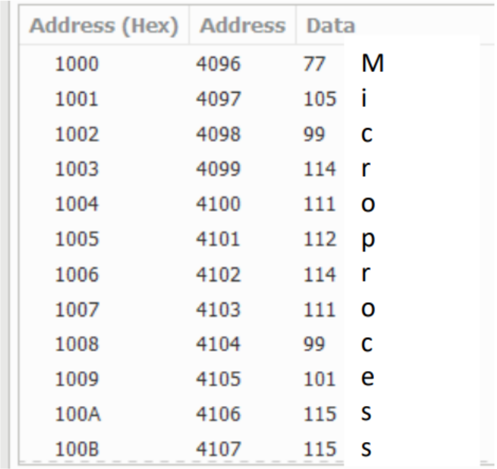
MIT ASSIGNMENT – 9

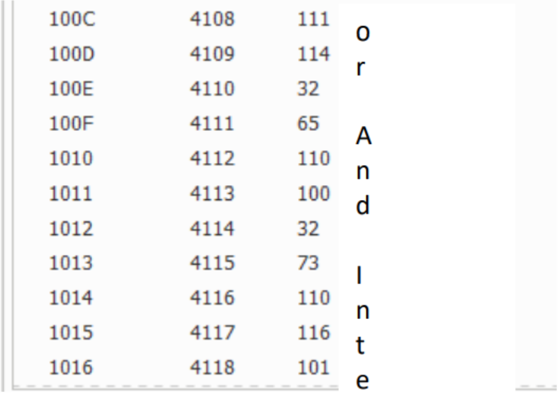
1. **The Given String Is Stored At Memory Location 1000 Onwards:**
   ”Microprocessor And Interface” Ended With ‘0dh’.
   Write 8085 Program To Count Occurrences Of Each Character In Given String. Output Is Displayed From Memory Location 2000.

```
;Program1
LXI H,1000H
LOOP:MOV A,M
CALL ASCII
MOV A,M
INX H
CPI 0DH
JNZ LOOP
hlt

ASCII: CPI 41H   ;ASCII OF A=65 =41H
RC
SUI 41H
JMP STORE
RET

STORE: LXI D,2000H
MOV E,A
LDAX D
INR A
STAX D
RET
```

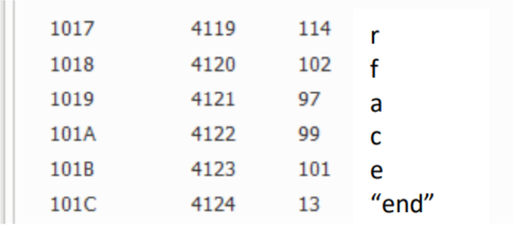
Input:



Address (Hex)	Address	Data	
1000	4096	77	M
1001	4097	105	i
1002	4098	99	c
1003	4099	114	r
1004	4100	111	o
1005	4101	112	p
1006	4102	114	r
1007	4103	111	o
1008	4104	99	c
1009	4105	101	e
100A	4106	115	s
100B	4107	115	s

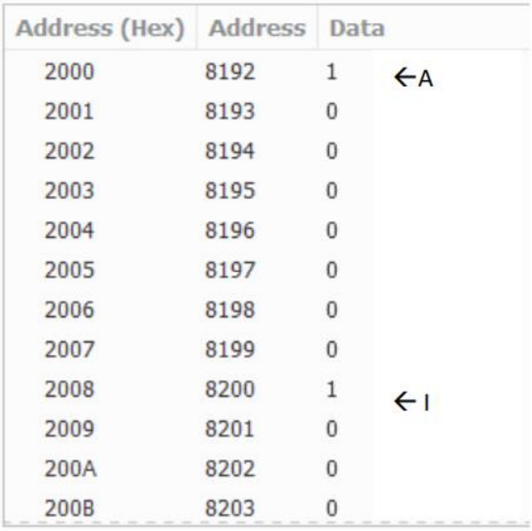


100C	4108	111	o
100D	4109	114	r
100E	4110	32	
100F	4111	65	A
1010	4112	110	n
1011	4113	100	d
1012	4114	32	
1013	4115	73	I
1014	4116	110	n
1015	4117	116	t
1016	4118	101	e

