

Les algorithmes de type « Sweep Line »

José Vander Meulen

30 novembre 2017

<https://www.codechef.com/LTIME43/problems/FLYMODE>

[Login](#)[Forgot Password](#)

► PRACTICE ► COMPETE ► DISCUSS | ► COMMUNITY

[Home](#) » [Compete](#) » [December Lunchtime 2016](#) » Fly height mode

Fly height mode | Problem Code: FLYMODE

[Tweet](#)[Like](#)[Share](#)

5 people like this. [Sign Up](#) to see what your friends like.

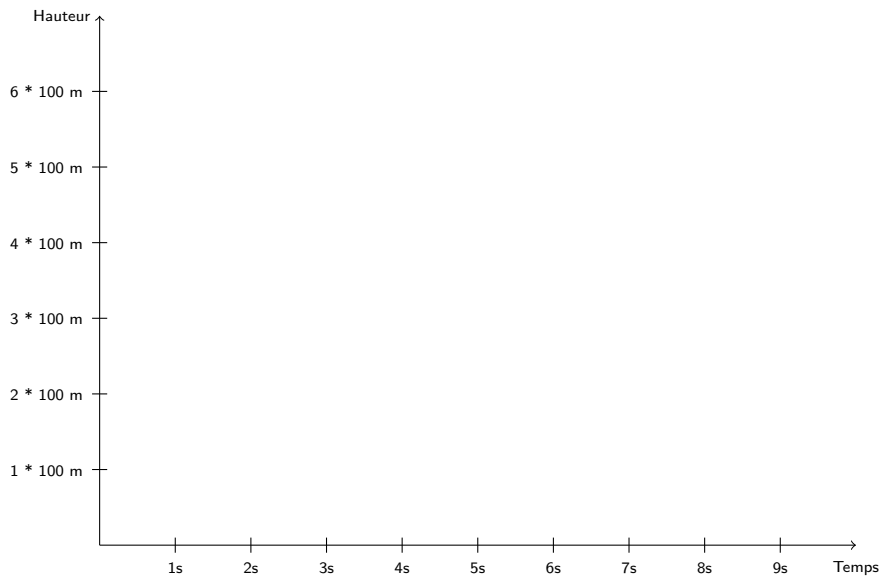
All submissions for this problem are available.

Read problems statements in [Mandarin Chinese](#), [Russian](#) and [Vietnamese](#) as well.

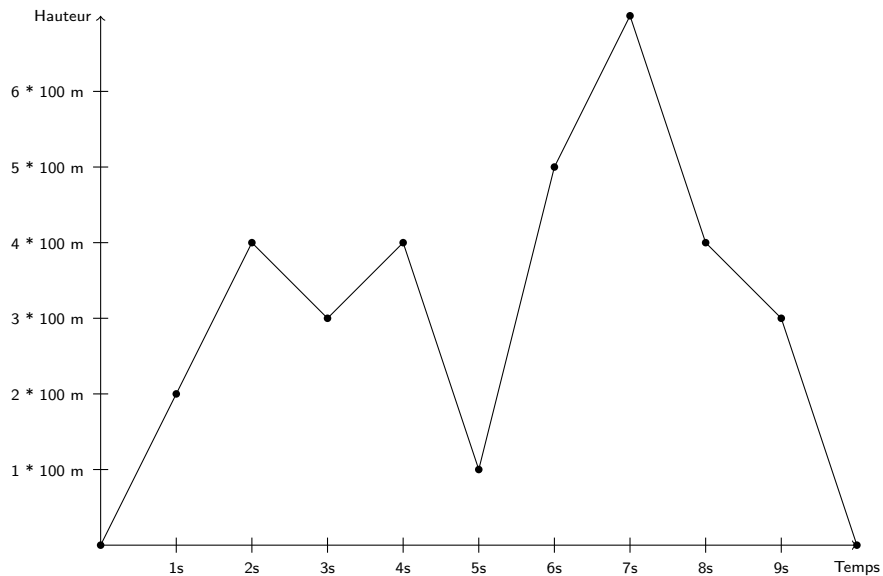
You like tracking airplane flights a lot. Specifically, you maintain history of an airplane's flight at several instants and record them in your notebook. Today, you have recorded N such records h_1, h_2, \dots, h_N , denoting the heights of some airplane at several instants. These records mean that airplane was first flying on height h_1 , then started changing its height to h_2 , then from h_2 to h_3 and so on. The airplanes are usually on cruise control while descending or ascending, so you can assume that plane will smoothly increase/decrease its height from h_i to h_{i+1} with a constant speed. You can see that during this period, the airplane will cover all possible heights in the range $[\min(h_i, h_{i+1}), \max(h_i, h_{i+1})]$ (both inclusive). It is easy to see that the plane will be at all possible heights in the range exactly a single instant of time during this ascend/descend.

