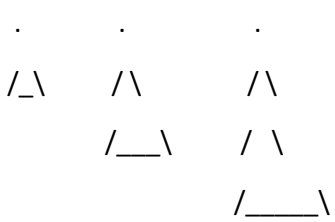
Lab 3

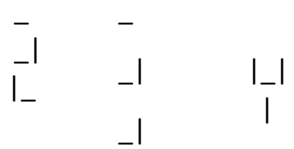
(Series , Patterns)

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: $ax^2 + bx + c = 0$. 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

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



N=2 N=3 N=4

11. Print the pattern upto N lines:

```
1 2          1 2 3          1 2 3 4
4 3          8 9 4          12 13 14 5
             7 6 5          11 16 15 6
                            10 9 8 7
```

N=2 N=3 N=4

12. 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