Assignment Sheet

ODD Semester 2019

B.Tech CSE/IT 5th Semester

Course	Artificial Intelligence Lab
Course Code	15B17CI574

Instructions:

- All students are required to wear uniform else no attendance will be given plus minus 5 marks in disciplinary grade for not wearing uniform.

- Students have to do a mini project apart from the Lab Assignments.

- The evaluative lab assignments must be evaluated as per the given deadline. The total weightage of all day to day work is 60 Marks.

- There will be two lab tests of **20 marks each**. In case a student, who is absent in Lab Test 2 will be considered as Fail in the lab course.

- All students are required to attend at least **80%** labs. 15 marks are reserved for attendance. The evaluative lab assignments must be evaluated as per the given deadline from time to time.

Lab Assignment 7:

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1. **Write a program to implement Traveling Salesman Problem using GA**
2. **Write a program to implement 8 puzzle problem using GA.**
3. **Suppose you are running GAs on bit strings of length 16, in which we want to maximize symmetry: the extent to which the bit string is a mirror image of itself (also known as being a palindrome).**
4. **More formally:**

5. **Score = Number of bits that agree with their mirror image position.**
6. **Examples:**
    a. **Score (1100110110110011) = 16 (this is an example of an optimal bit string)**
    b. **Score (0000000011111111) = 0**
    c. **Score (0100000011111111) = 2**
7. **Suppose you run GA with the following parameter settings:**
    a. **Single-point crossover**
    b. **Mutation rate = 0.01**
    c. **Population size 1000 (with an initial population of randomly generated strings)**
    d. **Stochastic Universal Sampling for selection (i.e. Roulette-wheel style)**
8. **Let N = the number of crossovers performed before an optimal bit string is discovered.**
9. **What is the most likely value of N? (note: we will accept any answer provided it is not less than half the correct value of N and provided it is not greater than twice the correct value of N).**