NEIGHBOR-NET($X$, $d$)

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Input: A finite non-empty set $X$ and a distance function $d$ on $X$
Output: A circular split weight function $\omega$

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1. $\mathfrak{C} = \{\{x\} \mid x \in X\}$ //initial set of clusters
2. $\Theta$ = FINDORDERING($\mathfrak{C}$, $d$)
3. $\omega$ = ESTIMATESPLITWEIGHTS($X$, $d$, $\Theta$)
4. **return** $\omega$

FINDORDERING($\mathfrak{C}$, $d$)

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Input: A collection $\mathfrak{C}$ of ordered clusters and a distance function $d$
Output: An ordering $\Theta$ of the elements in $\cup_{C \in \mathfrak{C}} C$

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1. $Y = \cup_{C \in \mathfrak{C}} C$
2. $m = |\mathfrak{C}|$
3. $n = |Y|$
4. **if** $n \leq 3$ //base case
5. **return** an ordering $\Theta$ of $Y$ that is compatible with $\mathfrak{C}$.
6. **else if** there exists $C \in \mathfrak{C}$ with $k = |C| \geq 3$ //reduction case
7. Select $x = c_1$, $y = c_2$ and $z = c_3$ from $C$ with $\Theta_C = c_1, \ldots, c_k$.
8. Create two new elements $u, v$ not contained in $Y$.
9. $C' = (C \setminus \{x, y, z\}) \cup \{u, v\}$
10. $\Theta_{C'} = u, v, c_4, \ldots, c_k$
11. $\mathfrak{C}' = (\mathfrak{C} \setminus \{C\}) \cup \{C'\}$
12. Compute distance function $d'$ on $Y' = \cup_{C \in \mathfrak{C}'} C$ according to (1).
13. $\Theta'$ = FINDORDERING($\mathfrak{C}'$, $d'$)
14. Compute an ordering $\Theta$ of $Y$ according to (2).
15. **return** $\Theta$
16. **else** //selection case
17. Select two clusters $C_1, C_2 \in \mathfrak{C}$ that minimize (3).
18. $C' = C_1 \cup C_2$
19. Compute ordering $\Theta_{C'}$ using (4).
20. $\mathfrak{C}' = (\mathfrak{C} \setminus \{C_1, C_2\}) \cup \{C'\}$
21. $\Theta$ = FINDORDERING($\mathfrak{C}'$, $d$)
22. **return** $\Theta$