8-bit -Ant	thmatic	Operations	aulizly
Asm: To perform	ari	thmatic o	perations using MASAM
between	-bit	numbers	
software Ma 20	36(1)	2032	· · · · · · · · · · · · · · · · · · ·
Apparatus: - A system	with	masam and	
-sparation of 18	VOM	Odlogias	6468:0008
program:	100	E) 20	5000 de Fo
ASSUME DS: DATA	cs:	CODE	9 000 : 88F0
17.30 TA	VOIM	0000000	1160:8370
DATA SEGMENT	SOR	EDAC	FIOO Hafo
NUM1 DB 16H	5678H	DOEFUA	9100 : 8910
HEO BO SMUN		0000077	Plos : 82Fo
R1 ODB 14?	AMAL		
Ra DB 7	7014	Delat	076B: 0010
R3 JA [NOO]	VOM	SULULA,	046B: 0016
RY DB ?	- Vana	00000A	0168: 0031
DATA ENDS	VIQ-	Total .	usoo :80F0
CODE SEGMENT		Goraga	076B: 0026
START: MOV AX, DAT	TA A		0468:0059
Mov DS, AX	THE	32.	
MOV AL, NUM1	•	2000	DO:000
MOV BL, NUMZ		EQ 41	- 0000 : AJFO
ADD AL, BL	a ar	10	
MOV R1, AL			
MOV AL, NUM	1		
SUB AL, BL			
			Scanned by CamScann

MOV RQ, AL

MOV AL, NUM1

MUL AL, BL

MOV R3, AL

MOV AL, NUMI

DIV AL, BL

MOV Ry, AL

INT 03H

CODE ENDS

END START

Result!-

The arithmetic operations on two 8-bit numbers has been performed

16-bit -Asithmatic	Operations 24/12/19
Alm: To perform another	natic operation between
two 16-bit numbers uan	g MASM software.
Appartus: A system with	MASM and 80% assembler
programi	60 93 E000 :00F0
ASSUME DS: DATA, CS: CODE	00000A 7000 :8af0
DATA SEGMENT	GUESTAG SAGO:80TO
NA DEN 5678 H	والمالية ودود المعرف
Na DW 9	0408H J000 :8010
Ra DW 149 VOM	00000A 11000 Boro
R3 DW 1/2?	67.68 : 6014 CITCS
RY DW :	ores aloo aloo
	DECORDA PIRO : 8 a FO
CODE SEGIMENT	7357 2100 : A-10
START: MOV AX, DATA	9191 919
Mov DS, AX	
MOV BL, NUM2	0000000 1200 : 8010
ADD ALIBL	0107 Nº00 : 80FO
Mov RJ, AL	OTED : OD SU PACEDO
MOV AL, NA	P\$ 00 : 841-0
SUB - AL, BL	- D DS: CODO CODE
MOV Ra, AL	03 0000 THE FG
Mov AL, Nel	38 3F 0.00
MOL, AL, BL	00 8F

