**BCSE204P Design and Analysis of Algorithms Lab**

**Practice Questions**

1. Design and implement an algorithm that multiplies two 'n' digit numbers faster than O(n2).
2. Design and implement an algorithm that will find the top and the least scores of students from an online Quiz, using divide and conquer strategy. Note: The scores are stored in an array.
3. Design a solution for an Airline Customer on what to leave behind and what to carry based on cabin baggage weight limits. The Customer has to pack as many items as the limit allows while maximizing the total worth. The data needed will be shared along with the question.
4. Assume you have an unparenthesized arithmetic expression. You can change the value of expression by parenthesizing at different positions. To keep it simple, assume that the expression comprises only + and \* operators and parenthesis occurs only immediately before/after operands and not before/after operators. Write and execute a program that can output the maximum possible value that can be obtained by evaluating the expression by different parenthesizations.
5. Design a solution to see if a content C = PGGA is plagiarized in Text T = SAQSPAPGPGGAS.
6. Solve rat in a maze problem using backtracking.
7. Consider two strings, str1 and str2.  Given that each insertion, deletion and edit operation costs one unit. Write and execute a program to print the minimum edit distance and the minimum cost edit sequence that transforms str1 into str2 by using a suitable algorithm design technique. To simplify things, assume that length(str1) >= length(str2) so that insert operation will not be applicable10.
8. Implement N-Queens problem using backtracking (N will be given in the question).