



## AL 2002 – Artificial Intelligence Lab Assignment 01




**Deadline: June 2<sup>nd</sup>, 2023**

**Weightage: 5**

### Knapsack Problem Using Genetic Algorithm

A poor and hungry person walks by a local shop with empty pockets and a grumbling stomach. However, He notices a sign that reads "Help yourself to our items, we care about the community!" The shop has 10 items, each with a specific weight and price, and a knapsack that can carry up to 35 kgs of weight. The person is faced with the dilemma of making a selection of items that maximizes the value (i.e., total price) without exceeding the knapsack weight. You have to assist the person in making the selection, so they can enjoy a good meal and feel the warmth of community support. Solve the problem using Genetic Algorithm.

#### Sample Visuals:

	7	2	1	9	
	5	4	7	2	
	A	B	C	D	

Max Weight: 15kg

#### Deliverables:

A complete Python program that implements the genetic algorithm to solve the knapsack problem. The code should be well-documented and include comments explaining each step of the algorithm.