# **Report for Assignment 2**

1. The chromosome in the initial population is a list that contains either a 0 or 1

to represent whether there is or there is not an object in the delivery vehicle.

1. The fitness function used is if the total weight is less than or equal to the target capacity,

then the fitness value is set to the total value, otherwise the fitness value

is set to 0 because the value is invalid. The better the fitness value the better it is.

1. Tournament selection is used. 20 random chromosomes are chosen randomly from

the population. These 20 chromosomes are sorted in according to their fitness values in descending order. The top two are chosen and are returned as the two parents.

1. The mutation operator goes through each gene and generates a random decimal

between 0 and 1. If the random decimal is less than the mutation rate then

the gene at that location is replaced with a randomly chosen 0 or 1.

1. The crossover operator chooses a random decimal between 0 and 1. If the

random decimal is less than the crossover rate, then crossover will occur

as follows:

* A random crossover point on the genes is chosen. All the

genes before the crossover point are inherited from the first parent and after

the crossover point the genes are inherited from the second parent which forms

a new child chromosome which is added to the population as a new person.

* The crossover rate chosen is 80%;

1. The termination criterion is a solution is found or when the maximum number of generations has been reached.