LAB WORK

OPERATION SYSTEM

ODD SEMESTER

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INFORMATION STUDY PROGRAM

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1. The American Standard Code for Information Exchange or the American Standard Code for Information Interchange (ASCII) is an international standard in letter and symbol codes such as Hex and Unicode but ASCII is more universal. It is always used by computers and other communication tools to show texts.

Character	Unicode Value (hexadecimal)	ANSI ASCII Value (decimal)	Explanation
NUL	0000	0	Null (invisible)
SOH	0001	1	Start of heading (not visible)
STX	0002	2	Start of text (not visible)
ETX	0003	3	End of text (not visible)
EOT	0004	4	End of transmission (not visible)
ENQ	0005	5	Inquiry (not shown)
ACK	0006	6	Acknowledge (invisible)
BEL	0007	7	Bell (invisible)
BS	0008	8	Delete one character behind the cursor (Backspace)
HT	0009	9	Horizontal tabulation
LF	000A	10	Line feeds
VT	000B	11	Vertical tabulation
FF	000C	12	Line change (Form feed)
CR	000D	13	Line change (carriage return)
SO	000E	14	Shift out (not visible)
SI	000F	15	Shift in (not visible)
DLE	0010	16	Data link escape (not visible)
DC1	0011	17	Device control 1 (not visible)
DC2	0012	18	Device control 2 (not visible)
DC3	0013	19	Device control 3 (invisible)
DC4	0014	20	Device control 4 (not visible)
NAK	0015	21	Negative acknowledge
SYN	0016	22	Synchronous idle (not visible)
ETB	0017	23	End of transmission block (invisible)
CAN	0018	24	Cancel (not visible)
EM	0019	25	End of medium (invisible)
SUB	001A	26	Substitute (not visible)
ESC	001B	27	Escape (not visible)
FS	001C	28	File separator

GS	001D	29	Group separator
RS	001E	30	Separator record
US	001F	31	Separator unit
SP	0020	32	Space
!	0021	33	Exclamation mark
“	0022	34	Double quotes
#	0023	35	Hash mark
$	0024	36	Dollar sign
%	0025	37	Percent sign
&	0026	38	The ampersand character (&)
‘	0027	39	Apostrophe Character
(	0028	40	Open parenthesis
)	0029	41	Close parenthesis
*	002A	42	Asterisk (star) character
+	002B	43	Plus sign (plus)
,	002C	44	Comma character
–	002D	45	Hyphen character (strip)
.	002E	46	Dot
/	002F	47	Slash
0	0030	48	Zero number
1	0031	49	Number one
2	0032	50	Number two
3	0033	51	Number three
4	0034	52	Quaternion
5	0035	53	Number five
6	0036	54	Six
7	0037	55	Seven
8	0038	56	Number eight
9	0039	57	Number nine
:	003A	58	Colon
;	003B	59	Semicolon
<	003C	60	Smaller sign
=	003D	61	Sign equal to
>	003E	62	Bigger sign
?	003F	63	Question mark

@	0040	64	A snail (@)
A	0041	65	Latin capital letter A
B	0042	66	Latin capital B
C	0043	67	Latin capital letter C
D	0044	68	Latin capital D
E	0045	69	Latin capital letter E
F	0046	70	Latin capital letter F
G	0047	71	Latin capital G
H	0048	72	Latin capital letter H
I	0049	73	Latin capital letter I
J	004A	74	Latin capital letter J
K	004B	75	Latin capital K
L	004C	76	Latin capital letter L
M	004D	77	Latin capital letter M
N	004E	78	Latin capital letter N
O	004F	79	Latin capital O
P	0050	80	Latin capital P
Q	0051	81	Latin capital Q
R	0052	82	Latin capital R
S	0053	83	Latin capital S
T	0054	84	Latin capital T
U	0055	85	Latin capital letter U
V	0056	86	Latin capital V
W	0057	87	Latin capital letter W
X	0058	88	Latin capital X
Y	0059	89	Latin capital letter Y
Z	005A	90	Latin capital letter Z
[	005B	91	Left bracket
\	005C	92	Backslash
]	005D	93	Right brackets
^	005E	94	Chancellor
_	005F	95	Underscore
`	0060	96	Quotation mark one
a	0061	97	Latin letters a are small
b	0062	98	Latin letter b is small

c	0063	99	Latin capital letter c is small
d	0064	100	Latin letter d small
e	0065	101	Latin letter e is small
f	0066	102	Latin capital letter f small f
g	0067	103	Latin letters g small
h	0068	104	Latin capital letter h is small
i	0069	105	Latin letter i is small
j	006A	106	Latin lowercase j
k	006B	107	Latin capital letter k is small
l	006C	108	Latin letter l is small
m	006D	109	Latin letters m small
n	006E	110	Latin lowercase n
o	006F	111	Latin letters o small
p	0070	112	Latin letter p is small
q	0071	113	Latin letter q is small
r	0072	114	Latin letter r is small
s	0073	115	Latin letters s small
t	0074	116	Latin letter t is small
u	0075	117	Latin letters u are small
v	0076	118	Latin lowercase v
w	0077	119	Latin letter w is small
x	0078	120	Latin x small
y	0079	121	Latin lowercase y
z	007A	122	Latin lowercase z
{	007B	123	The curly braces are open
¦	007C	124	Vertical line (pipe)
}	007D	125	Curly braces closed
~	007E	126	Wave character (tilde)
DEL	007F	127	Delete
	0080	128	Reserved
	0081	129	Reserved
	0082	130	Reserved
	0083	131	Reserved
IND	0084	132	Index
NEL	0085	133	Next line

