Input: Two matroids $(E, \mathcal{F}_1), (E, \mathcal{F}_2)$ given by independence oracles. Weights $c : E \to \mathbb{R}$.
Output: A set $X \in \mathcal{F}_1 \cap \mathcal{F}_2$ whose weight $c(X)$ is maximum.

1. Set $k := 0$ and $X_0 := \emptyset$. Set $c_1(e) := c(e)$ and $c_2(e) := 0$ for all $e \in E$.

2. For each $y \in E \setminus X_k$ and $i \in \{1, 2\}$ compute
$$C_i(X_k, y) := \{x \in X_k \cup \{y\} : X_k \cup \{y\} \notin \mathcal{F}_i, (X_k \cup \{y\}) \setminus \{x\} \in \mathcal{F}_i\}$$

3. Compute
$$\begin{aligned} A^{(1)} &:= \{(x, y) : y \in E \setminus X_k, x \in C_1(X_k, y) \setminus \{y\}\} \\ A^{(2)} &:= \{(y, x) : y \in E \setminus X_k, x \in C_2(X_k, y) \setminus \{y\}\} \\ S &:= \{y \in E \setminus X_k : X_k \cup \{y\} \in \mathcal{F}_1\} \\ T &:= \{y \in E \setminus X_k : X_k \cup \{y\} \in \mathcal{F}_2\} \end{aligned}$$

4. Compute
$$\begin{aligned} m_1 &:= \max\{c_1(y) : y \in S\} \\ m_2 &:= \max\{c_2(y) : y \in T\} \\ \bar{S} &:= \{y \in S : c_1(y) = m_1\} \\ \bar{T} &:= \{y \in T : c_2(y) = m_2\} \\ \bar{A}^{(1)} &:= \{(x, y) \in A^{(1)} : c_1(x) = c_1(y)\} \\ \bar{A}^{(2)} &:= \{(y, x) \in A^{(2)} : c_2(x) = c_2(y)\} \\ \bar{G} &:= (E, \bar{A}^{(1)} \cup \bar{A}^{(2)}) \end{aligned}$$

5. Apply BFS to compute the set R of vertices reachable from $\bar{S}$ in $\bar{G}$.

6. If $R \cap \bar{T} \neq \emptyset$, then find an $\bar{S} - \bar{T}$ path P in $\bar{G}$ with a minimum number of edges, set $X_{k+1} := X_k \triangle V(P)$ and $k := k + 1$ and go to 2.

7. Compute
$$\begin{aligned} \varepsilon_1 &:= \min\{c_1(x) - c_1(y) : (x, y) \in \delta^+_{A^{(1)}}(R)\} \\ \varepsilon_2 &:= \min\{c_2(x) - c_2(y) : (y, x) \in \delta^+_{A^{(2)}}(R)\} \\ \varepsilon_3 &:= \min\{m_1 - c_1(y) : y \in S \setminus R\} \\ \varepsilon_4 &:= \min\{m_2 - c_2(y) : y \in T \cap R\} \\ \varepsilon &:= \min\{\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4\} \end{aligned}$$
where $\min \emptyset := \infty$.

8. If $\varepsilon < \infty$ then set $c_1(x) := c_1(x) - \varepsilon$ and $c_2(x) := c_2(x) + \varepsilon$ for all $x \in R$ and go to 4. If $\varepsilon = \infty$, then among $X_0, X_1, \ldots, X_k$, let X be the one with maximum weight. Stop and output X.