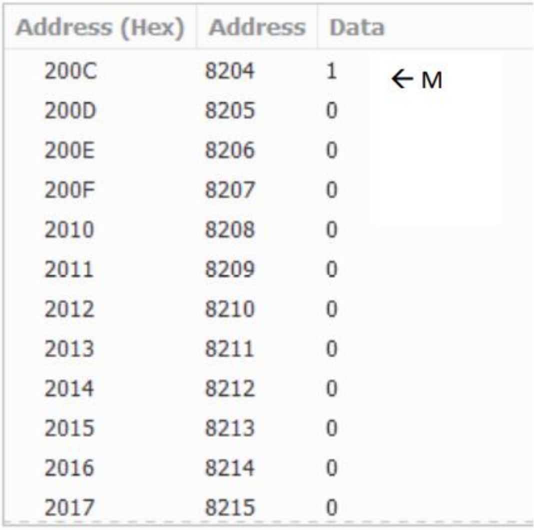


1017	4119	114	r
1018	4120	102	f
1019	4121	97	a
101A	4122	99	c
101B	4123	101	e
101C	4124	13	“end”

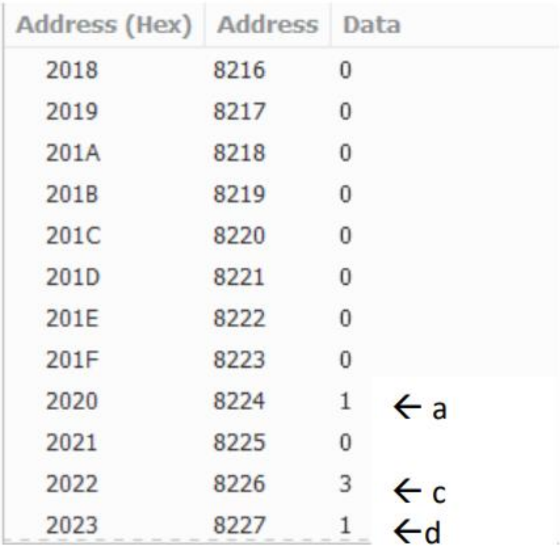
Output:



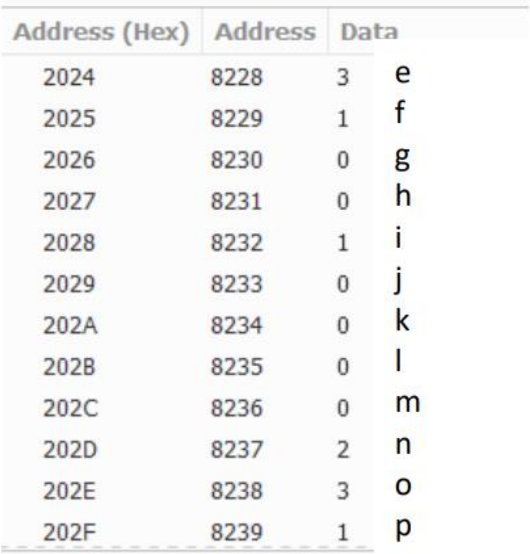
Address (Hex)	Address	Data	
2000	8192	1	←A
2001	8193	0	
2002	8194	0	
2003	8195	0	
2004	8196	0	
2005	8197	0	
2006	8198	0	
2007	8199	0	
2008	8200	1	←I
2009	8201	0	
200A	8202	0	
200B	8203	0	



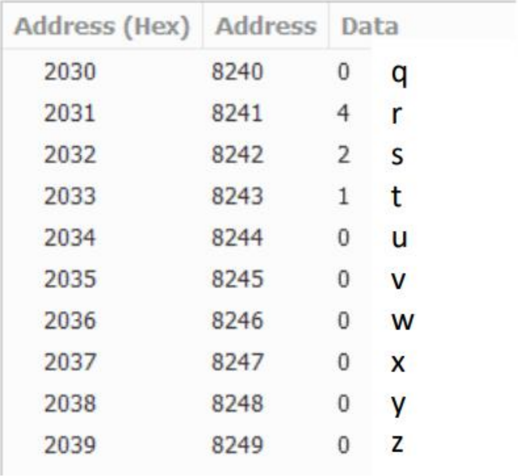
Address (Hex)	Address	Data	
200C	8204	1	←M
200D	8205	0	
200E	8206	0	
200F	8207	0	
2010	8208	0	
2011	8209	0	
2012	8210	0	
2013	8211	0	
2014	8212	0	
2015	8213	0	
2016	8214	0	
2017	8215	0	