SSA	0086	134	Start of selected area
ESA	0087	135	End of selected area
	0088	136	Character tabulation set
	0089	137	Character tabulation with justification
	008A	138	Line tabulation set
PLD	008B	139	Partial line down
PLU	008C	140	Partial line up
	008D	141	Reverse line feed
SS2	008E	142	Single shift two
SS3	008F	143	Single shift three
DCS	0090	144	Device control string
PU1	0091	145	Private use one
PU2	0092	146	Private use two
STS	0093	147	Set transmit state
CCH	0094	148	Cancel character
MW	0095	149	Message waiting
	0096	150	Start of guarded area
	0097	151	End of guarded area
	0098	152	Start of string
	0099	153	Reserved
	009A	154	Single character introducer
CSI	009B	155	Control sequence introducer
ST	009C	156	Terminator string
OSC	009D	157	Operating system command
PM	009E	158	Privacy message
APC	009F	158	Application program command
	00A0	160	Spaces that are not word separators
¡	00A1	161	Reverse exclamation mark
¢	00A2	162	Cent Sign (Cent)
£	00A3	163	Pounds Sterling
¤	00A4	164	Currency Sign
¥	00A5	165	Yen Sign
¦	00A6	166	Broken bar
§	00A7	167	Section sign
¨	00A8	168	Diaeresis

©	00A9	169	Copyright mark
ª	00AA	170	Feminine ordinal indicator
«	00AB	171	Left-pointing double angle quotation mark
¬	00AC	172	Not sign
	00AD	173	Dashes (hyphen)
®	00AE	174	Registered brand mark
¯	00AF	175	Macron
°	00B0	176	Degree sign
±	00B1	177	More or less (plus-minus) sign
²	00B2	178	Quadratic (square)
³	00B3	179	Cubic marks (cube)
´	00B4	180	Account accent
µ	00B5	181	Micro sign
¶	00B6	182	Pilcrow sign
·	00B7	183	Middle dot

2. - **Assembly Directive** (the code that directs the assembler / compiler to organize the program)

   - **Instruksi** (the code that must be executed by the microcontroller CPU by performing certain operations according to a list that is already embedded in the CPU)

List of Assembly Directives

Assembly Directive	Information
EQU	Defining constants
DB	Defining data with 1 byte unit size
DW	Defining data with 1 word unit size
DBIT	Defining data with 1 bit unit size
DS	Reserving data storage in RAM
ORG	Initialize the program's start address
END	End of program marker
CSEG	Placement marker in the code segment
XSEG	Placement markers in the external data segment

DSEG	Placement markers in the internal direct data segment
ISEG	Placement markers in the internal indirect data segment
BSEG	Placement marker in the segment data bit
CODE	Markers start defining the program
XDATA	Defining external data
DATA	Defining internal direct data
IDATA	Defining internal indirect data
BIT	Defining data bits
#INCLUDE	Include other program files

List of Instructions

Instructions	**Abbreviation Description**
ACALL	Absolute Call
ADD	Add
ADDC	Add with Carry
AJMP	Absolute Jump
ANL	AND Logic
CJNE	Compare and Jump if Not Equal
CLR	Clear
CPL	Complement
DA	Decimal Adjust
DEC	Decrement
DIV	Divide
DJNZ	Decrement and Jump if Not Zero
INC	Increment
JB	Jump if Bit Set
JBC	Jump if Bit Set and Clear Bit
JC	Jump if Carry Set
JMP	Jump to Address
JNB	Jump if Not Bit Set
JNC	Jump if Carry Not Set
JNZ	Jump if Accumulator Not Zero
JZ	Jump if Accumulator Zero
LCALL	Long Call
LJMP	Long Jump

MOV	Move from Memory
MOVC	Move from Code Memory
MOVX	Move from Extended Memory
MUL	Multiply
NOP	No Operation
ORL	OR Logic
POP	Pop Value From Stack
PUSH	Push Value Onto Stack
RET	Return From Subroutine
RETI	Return From Interrupt
RL	Rotate Left
RLC	Rotate Left through Carry
RR	Rotate Right
RRC	Rotate Right through Carry
SETB	Set Bit
SJMP	Short Jump
SUBB	Subtract With Borrow
SWAP	Swap Nibbles
XCH	Exchange Bytes
XCHD	Exchange Digits
XRL	Exclusive OR Logic

For more details and details:

a. MOV

MOV command is a command to fill, move, update the contents of a register, variable or memory location. The MOV command writing procedure is:

MOV [operand A], [Operand B]

Example :

MOV AH, 02

Operand A is the AH Register

Operand B is number 02

What the computer does for the above command is input 02 into the AH register.

b. INT (Interrupt)

If you have learned BASIC, then surely you are familiar with the GOSUB command. The INT command also works the same way as GOSUB, only the subroutine that is called has been provided by computer memory which consists of 2 types, namely:

- Bios Interrupt (interput provided by BIOS (INT 0 - INT 1F))

- Dos Interrupt (Interrupt provided by DOS (INT 1F - above))

c. Push

Is a command to enter the contents of a register on the stack, with its typing: POP [16-bit operand]

d. Pop

A useful command for extracting the contents of a register / variable from the stack, with the following writing arrangements: POP [16-bit operand]

e. RIP (Register IP)

This command is used to tell the computer to start processing programs from a certain point.

f. A (Assembler)

The Assembler command is useful for writing Assembler programs.

-A100

0FD8: 100

g. RCX (Register CX)

This command is used to find out and update the contents of the CX register which is a long shelter for the currently active program.