MOV R	3, AL		
DIV	ALI BL		
Mov	RuiAL		JUGIN
INT	D3H		
cope	END5		
END	STARI	E04963	0999: 990
A PACU	Walking .	2433	2009 dato
Result:	4	toad	2000 ; 3 a EQ
	thmetic	operations or	1 16-bit
	been	performed.	7500: 80t0
numbers has	V (I)	LO AS	1000 : 80fc
		103848	4960 : 53F0
July		SAME	AIGO : OUTO
Sulve)	4-	SUS F	Alde . 3 Ibo
		in thank	0 NO 1 0270
	31-1	VI S	Pho: date
	CM.		diod durs
		JY also	34441 Jelio
	- 90	P391	FIDO BAFC
ودو	SKE	AZEF	1500 : doc
		4231	7 £%00 € da. 0
125000	SUIT	SERV	01 00 Boks
	int		الرب دوندا
		2009	JUAN 1 3G C CE
			Loss - Auto

```
Ascending and Descending Order
                                                     3/10/19
             per-form
       70
                       DY
                            arrange given numbers in
Arm?
       incrementing
                                            ordez.
                             decrementing
                        o_{\gamma}
                             MASM software
                      with
           system
program:-
                   DS: DATA,
         ASSUME
                            CS: CODE
        DATA SEGMENT
        LIST
                      ADH, 10H, F9H, 36H, 99H
                DB
              ENDS
        DATA_
               SEGMENT
       cast
       START: MOV . AX, DATA
                    DS, AX .
              MOV
                    CH, 044
              Mov
                    -SIT, LIST
              MOY
                    CL, OYH
SI, UST
AL, [SI]
              MOV
      UP1
              MOU
                     BL, [SI+1]
              MOV
                     AL, BL
             CMP
                      DOWN
              JC
                      DL, [S.II]
             MOV
             XCHA
                      AL, BE, [SI], DL
                      [SI], DL
              Mov
   DOWN
             INC
                      SI
                      CL
              DE C
             JN Z
                      UPA
             DEC
                       CH
                      UP2
CNDS
             INE
             END
                      START
```

```
Ascending
                                Desending
                        and
     16-pit
                                            Order
                                                      31/12/19
       70
            Perform
                            arrange
                                       given
                      OY
After :
                                               numbes in
        incomenting
                            decramenting
                       or
                                          order
                                                 ф
                                                    16-bit.
               system
                         with
Apportus:
         A
                                 MASM
                                         software.
program:
                     CS: CODE , DS: DATA
           ASSUM 6
          DATA
                     SEGMENT
           LIST
                DW
                        ABCDH, 1102H, 1234H, FOOIH, 9999H
          DATA
                 ENDS
                                     F 019
          CODE
                 SEGMENT
                                                   P-000 : dala
                         AX, DATA
         START:
                  MOV
                          DS, AX
                Mov
                         CH, OYH
           UP2!
                  MOV
                  LEA
                         SI, LIST
                 MOV
           UPI :
                         CL, OUH
                 MOV
                         AX, [SI]
                 MOV
                         BY, [SI +2]
               MOV
                                                          A arc
                         AXIBA
                EMP
                                                   ⇒100: dol 0
                         DOWN
                JC
                         DX, [SI+2]
                MOV
                         [SI], DX
                XC 4G
                         [SI+2], DY
                MOV
       DOWN:
                INC
                         SIA
                 INC
                         ECL
                 DEC
                         UPI
                 JNZ
                        CH
                 Dec
                 JNZ
                        UP2
                 INT
                         034
               CODE
                       ENDS
               CND
                        START
```

