maximize:f(A)

subject to:

$$f(A) = \min_{A_{i1,j1}=A_{i2,j2}} \{\sqrt{(i2-i1)^2+(j2-j1)^2}\},$$

$A \in R^{m\times n}$, $A_{i,j} \in \{0,1,2,3...47\}$

$$f(A) = \begin{cases} +\infty, & S(A) = \emptyset \\ \min\limits_{(P_1,P_2)\in S(A)} D(P_1,P_2), & S(A) \neq \emptyset \end{cases}$$

$S(A) = \{(P_1,P_2) \mid M(P_1) = M(P_2), P_1 \in A, P_2 \in A\}$

$$f(A) = \begin{cases} +\infty, & S(A) = \emptyset \\ \min\limits_{(P_1,P_2)\in S(A)} D(P_1,P_2), & S(A) \neq \emptyset \end{cases}$$

$S(A) = \{(P_1,P_2) \mid A(P_1) = A(P_2) \neq -1\}$