1: **function** SEMI-RANGE-JOIN (indoor index $\mathcal{T}_Q$, indoor index $\mathcal{T}_O$, distance $\epsilon$)

2:   result set $R$; candidate partition set $C$;
                                  ▷ Global variables

3:   Semi-range-Filtering($\mathcal{T}_Q$, $T_O$, $\epsilon$);
                         ▷ Phase 1: filtering

4:   **for** each partition $Q^P \in C$ **do**

5:     Cand $\leftarrow \emptyset$   ▷ Cand is a set for candidate join pairs

6:     $\langle R^O, R^P \rangle \leftarrow$ RangeSearch($Q^P, \epsilon + Q^P \cdot r_{max}, T_O$);

7:     ▷ $R^O$ is a set of objects in $\mathbb{O}$; $R^P$ is a set of partitions;

8:     Dijkstra($R^P$);    ▷ Phase 2: subgraph

9:     **for** each object pair $\langle Q, O \rangle_{Q \in Q^P, O \in R^O}$ **do**

10:       $[\langle Q, O \rangle . l, \langle Q, O \rangle . u] \leftarrow [|Q, O|_{minI}, |Q, O|_{maxI}]$; (Table 2)

11:                                     ▷ Phase 3: pruning