esult:-

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```
program 3: (descerding order)
           DS: DATA , CS: CODE
 ASSUME
         SEGMENT
 DATA
                  AOH, 10H, F9H, 36H, 99H
 LIST
          DB
         ENDS
DATA
          SEGMENT
CODE
              AX, DATA
        MOV
START:
               DS, AX
       MOV
               CH, OYH
        MOV
               SI , LIST
        MOV
              CL,04H
  UP2 : MOV
                SI, LIS
         LEA
               AL, [SI]
  UPS ;
         MOV
               BL, (SI +1)
         MOV
               AL,BL
        CMP
                DOWN
        JNC
                DL, [SI+4]
        MOV
                 [SI], DL
        XCHG
                 [SI+1],DL
        MOV
 DOWN
         INC
                  SI
         Dec
                 CL
         JNZ
                 Up1
         DEC
                 CH
                  Upa
         FUT
                   03H
         CODE
                 ENDS
         END
                 START
```

DATA SEGMENT LIST DW ABCDH, 1102H, 123UII, FOOH, 9199H DOTA ENDS. CODE SEGMENT START MOV AV, DATA MOV DS, AX UP2: MOV SI, LIST UP1: MOV AX, [SF] MOV AX, [SF] MOV BX, [SI+2] EMP AX, BY JNC DOWN MOV DX, (SI+2) XCHG [SI], DX MOV [SI+1], DX DWN: INC SI INC SI DEC CL JNZ UPI DEC CH JENZ UPI DEC CH JENZ UPI DEC CH JENZ UPI RESULT:—The descending and ascending on 16-bit	program	4:- (des	exending 16 !	sit)		The state of the s
LIST DW ABCDH, 1102H, 123UII, FORH, 9799H DATA ENDS: CODE SCGMENT START: MOV AX, DATA MOV DS, AX UP2: MOV ST, LIST UP1: MOV CL, OHH MOV AX, [SF] MOV BX, [SI+2] EMP AX, BX JNC DOWN MOV DX, (SI+3) XCHG [SI], DX MOV [SI+3], DX MOV ST, LIST EMP AX, BX JNC DOWN MOV DX, (SI+3) XCHG [SI], DX MOV [SI+3], DX DWN: INC SI INC SI DEC CL JNZ UPI DEC CH JOENZ PUP2 INT 03H CODE ENDS END START RESULK: The descending and aexending on 16-bkt	ASSUME	CSIC	code , Ds:	DATA		111111
LIST DW ABCDH, 1102H, 1234H, FORTH, 9799H DOTA ENDS CODE SEGMENT START: MOV AX, DATA MOV DS, AX UP2: MOV SI, LIST UP1: MOV AX, [SF] MOV BX, [SF] MOV BX, [SF] MOV DX, [SF] FMP AX, BY JNC DOWN MOV DX, [SH2] XCHG [SI], DX MOV [SI+2], DX MOV [SI+2], DX DWN; INC SI INC SI DEC CL JNZ UPI DEC CH JENZ UPI DEC CH JENZ UPI TNT 03H CODE ENDS END START Result - The descending and ascending on 16-bit		segr	MENT		mark the defer	
DATE CODE SEGNENT CODE SEGNENT MOV AX, DATA MOV DS, AX UP2: MOV SI, LISI UP1: MOV -AX, [SI] MOV -AX, [SI] MOV BX, [SI+2] FMP AX, BX JNC DOWN MOV DX, [SI+2] XCHQ [SI], DX MOV [SI+1], DX MOV [SI+1], DX DWN: INC SI INC SI DEC CL JNZ UPI DEC CH JENZ UPI INT 03H CODE ENDS END START Result - The descending and ascending on 16-bit		DW	ABCDH,		1234H, FOOH	,9999#
SEGMENT START: MOV AX, DATA MOV DS, AX UPL2: MOV ST, LIST UPL: MOV CL, OUTH MOV AX, [SF] MOV BX, [SI+2] EMP AX, BY JNC DOWN MOU DX, (SI+2) XCHG [SI], DX MOV [SI+2], DX DWN: INC SI INC SI DEC CL JNZ UPL DFC CH JOINE DUPL INT 03H CODE ENDS END START Result: The descending and ascending on 16-15%		ENDS.	MA 30		Sulja	Section 3
MOV DS, AX UPL: MOV DS, AX UPL: MOV SI, LIST UPL: MOV SI, LIST MOV AX, [SF] MOV AX, [SF] MOV BX, [SI+2] EMP AX, BY JNC DOWN MOV DX, [SI+2] XCHG [SI], DX MOV [SI+1], DX DWN: INC SI INC SI DEC CL JNZ UPT DEC CH JZINZ DUPL ZINT 03H CODE ENDS END START RESULT: The descending and ascending on 16-bit	LODE	SEGM	A Park Street			
MOV DS, AX UPS: MOV ST, LIST UPI: MOV CL, OLH MOV AX, (SF) MOV BX, [SI+2] EMP AX, BY JNC DOWN MOV DX, (SI+2) XCHG [SI], DX MOV [SI+2], DX MOV [SI+2], DX DWN: INC SI INC SI DEC CL JNZ UPI DEC CH JOINE DUPS INT 03H CODE ENDS END START RESULT: The descending and ascending on 16-bit	STA PT :	Mov	AX, DATA			
MOV -Ax, [SF] MOV BX, [SI+2] EMP AX, BY JNC DOWN MOV DX, [SI+2] XCHq [SI], DX MOV [SI+2], DX MOV [SI+2], DX INC SI DEC CL JNZ UPI DEC CH JINT 03H CODE ENDE END START Result !- The descending and ascending on 16-bit		Mov	DS, AX			0000 000
