

## Artificial Intelligence

### Assignment #1

**Due date: 1-12-2023 11:59 pm**

**Total Marks=15**

**Copied assignment will be cancelled**

#### Question No 1: CLO3

Implement 8 Queen Problem in python using Genetic algorithm. Use initial population of 4 chromosomes in which genes will be added using the random function. Implement all step of genetic algorithm to complete this task. Termination criteria will be when the fitness reaches the values of 26. Fitness function will be based on number of non-attacking queens.

#### Pseudocode:

*Pseudo-code:*

- START
  - create the initial population
- Compute fitness
- REPEAT
  - Selection
  - Crossover
  - Mutation
  - Compute fitness
- UNTIL population has converged
- STOP

#### Question No 2: CLO4

Data Set: Please use the following data set for your project.

<https://archive.ics.uci.edu/ml/datasets/iris>

The data set contains 3 classes of 50 instances each, where each class refers to a type of iris plant.

You are required to implement the K-means on the above given data set. Your result will be the clusters, after applying the K Means .Visualize the result.

#### Input:

1. Sepal length in cm
2. Sepal width in cm
3. Petal length in cm
4. Petal width in cm

#### Output:

Predicted attribute: class of iris plant

### Question No 3: CLO2

Data Set: Please use the following data set for your project.

<https://archive.ics.uci.edu/ml/datasets/iris>

The data set contains 3 classes of 50 instances each, where each class refers to a type of iris plant.

Apply Naïve Bayes Theorem. When an input will be given different from the one used in the data set, your code will be predicting about the type of class to which it belongs.

#### Input:

1. Sepal length in cm

4.9

2. Sepal width in cm

3.1

3. Petal length in cm

1.5

4. Petal width in cm

0.2

#### Output:

It belongs to "Iris-setosa"