BnB algorithm for QWSRM problem

Input: $\mathcal{Q}_{\text{init}}, \mathcal{A}$, and$\{$(c).

Initialize: Obtain c_i by solving $\frac{\delta f(c)}{\delta c_i} = 0,$ for $i \in \mathcal{N}$. Set $k = 1, \mathcal{B} = \mathcal{Q}_{init}, u_1 = \gamma_{ub}(\mathcal{Q}_{init})$ and $l_1 = \gamma_{lb}(\mathcal{Q}_{init})$.

Check the feasibility of problem (17) with given

if feasible **then**

$c_0 = \widetilde{c}$;

else

while $u_k - l_k > \epsilon$ **do**

Branching:

- Set $\mathcal{Q}_k = \mathcal{Q},$ where $\mathcal{Q}$ satisfies $\gamma_{lb}(\mathcal{Q}) = l_k$.
- Split $\mathcal{Q}$ into $\mathcal{Q}_{\text{I}}$ and $\mathcal{Q}_{\text{II}},$ along one of its longest edges.
- Update $\mathcal{B}_{k+1} = (\mathcal{B}_k \setminus \{\mathcal{Q}_k\}) \bigcup (\mathcal{Q}_{\text{I}}, \mathcal{Q}_{\text{II}})$.

Bounding:

- Update $u_{k+1} = \min_{\mathcal{Q} \in \mathcal{B}_{k+1}} \{\gamma_{ub}(\mathcal{Q})\}$
- Update $l_{k+1} = \min_{\mathcal{Q} \in \mathcal{B}_{k+1}} \{\gamma_{lb}(\mathcal{Q})\}$

end while

Set $c_0 = c_{min}$;

end if

Output: c_0.