MOV -Ax, [SF] MOV BX, [SI+2] EMP AX, BY JNC DOWN MOV DX, [SI+2] XCHq [SI], DX MOV [SI+2], DX MOV [SI+2], DX INC SI DEC CL JNZ UPI DEC CH JINT 03H CODE ENDE END START Result !- The descending and ascending on 16-bit	•	MOV	SI, LIST	wist.	- ustoon	
MOV BX, [SI+2] EMP AX, BY JNC DOWN MOV DX, [SI+2] XCHq [SI], DX MDV [SI+2], DX INC SI DEC CL JNZ UPI DEC CH JINT 03H CODE ENDS END START RESULT:— The descending and ascending on 16-bit	Up1 ;	Mov	the state of the s	-1661 5-		
EMP AX, BY JNC DOWN MOU DX, (St+2) XCHG [ST], DX MDV [ST+2], DX MDV [ST+2], DX DWN; INC SI INC SI DEC CL JNZ UPT DEC CH JZDNZ PUP2 INT 03H CODE ENDE END START RESULT:— The descending and ascending on 16-byt		Mov		5 4	i gi i	
JNC DOWN MOU DX, (St+2) XCHG [ST], DX MOV [ST+2], DX MOV [ST+2], DX INC ST INC ST DEC CL JNZ UPT DEC CH JOINTE DUPD INT 03H CODE ENDS END START Result:— The descending and ascending on 16-byt		MOV	Bx,[s1+2]			
MOV DX, (St+2) XCHG [SI], DX MOV [SI+2], DX MOV [SI+2], DX DOWN: INC SI INC SI DEC CL JNZ UPI DEC CH JOINTE DUP2 INT 03H CODE ENDS END START Result:- The descending and ascending on 16-15/th			district the second		-61dF	
MOV [SI+2], DX MOV [SI+2], DX DOWN: INC SI INC SI DEC CL JNZ UPT DEC CH JOINE DUP2 INT 03H CODE ENDS END START Result:— The descending and accending on 16-byt		JNC	C.1 11/2-	- 1411	T G Nd	
MOV [SI+], DY DOWN: INC SI INC SI DEC CL JNZ OPT DEC CH JOINE DUPL INT 03H CODE ENDS END START Result: The descending and accending on 16-bit		1 3 1	. 1		(godjejje)	100 mile
INC SI INC SI DEC CL JNZ UPI DEC CH JINZ PUPE INT 03H CODE ENDS END START Result:— The descending and accending on 16-bit				· Tell	1505-	
DEC CL void 1913 - 00:401 JNZ UPT. DEC CH JZONZ DUPZ JINT 03H CODE ENDS END START Result:— The descending and ascending on 16-bit				1215	2)	
DEC CL JNZ UPT DEC CH JOINZ DUPR INT 03H CODE ENDS END START Result:— The descending and accending on 16-bit	DOWN '		1994	1015	Aodi	
DEC CH JOINE DUPE JINT 03H CODE ENDS END START Result:— The descending and accending on 16-bit			100			
DEC CH JOINE 100P2 JINT 03H CODE ENDS END START Result:— The descending and ascending on 16-15%				Volum		
JOINT 03H CODE ENDS END START Result:— The descending and ascending on 16-bit		- Lateria	La Alexander	(19)	90 =061d8	
INT 03H CODE ENDS END START Result:- The descending and ascending on 16-bit			145.0	wile.		
Result: The descending and ascending on 16-bit		7 3KL	and the second	141		
Result: The descending and ascending on 16-bit				A STATE OF THE PARTY OF THE PAR		in the Part
the descending and assert					GORAL.	F Daniel
has been performed.	Result	Tirly -		3 4 4		en 16-bit

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```
Searching a number in an array
                                                7/01/2020
Aim: find the given number is available in the array or
             and
                   print the
      not
                                   message.
           pc Lath MASM software.
Apparatus:
program:
          ASSUME CS: CODE, DS: DATA
               SEGMENT
        DATA
                      10H, 26H 30H, 40H, 50H, 60H, 70H
        LIST
               DB
         SRC
               DB
                    46H
              DB > "Number founds"
        MS&1
              DB > "Number Not fourds"
        MSQ2
              ENDS.
        DATA
        CODE
               SEGMENT
        START : MOU AX, DATA
                MOV DS, AX
                LEA SI, LIST
                MOV CL, OTH
         UP: MOV
                  81, [SI]
              MOV AL, SRC
                   ALIBL
             CMP
             JZ , GOT
             INC
                    SI
                    CL
              DEC
              JNZ
                    UP
                     MSG12
             PRINT
             JMP
                    END
        GUT ;
            PRINT
                    MSGII
       END :
              INT
                     03H
                     ENDS
              CODE
                     START
              END
              MACRO MSQ
        PRINT
        MOV
                AH, 09H
```