[All Submissions](#)[Successful Submissions](#)

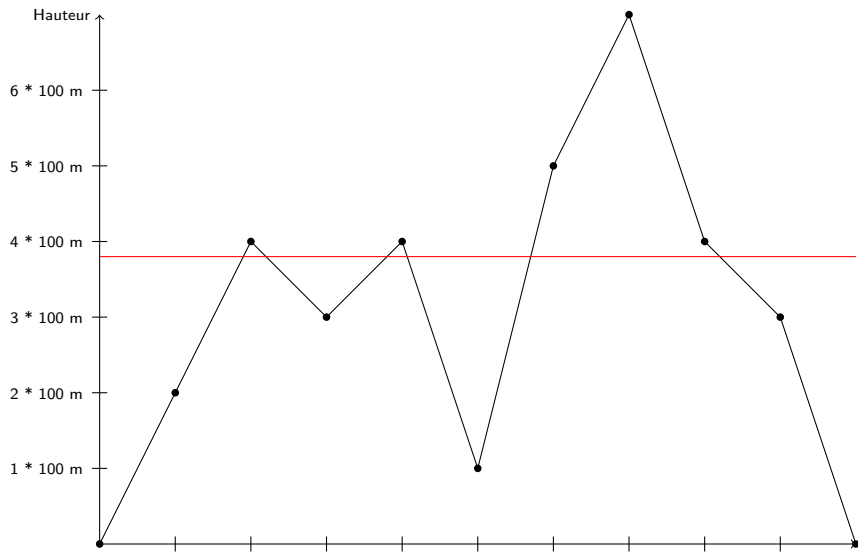
Données

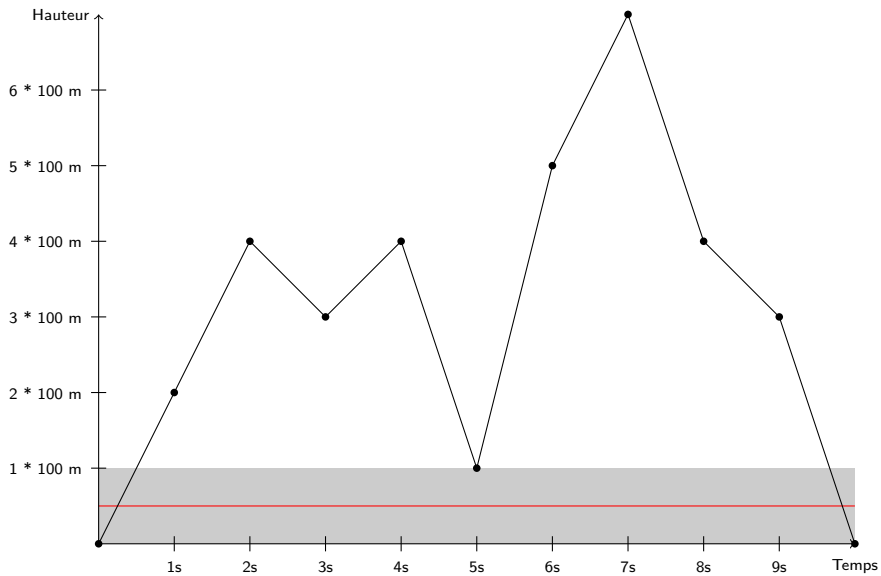


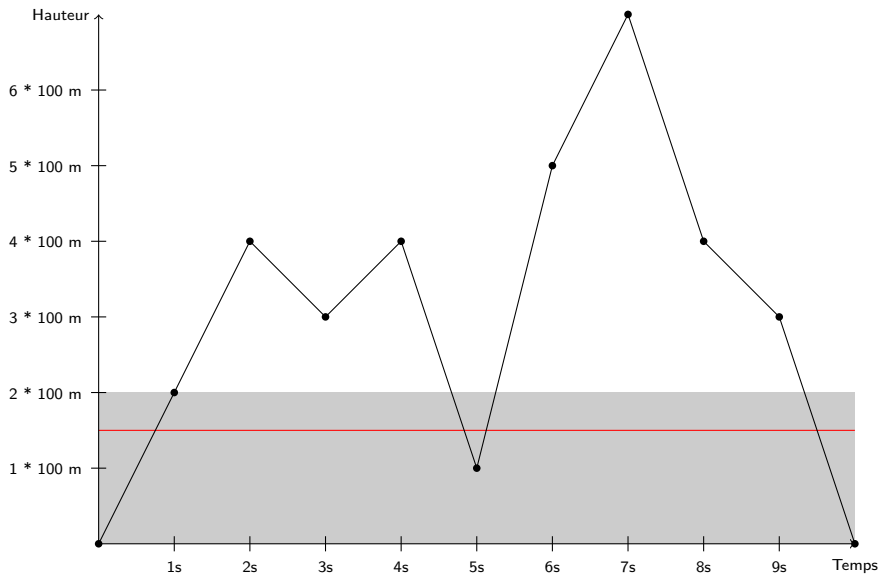
Données