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	← a
2021	8225	0	
2022	8226	3	← c
2023	8227	1	←d



Address (Hex)	Address	Data	
2024	8228	3	e
2025	8229	1	f
2026	8230	0	g
2027	8231	0	h
2028	8232	1	i
2029	8233	0	j
202A	8234	0	k
202B	8235	0	l
202C	8236	0	m
202D	8237	2	n
202E	8238	3	o
202F	8239	1	p



Address (Hex)	Address	Data	
2030	8240	0	q
2031	8241	4	r
2032	8242	2	s
2033	8243	1	t
2034	8244	0	u
2035	8245	0	v
2036	8246	0	w
2037	8247	0	x
2038	8248	0	y
2039	8249	0	z

2. **Write An 8085 Program To Check The Substring From Given String**
Example: Given String: “Hello World”
Substring: “Wor”

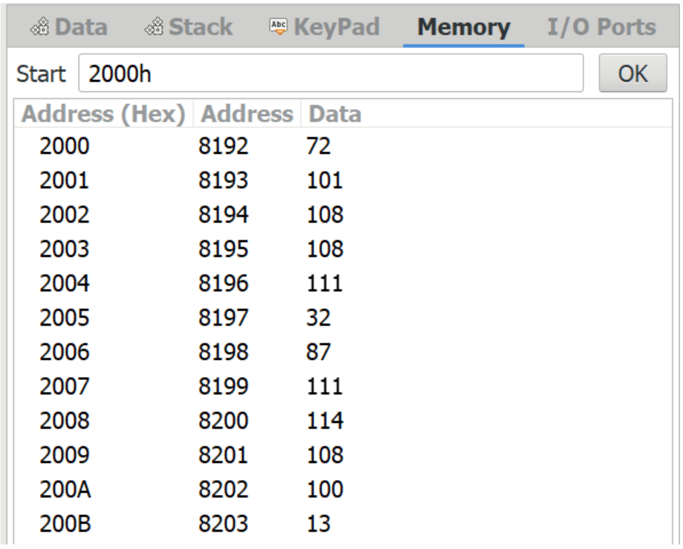
```
;Program2
LXI H,2000H
LDA 3000H
MOV B,A
LOOP: MOV A,M
CMP B
CZ CHECK
MOV A,M
INX H
CPI 0DH
JNZ LOOP
Hlt

CHECK:    PUSH H
LXI D,3000H
```

```
REPEAT:  LDAX D
CMP M
JNZ NOTEQUAL
INX D
INX H
LDAX D
CPI 0DH
JNZ REPEAT
POP H
XCHG
INX H
INX H
MOV M,E
INX H
MOV M,D
HLT

NOTEQUAL: POP H
RET
```

