**Shiv Nadar University, Chennai**

**School of Engineering**

**Department of Computer Science**

CS1802 -- Programming in Python Lab Class: 2024-2028 B. Tech CSE (Cyber)

Date: 28/03/2025 Continuous Lab Evaluation – 7

1. Consider a continuous function *f* and *f(a)* < 0 and *f(b)* > 0 for some known *a* and *b*. Assume *a < b*. Then, there must exist some *c* such that *f(c)* = 0.

(Minimum Order of the function should be 3)

1. Write a function *root (f, a, b)* that takes a function *f* and float values *a* and *b* and returns the root *c*.
2. Reconsider the assumption that *a < b*, and that *f(a) < 0* and *f(b) > 0*, if your code relies on them.
3. Also, add a check point that prints function evaluations have same sign if *f(a) > 0* and *f(b) > 0* or if *f(a) < 0* and *f(b) < 0*.
4. Consider having a list with lists as elements, e.g. [[1,3], [3,6]]. Flatten a list of lists
5. Write a function that takes such a list and returns a list with as elements the elements of the sub lists, e.g. [1, 3, 3, 6].
6. Implement *map* and *filter* for any function and conditions of your choice using list comprehensions on the list obtained from the previous question 2.(i)