Microprocessors – Tutorial –lab 07

#	Student ID	Student Name	Grade (10)
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Arrays

ArrDB0BH , 1BH , 2BH , 3BH
MOVAL , [Arr + 3];sets AL to 3BH

ADB0Ah , 1Ah , 2Ah , 3Ah , 4Ah , 5Ah
BDB0Bh , 1Bh , 2Bh , 3Bh
CDB0Ch , 1Ch
MOVAL , [B+3] ; sets AL = 3Bh
MOVAL , [B+4] ; sets AL = 0Ch
MOVAL , [A+12] ; sets AL = 1Ch

Byte Swapping

8086 stores the low order byte first

A DW 1234h

A:

	34	12

ADB34h , 12h
MOVAX , A ; sets AX = 1234h (AH = 12h , AL = 34h)

AX:

12	34

A DW 14
B DB 100
C DB ‘Hello’
MOVAX , WORD PTR B ; sets AL to 100, AH to ‘H’ = 72

A:		B:	C:		
14	0	100	‘H’	‘e’	

Q1	Write following code ORG 100H jmp start W DW 10 DUP (9999h); Creates an array of 10 words initialized by 9999 each ; Note : DUP came for duplicate. Z DW 10 DUP(0000h); Creates an array of 10 uninitialized words HLT start: MOV CX , 10 MOV DI , 0; N = 0 Zero: MOV AX , [W + DI] MOV [Z + DI] , AX MOV [W + DI] , 0FFFFh; W[N] = 0 ADD DI , 2; N = N + 1 DEC CX JNZ Zero HLT Clearly observe all the steps and write what happens. Dump cs:100 → cs:
Sol 1	....

Q2	Write following code (; convert all lowercase letters in the array to the corresponding uppercase letters) ORG 100H jmp start B DB 'HelLo' , '$' start: MOV SI , OFFSET B Upcase: MOV AL , [SI] CMP AL , '$' JE DONE CMP AL , 'a' JB NotLC CMP AL , 'z' JA NotLC ADD BYTE PTR [SI] , 'A' - 'a' NotLC: INC SI JNZ Upcase DONE: HLT Clearly observe all the steps and write what happens. Dump cs:102 → cs:129
Sol 2	....

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Q3	; convert all lowercase letters in the array to the corresponding uppercase letters ORG 100H jmp start FOUR DB 4 ;Class Test Mark: T1 : T2 : T3 : T4 : Name ;---------- MARK DB 15 , 20 , 12 , 16 ; student 1 DB 14 , 10 , 18 , 20 ; student 2 DB 12 , 15 , 20 , 17 ; student 3 DB 14 , 17 , 16 , 11 ; student 4 AVG DB 4 DUP (0) start: MOV AX , CS MOV DS , AX MOV SI , 3 REPEAT: MOV CX , 4 XOR BX , BX XOR AX , AX FOR:

	MOV DL , MARK[BX + SI] MOV DH , 0 ADD AX , DX ADD BL , 4 LOOP FOR ; end of FOR XOR DX , DX DIV FOUR MOV AVG[SI] , AL SUB SI , 1 JNL REPEAT DONE: HLT Clearly observe all the steps and write what happens. Dump cs:113 → cs:116
Sol 3	....

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Q4	;Find factorial of AX
	
	ORG 100H
	MOV AX,4
	PUSH AX
	CALL FACT
	; AX CONTAINS THE FACTORIAL OF AX
	HLT
	FACT:
	PUSH BP
	MOV BP,SP
	IF:
	CMP WORD PTR[BP+4],1
	JG ENDIF
	THEN:
	MOV AX,1
	POP BP
	JMP RETURN
	ENDIF:
	MOV CX,[BP + 4]
	DEC CX
	PUSH CX
	CALL FACT
	MUL WORD PTR[BP+4]
	POP CX
	POP BP
	RETURN:
	RET
	
	Clearly observe all the steps and write what happens. Find the contants of AX, try to change contents of AX, then test results.

Sol 4	....

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