U19CS076 MIT ASSIGNMENT 9

Q1. The Given String Is Stored At Memory Location 1000 Onwards:
"Microprocessor And Interface" Ended With '0dh'.
Write 8085 Program To Count Occurrences Of Each Character In Given String.
Output Is Displayed From Memory Location 2000.

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;Question 1 Assignment 09

LXI H,1000H

LOOP: MOV A,M

      CALL ASCII

      MOV A,M

      INX H

      CPI 0DH   ;if reached end

      JNZ LOOP

hlt


ASCII: CPI 41H      ;ASCII OF A=41H    =65

      RC    ;return If exists white space(ASCII=32) so <0  ->carry=1

      SUI 41H

      JMP STORE

RET
```

STORE: LXI D,2000H

MOV E,A

LDAX D

INR A

STAX D

RET

Start	1000h		OK

Address (Hex)	Address	Data
1000	4096	77
1001	4097	105
1002	4098	99
1003	4099	114
1004	4100	111
1005	4101	112
1006	4102	114
1007	4103	111
1008	4104	99
1009	4105	101
100A	4106	115
100B	4107	115
100C	4108	111
100D	4109	114
100E	4110	32
100F	4111	65
1010	4112	110
1011	4113	100
1012	4114	32
1013	4115	73
1014	4116	110
1015	4117	116
1016	4118	101

1017	4119	114
1018	4120	102
1019	4121	97
101A	4122	99
101B	4123	101
101C	4124	13
101D	412E	0

Start   2000h   OK

Address (Hex)	Address	Data
200C	8204	1
200D	8205	0
200E	8206	0
200F	8207	0
2010	8208	0
2011	8209	0
2012	8210	0
2013	8211	0
2014	8212	0
2015	8213	0
2016	8214	0
2017	8215	0

OUTPUT

Start	2000h		OK

Address (Hex)	Address	Data
2000	8192	1
2001	8193	0
2002	8194	0
2003	8195	0
2004	8196	0
2005	8197	0
2006	8198	0
2007	8199	0
2008	8200	1
2009	8201	0
200A	8202	0
200B	8203	0

⚿ Data	⚿ Stack	🔤 KeyPad	Memory	I/O Ports

Start	2000h		OK

Address (Hex)	Address	Data
200C	8204	1
200D	8205	0
200E	8206	0
200F	8207	0
2010	8208	0
2011	8209	0
2012	8210	0
2013	8211	0
2014	8212	0
2015	8213	0
2016	8214	0
2017	8215	0

Start 2000h   OK

Address (Hex)	Address	Data
2018	8216	0
2019	8217	0
201A	8218	0
201B	8219	0
201C	8220	0
201D	8221	0
201E	8222	0
201F	8223	0
2020	8224	1
2021	8225	0
2022	8226	3
2023	8227	1

Start 2000h   OK

Address (Hex)	Address	Data
2024	8228	3
2025	8229	1
2026	8230	0
2027	8231	0
2028	8232	1
2029	8233	0
202A	8234	0
202B	8235	0
202C	8236	0
202D	8237	2
202E	8238	3
202F	8239	1

Address (Hex)	Address	Data
2030	8240	0
2031	8241	4
2032	8242	2
2033	8243	1
2034	8244	0
2035	8245	0
2036	8246	0
2037	8247	0
2038	8248	0
2039	8249	0

Start 2000h   OK

Q2.Write An 8085 Program To Check The Substring From Given String
Example:
Given String:"Hello World"
Substring:"Wor"

;Question 2 assignment 9

LXI H,2000H;string starting location

LDA 2050H ;substring location

MOV B,A

LOOP: Mov A,M   ;check each character of string with 1st character of substring

CMP B

CZ CHECK ;for first character of string call check

MOV A,M

INX H

```
        CPI 0DH;check for end of the string

        JNZ LOOP

HLT

CHECK:  PUSH H

        LXI D,2050H        ;location of substring

REPEAT: LDAX D                ;substring[j]

        CMP M      ;compare each character of substring if exists in Main string

        JNZ NOTEQ              ;if not equal jump

        INX D

        INX H

        LDAX D

        CPI 0DH            ;check for end of substring

        JNZ REPEAT


POP H

XCHG

INX H

INX H

MOV M,E        ;after increating 2 locs after end of sub store string[i] here

INX H

MOV M,D
```

HLT

NOTEQ: POP H;if substring not found return to main function

          RET

;Hello World-72 101 108 108 111 32 87 111 114 108 100 ;0d is 13 denoting end of string

;Wor=87 111 114

INPUT

| Start | 200|0h | | OK |

Address (Hex)	Address	Data
2000	8192	72
2001	8193	101
2002	8194	108
2003	8195	108
2004	8196	111
2005	8197	32
2006	8198	87
2007	8199	111
2008	8200	114
2009	8201	108
200A	8202	100
200B	8203	13

2050	8272	87
2051	8273	111
2052	8274	114
2053	8275	13

OUTPUT

| 2055 | 8277 | 6 |
| 2056 | 8278 | 32 |

32h=20   6h=06   ->2006 location has "Wor" which is right

3) Write An Assembly Language Program In 8085 Microprocessor To Subtract Two 8 Bit BCD Numbers.

;Question 3 Assignment 9

LXI H,3000H ;input stored at 3000H and 3001H

MOV B,M

INX H

MOV C,M

INX H

;subtract B-C

MVI A,99H

SUB C

DAA

ADD B

DAA

JNC COMP ;if no carry i.e -ve number

ADI 01H

DAA

MVI M,00H

INX H

JMP RES

COMP: MOV D,A

MVI A,99H

SUB D

MVI M,01H

INX H

RES: MOV M,A

HLT

<div align="center">**INPUT**</div>

3000	12288	34
3001	12289	83

Num 1= 22 BCD= (0010 0010)binary =34 decimal

Num2= 53 BCD =(0101 0011) binary =83 decimal

<div align="center">OUTPUT</div>

3002	12290	1
3003	12291	49

1 denotes negative number as we did 83-34(decimal) or (53 – 22)BCD we get 31 BCD which is 49 decimal(0011 0001)

Registers			Flag	
A		31	S	0
BC	22	53		
DE	68	00	Z	0
HL	30	03		
PSW	00	00	AC	0
PC	42	22	P	0
SP	FF	FF		
Int-Reg		00	C	0

Q4) Write An Assembly Level Language Program To Convert 8 Bit BCD Number To Its Respective ASCII Code.

;Question 4 Assignment 9

LXI H ,3000H;Memory location of packed BCD numbers

CALL CONVERT

INX H

INX H

```
MOV D,A          ;STORE BIN IN D

;ones and tens digit are in B&C

MOV A,C

ADI 1EH          ;Adding 30(DEC) with digit gives the ASCII

MOV M,A

INX H

MOV A,B

ADI 1EH

MOV M,A

HLT


;convert BCD to Binary

CONVERT: MOV A,M

        ANI 0FH

        MOV C,A          ;Store ones digit in C

        MOV A,M

        ANI 0F0H

        RRC

        RRC

        RRC

        RRC           ;ONE'S DIGIT
```

```
        MOV B,A

        MVI D,09H ;A*=10


LOOP:   ADD B

        DCR D

        JNZ LOOP

        ADD C

        RET
```

Address (Hex)	Address	Data
3000	12288	51

51 DECIMAL=(0011 0011) IN BINARY =33 IN BCD

Address	Address	Data
3002	12290	33
3003	12291	33
3004	12292	0

SINCE 3 ASCII VALUE IS - >33

SO 33 BCD IS 33 33 IN ASCII