

# UNIVERSITY OF CENTRAL PUNJAB

## Faculty of Information Technology & Computer Science

Data Structures & Algorithms (SECP2043)

Assignment No. 3

Spring 2023 (Section P2 & P8)

Submission date: P8: Thursday 15<sup>th</sup> June, 2023, 01:00 pm and P2: Friday 16<sup>th</sup> June, 2023 12:00pm

Submission mode: Submission mode/instructions: Handwritten **A4** sheets individual assignment. Sheets other than **A4** size will not be accepted. Handwritten code should also be roughly indented. READ THE QUESTIONS VERY CAREFULLY. Bring **stapled** assignment from home. Marks will be deducted for stapling and managing assignments in class.

**Q. No. 1:** Write a recursive function to calculate the power of a number along with the driver code that takes input from the user for base and its power to be calculated.

**Q. No. 2:** Write a recursive function to find the sum of all elements in an array along with the driver code that takes input from the user for specified number of array elements to be added.

**Q. No. 3:** Write the c++ complete code for creation of quaternary tree based on user input with following properties:

- a) Each node has at most 4 children, namely child1, child2, child3 and child4.
- b) Implement in recursive manner.

**Q. No. 4:** Write the recursive code to traverse and display the values of quaternary tree created in question no. 3 using following order:

Child 1 → Child 2 → Root → Child 3 → Child 4