Hello World= 72 101 108 108 111 32 87 111 114 108 100

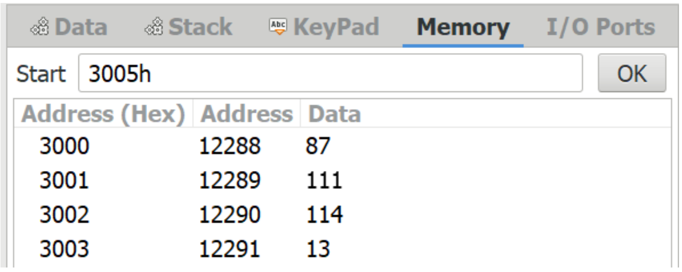
0d=13

Wor = 87 111 114



Start 2000h

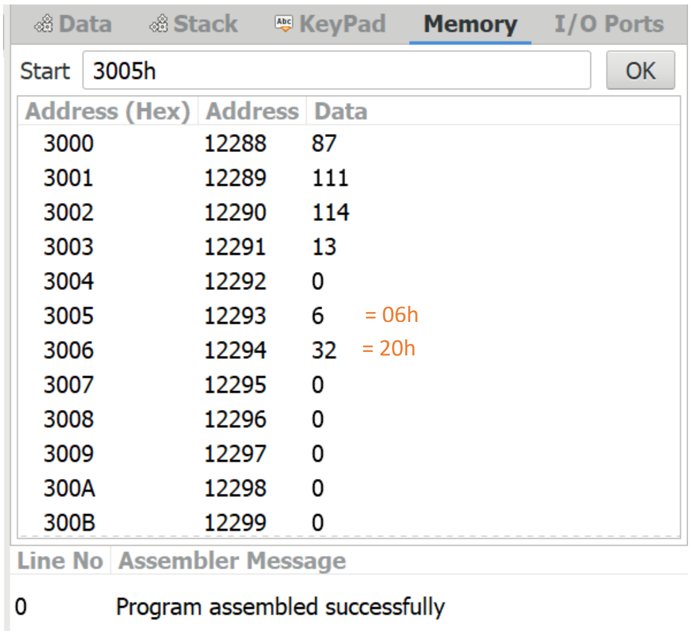
Address (Hex)	Address	Data
2000	8192	72
2001	8193	101
2002	8194	108
2003	8195	108
2004	8196	111
2005	8197	32
2006	8198	87
2007	8199	111
2008	8200	114
2009	8201	108
200A	8202	100
200B	8203	13



Start 3005h

Address (Hex)	Address	Data
3000	12288	87
3001	12289	111
3002	12290	114
3003	12291	13

Output:



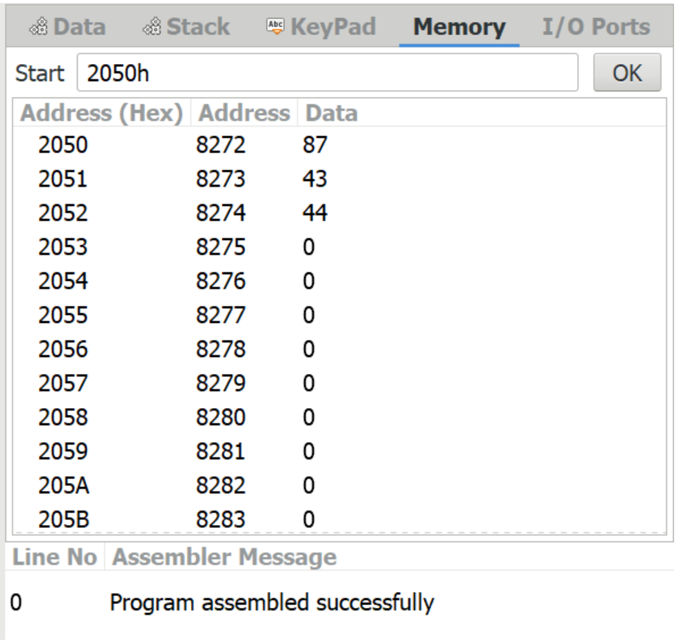
Start 3005h

Address (Hex)	Address	Data
3000	12288	87
3001	12289	111
3002	12290	114
3003	12291	13
3004	12292	0
3005	12293	6 = 06h
3006	12294	32 = 20h
3007	12295	0
3008	12296	0
3009	12297	0
300A	12298	0
300B	12299	0

Line No	Assembler Message
0	Program assembled successfully

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

```
;Program3
lda 2051h
mov b,a
mvi a,99h
sub b
inr a
mov c,a
lda 2050h
add c
daa
sta 2052h
hlt
```



