

ASSIGNMENT 1: SEQUENCE

1. Write a program to
 - a. Accept a number and print the number in character, decimal, octal and hex formats.
 - b. Accept a character and print the character in character, decimal, octal and hex formats.
2. Write a program to display ASCII values for '\n', '\r', '\t', '\a', '\0'
3. Write a program to display characters \ and %

4. Write a program to accept two numbers and calculate
 - a. Sum of the two numbers.
 - b. Difference of the two numbers.
 - c. Product of the numbers.

Test the program using different integral data type signed/unsigned char/int/long.

First test the result using small values. Then test the same program using large values. Observe the results.

Try input and output in decimal, octal and hex formats.

5. Write a program to accept runs and matches played by player and find players average.
6. Write a program to accept amount and display optimal distribution of notes and coins.

Example:

```
input :
3989.75
output:
3 x 1000.00 = 3000
1 x 500.00 = 0500
4 x 100.00 = 0400
8 x 10.00 = 0080
1 x 5.00 = 0005
2 x 2.00 = 0004
1 x 0.5 = 0000.50
1 x 0.25 = 0000.25
```

7. Write a program to accept an integer value and print its table in the following format

```
Input: 9
Output:
9 x 1 = 9
9 x 2 = 18
9 x 3 = 27
.
9 x 10 = 90
```

8. Write a program to accept a 4 digit number and
 - a. Display face value of each decimal digit in forward order of place.
 - b. Display face value of each decimal digit in reverse order of place.
 - c. Display place value of each decimal digit
 - d. calculate no in reverse order by changing decimal place values
 - e. Write the above code for five digit number

If user enters a 4 digit number **9361** output should be

- a. 1 6 3 9
- b. 9 3 6 1
- c. $9361 = 1 + 60 + 300 + 9000$
- d. 1639

9. Write a program to swap two numbers.
10. Write a program to swap two numbers without using third variable.
11. Write a program to accept a character from user. Assume use enters an alphabet. Set 5th bit of given character and print the character. Observe results.
12. Write a program to accept a character from user. Assume use enters an alphabet. Reset(Clear) 5th bit of given character and print the character. Observe results.
13. Write a program to accept a character from user. Assume use enters an alphabet. Toggle 5th bit of given character and print the character. Observe results.
14. Write a program to accept a character from user. Assume use enters an alphabet. Toggle 5th bit of given character and print the character. Observe results.
15. Write a program to convert a HEX number to BCD number.
16. Write a program to convert a BCD number to HEX number.
17. Write a program to accept a decimal digit (in character format) and calculate numeric equivalent of the char.

```
//var decln
char ch;           //input
int val;           //output

//input data
printf("digit : ");
scanf("%c", &ch);

//process data
val = _____; //fill in the blanks

//display result
printf("val : %d, %o, %x", val, val, val );
```

18. Write a program to accept a decimal digit (in decimal format) and calculate ASCII equivalent of the char.

```
//var decln
int val;           //input
char ch;           //output

//input data
printf("digit : ");
scanf("%d", &val);

//process data
ch = _____; //fill in the blanks

//display result
printf("ch : %c", ch);
```

19. Write a program to accept date from user and store the date in form of a short integer and vice versa.
Use first 5 bits for day. Next 4 bits for month and Last 7 bits to store (year – 1900).

Example: Input: 19 1 1969
 Return Value: 39109
 The bit pattern of the 39109 is
 10011 0001 1000101

 19 1 69

20. Clocks per machine cycle for various 8051 version is as follow

Chip/maker	clocks per machine cycle
AT89C51	12
P89C54X2 PHILIPS	6
DS5000 DALLAS SEMI	4
DS89C420/30/4050	1

Find the period of the machine cycle for various versions of 8051 if XTAL = 11.0592 MHz.

No of machine cycles for various instruction is as follows

Instruction	8051	DSC89C4x0
NOP	1	1
SJMP	2	3
LJMP	2	3
MUL	4	9
DJNZ	2	4
DEC	1	1
MOV	1	2

Calculate time required to execute each of the instructions.

21. Input delay in μs . For 8051 controller Assume XTAL = 11.0592 MHz. Calculate to set value of TMOD register to select TIMER 1 in 16 bit timer mode. Calculate values for TH and TL timer registers to achieve desired delay.
22. Input crystal frequency and desired baud rate. Calculate value of TH1 register(8051) needed to achieve desired baud rate.
23. Calculate value of SCON register (8051) needed for Serial Mode 1, 8-bit data, 1 start bit, 1 stop bit and receive enable.
24. Calculate value of IE (interrupt enable register) of 8051 to enable only Serial port interrupt and external interrupt 1.

25. Write a program to determine the ranges of char, short, int, and long variables, both signed and unsigned, by printing appropriate values from standard headers.

Do not use spaces to align table columns.

(Note: the size and range changes from compiler to compiler)

Data Type	Size	Format	Range
char	1	%c	-128 to +127
unsigned char	1	%c	0 to 255
short int	2	%d	-32768 to +32767
unsigned short int	2	%u	0 to 65535
int	2	%d	-32768 to +32767
unsigned int	2	%u	0 to 65535
long int	4	%ld	-2,147,483,648 to 2,147,483,647
unsigned long int	4	%lu	0 to 4,294,967,295

26. Modify above program to print ranges for float, double, and long double.

ASSIGNMENT 1 SEQUENCE ☺

- Write a program to round a floating point number.