Lab1 description:

Prerequisites:

- Arithmetic operators are already discussed in the lectures.
- “Address of” operator is already discussed in the lecture.
- Logical operators are discussed in the lecture.

Examples objectives:

- Understanding the use input output expressions (scanf and printf).

Assignments:

1- (Final Velocity) Write a program than asks the user to enter the initial velocity and acceleration of an object, and the time that has elapsed, places them in the variables u, a, and t, and prints the final velocity, v, and distance traversed, s, using the following equations.

a) $v = u + at$

b) $s = ut + \frac{1}{2}at^2$

2- Write a program that inputs three different integers from the keyboard, then prints the sum, the average, the product, the smallest and the largest of these numbers. Use only the operators you have learned without if statement. The screen dialogue should appear as follows:

```
Enter three different integers: 13 27 14
Sum is 54
Average is 18
Product is 4914
Smallest is 13
Largest is 27
```

3- Write a program that asks the user to enter the total time elapsed, in seconds, since an event and converts the time to hours, minutes and seconds. The time should be displayed as hours:minutes:seconds. [Hint: Use the remainder operator]

Lab2 description:

Prerequisites:

- All operators are discussed in the lectures.
- All loops and flow control statements are discussed in the lectures.

Examples objective:

- Using bitwise operators to perform bit masking operation.

Assignments:

1- Write a program to perform a generic rotate right and rotate left expression using bit masking. The code shall ask the user to enter an 8 bit number x, number of rotate cycles n and rotate option o. The software shall print the rotate value of x, n times based on the value of o.
2- Write a program that prints the following diamond shape. You may use printf statements that print either a single asterisk (*) or a single blank. Maximize your use of iteration (with nested for statements) and minimize the number of printf statements.

3- The Fibonacci series 0, 1, 1, 2, 3, 5, 8, 13, 21, … begins with the terms 0 and 1 and has the property that each succeeding term is the sum of the two preceding terms. a) Write a code that print the number of series terms after reading it from a user input.

HW assignment1:

Exponential function using tailor series:

- **Without using functions,** you are required to write a code to calculate the exponential function using Taylor series. Your program is required to ask the use to enter the exponent and the number of iteration and then print the exponential result.