Lab 3

(Series , Patterns)

1. Write a function called check-season, it takes a month parameter and returns the season: Autumn, Winter, Spring or Summer.
2. Write a function called calculate\_slope which return the slope of a linear equation
3. Quadratic equation is calculated as follows: ax² + bx + c = 0. Write a function which calculates solution set of a quadratic equation, \_solve\_quadratic\_eqn\_.
4. Declare a function named print\_list. It takes a list as a parameter and it prints out each element of the list.
5. Declare a function named reverse\_list. It takes an array as a parameter and it returns the reverse of the array (use loops).
6. Compute the sum up to n terms in the series  
   1 - 1/2 + 1/3 - 1/4 + 1/5 -... 1/n where n is a positive integer and input by user.
7. Write a program to compute sin x for given x. The user should supply x and a positive integer n. We compute the sine of x using the series and the computation should use all terms in the series up through the term involving xn  
   sin x = x - x3/3! + x5/5! - x7/7! + x9/9! ........
8. Write a program to compute cosine of x. The user should supply x and a positive integer n. We compute the cosine of x using the series and the computation should use all terms in the series up through the term involving xn  
   cos x = 1 - x2/2! + x4/4! - x6/6! ....
9. Print the pattern upto N Lines:

|  |  |  |
| --- | --- | --- |
| .  /\_\ | .  / \  /\_\_\_\ | .  / \  / \  /\_\_\_\_\_\ |
| N=2 | N=3 | N=4 |

1. Print a number as a 8 segment display N Lines:

|  |  |  |
| --- | --- | --- |
| \_  \_|  |\_ | \_  \_|  \_| | |\_|  | |
| N=2 | N=3 | N=4 |

1. Print the pattern upto N lines:

|  |  |  |
| --- | --- | --- |
| 1 2  4 3 | 1 2 3  8 9 4  7 6 5 | 1 2 3 4  12 13 14 5  11 16 15 6  10 9 8 7 |
| N=2 | N=3 | N=4 |

1. Write a python script that displays the following table

1 1 1 1 1

2 1 2 4 8

3 1 3 9 27

4 1 4 16 64

5 1 5 25 125