Dx, MSG LEA 214 INT 034 MIT ENDM array tras Result: number Tearching performed. been

APPORTONISE A SYSTEM WITH MASM and 20% assembles. Apportuse A System with MASM and 20% assembles. Program! ASSUME CS: CODE, DS: DATA DATA SEGMENT NI DB 1234H N2 DB 902H R1 DB? R2 DB? R3 DB? CODE SEGMENT START: MOV AX, DATA MOV BL, NI MOV BL, NI OR AL, BL MOV AL, NII OR AL, BL MOV AL, NUMI
Program! ASSUME CS: CODE, DS: DATA DATA SEGMENT NI DB 1234H N2 DB RORH RI DB? R2 DB? R3 DB? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOV BL, N2 AND AL, BL MOV R1, AL MOV R2, AL MOV R3, AL
Program! ASSUME CS: CODE, DS: DATA DATA SEGMENT NI DB 1234H N2 DB RORH RI DB? R2 DB? R3 DB? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOV BL, N2 AND AL, BL MOV R1, AL MOV R2, AL MOV R3, AL
DATA SEGMENT NI DB 1234H N2 DB RDRH RI DB ? R2 DB ? R3 DB ? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOU DS, AX MOV AL, NI MOV BL, N2 AND AL, BL MOV RI, AL MOV RA, BL MOV RA, BL MOV RA, BL MOV RA, AL
NI DB 1234H N2 DB RDRH RI DB ? R2 DB ? R3 DB ? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOV DS, AX MOV AL, NI MOV BL, NR AND AL, BL MOV AL, NI OR AL, BL MOV RA, AL
N2 DB QDRH R1 DB ? R2 DB ? R3 DB ? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOV DS, AX MOV AL, N1 MOV BL, N2 AND AL, BL MOV AL, BL
R2 DB ? R3 DB ? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOV DS, AX MOV AL, N1 MOV BL, N2 AND AL, BL MOV RI, AL MOV RI, AL MOV RAL, BL MOV RAL, BL MOV RAL, BL
R2 DB ? R3 DB ? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOV DS, AX MOV AL, N1 MOV BL, N2 AND AL, BL MOV RI, AL MOV RI, AL MOV RAL, BL MOV RAL, BL MOV RAL, BL
R3 DB ? DATA ENDS CODE SEGMENT START: MOV AX, DATA MOU DS, AX MOV AL, N1 MOV BL, N2 AND AL, BL MOV RI, AL MOV AL, N1 OR AL, BL MOV RA, AL
DATA ENDS CODE SEGMENT START: MOV AX, DATA MOV DS, AX MOV AL, N1 MOV BL, N2 AND AL, BL MOV RI, AL MOV AL, N1 OR AL, BL MOV RA, AL
CODE SEGIMENT START: MOV AX, DATA MOU DS, AX MOV AL, N1 MOV BL, N2 AND AL, BL MOV RI, AL MOV AL, N1 OR AL, BL MOV RAL, BL
START: MOV AX, DATA MOU DS, AX MOV AL, N1 MOV BL, N2 AND AL, BL MOV RI, AL MOV AL, N1 OR AL, BL MOV RA, AL
MOU DS, AX MOV AL, NI MOV BL, NQ AND AL, BL MOV RI, AL MOV AL, NI OR AL, BL MOV RA, AL
MOV AL, NI MOV BL, NE AND AL, BL MOV RI, AL MOV AL, NI OR AL, BL MOV RAL, BL
MOV BL, N2 AND AL, BL MOV RI, AL MOV AL, N1 OR AL, BL MOV RO, AL
MOV RI, AL MOV AL, NI OR AL, BL MOV RA, AL
MOV RI, AL MOV AL, NI OR AL, BL MOV RD, AL
MOV ALINI OR ALIBL MOV Ra, AL
MOV Ra, AL
MOV Ra, AL
IN IOIT DI MITUTI
NOT AL
Mov R3AL
Mov ALI NUM
YOR AL, BL
LIXIZEN MOV RYIAL
INT DAH
CODE ENDS END START
Result: Logical operations btw 2 numbers have been redomed

