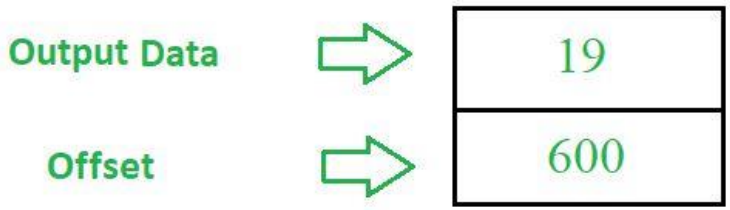
Write an assembly language program in 8086 microprocessor to find sum of digits of an 8 bit number using 8 bit operation.

00	MOV AL, [2050]	AL<-[2050]
404	MOV AH, AL	AH<-AL
406	MOV CX, 0004	CX <- 0004
409	AND AL, 0F	AL <- AL & 0F
40B	ROL AH, CX	Rotate AH content left by 4 bits(value of CX)
40D	AND AH, 0F	AH <- AH & 0F
40F	ADD AL, AH	AL<-AL+AH
411	MOV [2051], AL	[2051]<-AL
415	HLT	Stop Execution

Problem-5

Write an assembly language program in 8086 microprocessor to convert an 8 bit BCD number into hexadecimal number.





$(0001\ 1001)_2 > 25_{10}$

Problem-5

Write an assembly language program in 8086 microprocessor to convert an 8 bit BCD number into hexadecimal number.

0400	MOV SI, 500	SI <- 500
0403	MOV DI, 600	DI <- 600
0406	MOV BL, [SI]	BL <- [SI]
0408	AND BL, 0F	BL = BL AND 0F
040A	MOV AL, [SI]	AL <- [SI]
040C	AND AL, F0	BL = AL AND F0
040E	MOV CL, 04	CL = 04
0410	ROR AL, CL	Rotate AL
0412	MOV DL, 0A	DL = 0A
0414	MUL DL	AX = AL * DL
0416	ADD AL, BL	AL = AL + BL
0418	MOV [DI], AL	[DI] <- AL
041A	HLT	End of Program

Thank You