Beihang University
School of General Engineering

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Wei Lin and Yida Ding

Data Management and Artificial Intelligence
Homework 12

Task 1 ***GA:01-knapsack problem*** *Implement a solution procedure for the 01-knapsack problem. (The data is given in "Data for Lab2".)*

1. Implement an initialization function, which generates samples of a random population (=random selection of goods).

2. Implement a fitness function, based on the total value and the total weight. Not that if the total weight is larger than the capacity of the knapsack, then it is not a legal solution.

3. Implement a mutation function which modifies the strategy for selection of goods.

4. Implement a cross-over function which generates a new offspring, based on two parents.

5. Implement an overall algorithm. For the selection of parents, you can use the Roulette Wheel approach from the lecture.

6. Compare your current results to your previous results in Lab2.