
Algorithm 1: Ant Solution

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1 Function antSolution( $V = \{D, C\}, K, \tau, \alpha, \beta$ )
2    $V_{free} = C$ ;
3   while  $V_{free} \neq \emptyset$  do
4      $vt \leftarrow \text{selectVehicleType}(V_{free}, K, \tau)$ 
5      $d \leftarrow \text{selectDepot}(vt, V_{free}, K, \tau)$ 
6      $v \leftarrow \text{selectVehicle}(vt, d, V_{free}, K, \tau)$ 
7      $pos \leftarrow$  vehicle's position
8      $k \leftarrow \text{selectCluster}(vt, d, v, pos, v_{free}, K, \tau, \alpha, \beta)$ 
9      $V_{candidates} \leftarrow V_{free} \cap K_k^{(pos)}$ 
10     $c \leftarrow \text{selectCustomer}(vt, d, pos, V_{candidates}, \tau, \alpha, \beta)$ 
11    if  $v_{load} < c^{(demand)}$  then
12       $R_d^{(vt)} = R_d^{(vt)} + \{d\}$ 
13       $q_v = vt_{capacity}$ 
14     $R_d^{vt} = R_d^{vt} + \{c\}$ 
15     $v_{load} = v_{load} - c^{(demand)}$ 
16     $V_{free} \leftarrow V_{free} - \{c\}$ 
17    if  $vt = drone$  then
18       $R_d^{vt} = R_d^{vt} + \{d\}$ 
19       $q_v = drone_{capacity}$ 
20  foreach  $d \in D$  and  $vt \in VT$  do //Vehicles return to their depots
21     $R_d^{vt} = R_d^{vt} + \{d\}$ 
22  return  $R = \{R_1^1, R_2^1, \dots, R_2^3, R_3^3, R_D^{VT}\}$ 
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