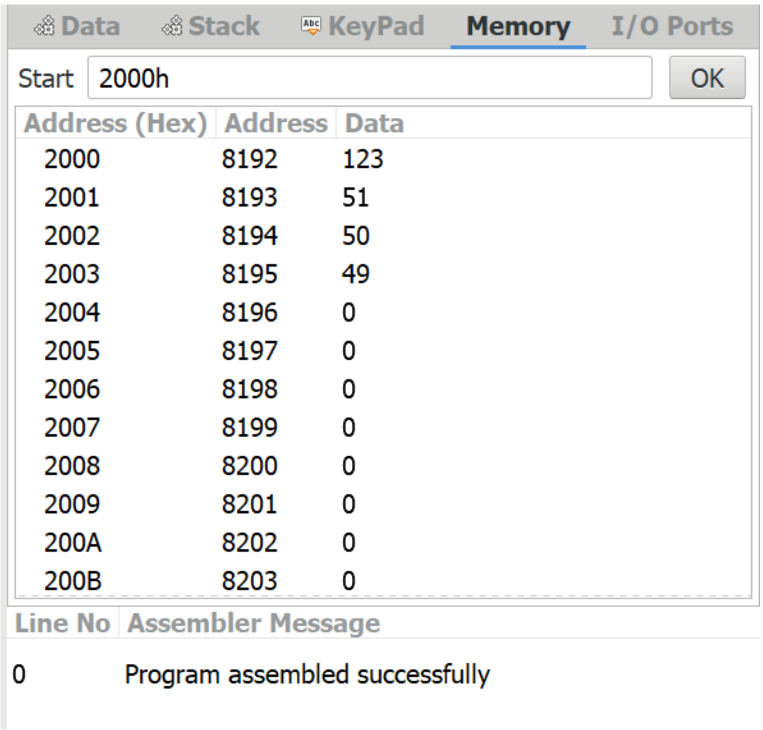
Start 2050h

Address (Hex)	Address	Data
2050	8272	87
2051	8273	43
2052	8274	44
2053	8275	0
2054	8276	0
2055	8277	0
2056	8278	0
2057	8279	0
2058	8280	0
2059	8281	0
205A	8282	0
205B	8283	0

Line No	Assembler Message
0	Program assembled successfully

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

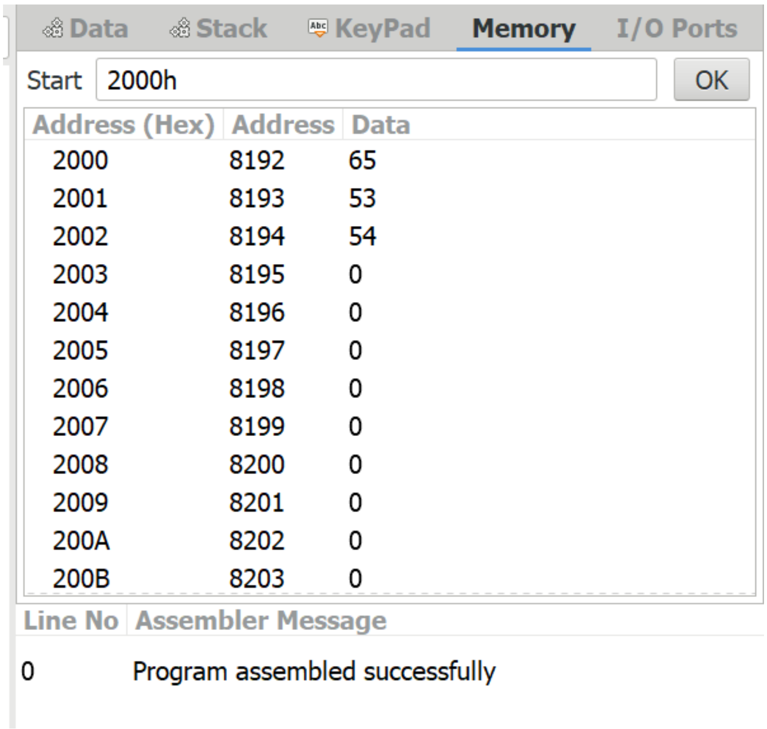
```
;Program4
lda 2000h
mvi b,00h
mvi c,00h
call bintobcd
adi 30h ;add (48)10
sta 2001h
mov a,c
adi 30h ;add (48)10
sta 2002h
mov a,b
adi 30h ;add (48)10
cpi 30h
jz end
sta 2003h
end: hlt

bintobcd: cpi 64h
jc s1
inr b
sui 64h
jmp bintobcd

s1: cpi 0Ah
jc exit
inr c
sui 0Ah
jmp s1
exit: ret
```



Start 2000h

Address (Hex)	Address	Data
2000	8192	123
2001	8193	51
2002	8194	50
2003	8195	49
2004	8196	0
2005	8197	0
2006	8198	0
2007	8199	0
2008	8200	0
2009	8201	0
200A	8202	0
200B	8203	0

Line No	Assembler Message
0	Program assembled successfully



Start 2000h

Address (Hex)	Address	Data
2000	8192	65
2001	8193	53
2002	8194	54
2003	8195	0
2004	8196	0
2005	8197	0
2006	8198	0
2007	8199	0
2008	8200	0
2009	8201	0
200A	8202	0
200B	8203	0

Line No	Assembler Message
0	Program assembled successfully