$$Max \sum_{i \in M} \sum_{k \in N} R_k Y_{ik}$$

$$s.t. R_k \leq (O_{k5} - O_{k4}) H_{O_{k2}}, k \in N$$

$$\sum_{j \in N_0, j \neq k} \sum_{i \in M} X_{ijk} = 1, k \in N,$$

$$\sum_{k \in N, k \neq j} \sum_{i \in M} x_{ijk} = 1, j \in N,$$

$$\sum_{k \in N_0, k \neq j} X_{ijk} = \sum_{h \in N_0, h \neq j} x_{ihj}, j \in N, i \in M,$$

$$S_{ijk} \geq D_{O_{j3} O_{k2}} \times X_{ijk}, j \in N, k \in N, j \neq k, i \in M$$

$$S_{i0k} \geq D_{A_{i2} O_{k2}} X_{i0k}, k \in N, i \in M$$

$$O_{k5} - O_{j5} + V(1 - x_{ijk}) \geq S_{ijk} + (O_{k5} - O_{k4}) Y_{ik}, j \in N_0, k \in N, j \neq k, i \in M$$

$$\sum_{i \in M} Y_{ik} \leq 1, k \in N,$$

$$\sum_{j \in N} X_{ioj} \leq 1, i \in M,$$

$$O_{05} = T,$$

$$\sum_{i \in M} \sum_{k \in N} \sum_{j \in N_0, j \neq k} Sijk \leq B,$$

$$0 \leq Y_{ki} (A_{i1} - O_{k2}), k \in N, i \in M$$

$$Y_{ki} (A_{i1} - O_{k2}) \leq 1, k \in N, i \in M$$

1 Variable explanation

R_k :The amount of money that can be earned from this order
Y_ik : If Y_ik equals 1, it means that the order k is accepted, otherwise it's 0
o_{k5}: Return time for the order k
o_{k4}: Pick-up time for the order k
$H_{o_{k2}}$: the hour rate of the order k
x_{ijk}: 1 if order k is processed directly after order j on car i
s_{ijk}: The time required to move car i from the return station of order j to the pick-up station of order k.
o_{j3}: the return station of order j
o_{k2}: the pick up station of order k
$D_{o_{j3}o_{k2}}$: the distance between the return station of order j and the pick up station of order k
c_j: Completion time of order j
V: A large positive number.
C_0: the completion time of order 0
B: the total amount of time spent on moving all cars cannot exceed a predetermined number B minutes
A_{i1}: the level of car i
T: The closest pick-up time minus the maximum distance
N: set of orders to schedule
M: set of cars
N_0:Set of orders to schedule with an additional dummy node (indexed by 0)