**Algorithm 1** CDS with betweenness centrality

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**Require:** A connected graph $G(V, E)$
  $d \leftarrow \{v : bw(v)\}, v \in V$, sort by BW on ascending order
  $V' \leftarrow \varnothing$, connected dominating sets
  **for all** $v : bw(v), v \notin V'$ **do**
    **if** $bw(v) = 0$ OR $G(V - \{v\})$ is connected **then**
      $V' \leftarrow V' \cup MAX - BW(N(v))$
    **else**
      $V' \leftarrow V' \cup \{v\}$
    **end if**
    $V \leftarrow V - \{v\}$
  **end for**

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