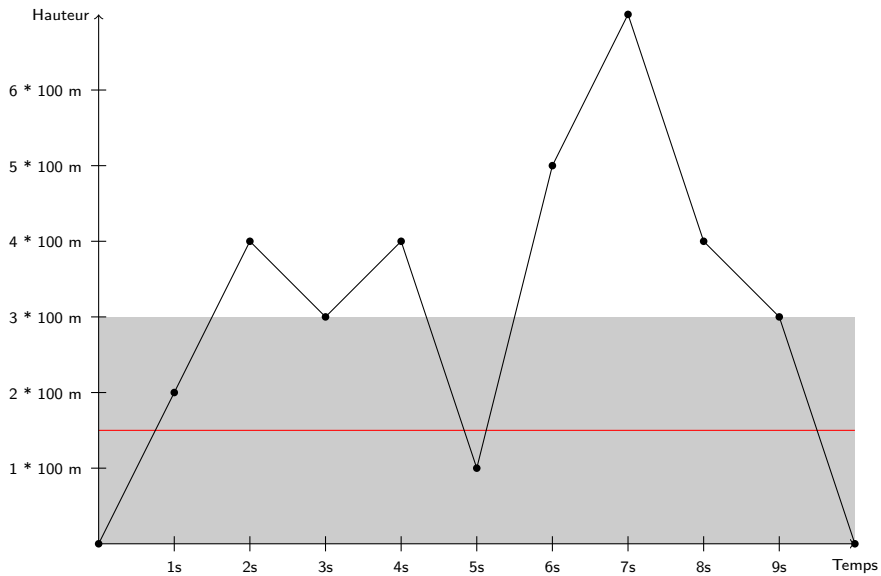


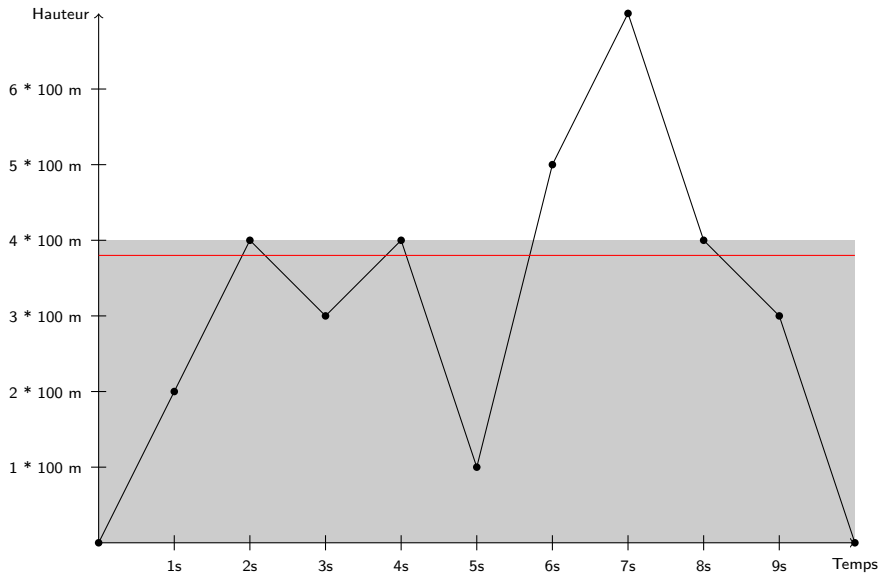
Soit H une des hauteurs par laquelle on est le plus passé,
trouver le nombre de fois qu'on est passé par H