5. String Manipulation Instructions. 28/01/2020 Aim: Right hand ALP to perform the reverse of a strang Apparatus: A pc with MASM software program: ASSUME CS: CODE, DS: DATA DATA SEGMENT MSG db 'string Reverse \$ \$-1159 CNT dw REV db ENDS DATA SEGMENT cope AX, DATA MOV START: DS, AX MOV MOV ES, AX CX, CNT MOV CX DEC CX DEC SI,MSG LEA DI , REV LeA SI, CNI LEA CO SI Dec SI DEC AL, [SI] Repeat: MOV Mov [O]], AL 51 Dec OI INC REPEAT LOOP AL, [SI] MOV

[DI], AL

Mov

DI INC MOV DL, 18'

MOV PRINT: AH109H

> DX, REV LeA

alH INT

AH, 4CH MOV EXIT

> HIB INT

ENDS CODE

STAR! END

String Result! Feeformed. Manipulations have been

b) sin: check given string is palindrome or not print the message it given string is palindrome and is not print the message given string is not palindrome. program: ASSUME CS: CODE, DS: DATA ES: EXTRA. DATA SEGMENT STRING DB 'MALAYALAM \$' Msq1 " GIVEN STRING IS PAUNDROME DIB MSG2 "GIVEN STRING IS NOT PALINDRADMES DB PAL DB HOO DATA €NDS PRINT MACRO MSG AH, DGH MOV Dx, MSG LEA INT AIH 03H INT ENDM EXTRA SEGMENT DB 9 DUP (?) BLOCK SEGMENENDS. EXTRA code segment MOV AX, DATA BEGIN: MOV DS, AX AX, EXTRA MOV MOV ES, AX LEA SI , STRING DI, BLOCK +8 LEA CX , 0009 H MOV BLACK: Auto increment (clear Directional CLD 11

CODSB (Load string in bytter).

STD (Stonge)

STOSB (COMPONE)

LOOP BACK

LCA SI, STRING

LEA DI, BLOCK

MOV CX, 0009H

CLD

REPZ CMPSB

JNZ SKIP

PRINT MSG1

SKIP: PRINT MSQ2

CODE ENDS

END BEGIN

Result: - string manipy lations have been performed.

July 1000