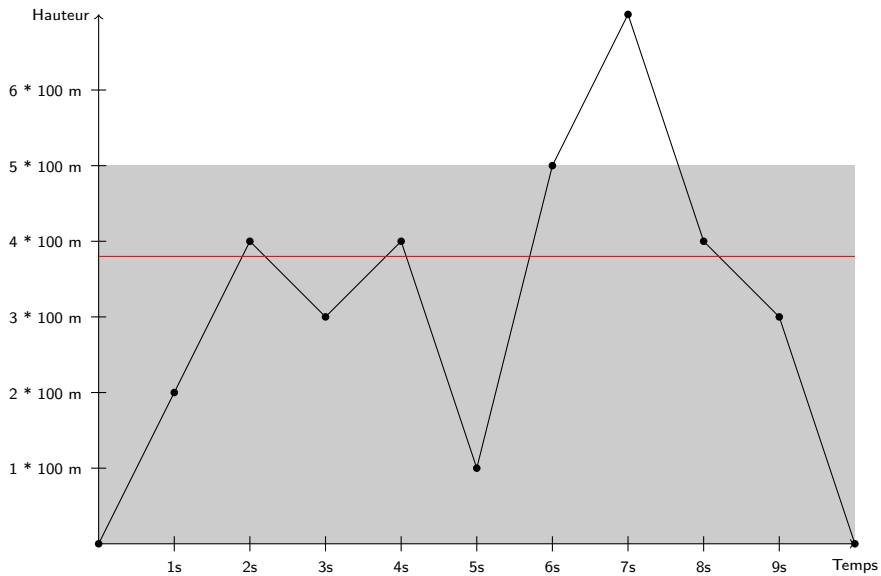


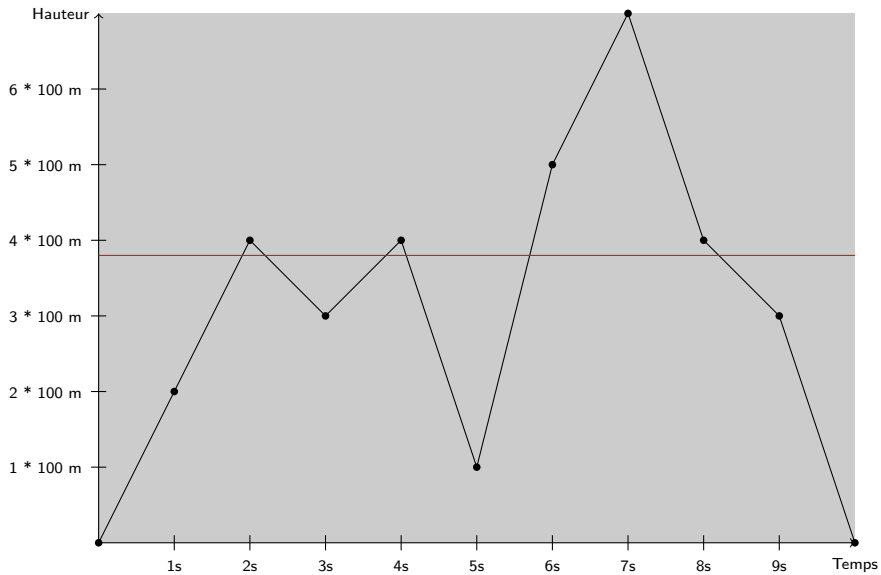


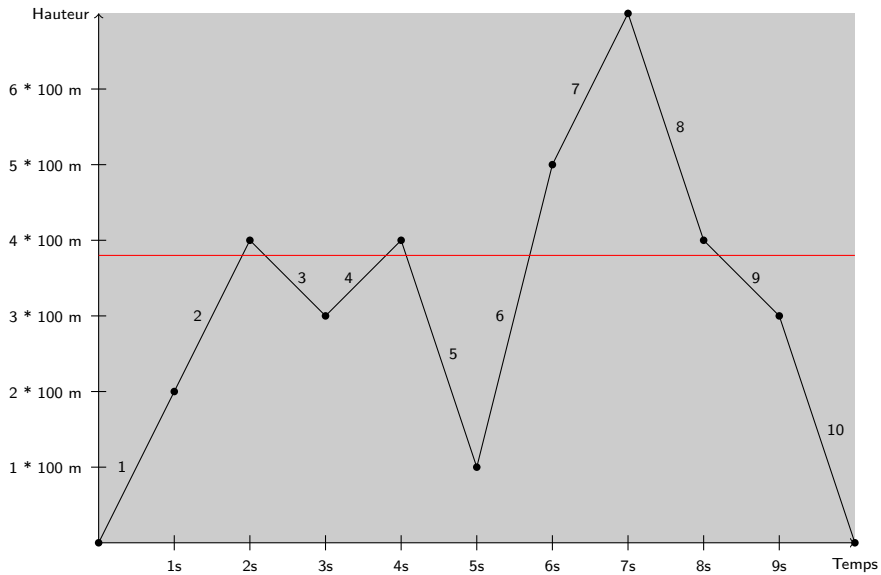












1. $(0,0)$ ——— $(1,2)$
2. $(1,2)$ ——— $(2,4)$
3. $(2,4)$ ——— $(3,3)$
4. $(3,3)$ ——— $(4,4)$
5. $(4,4)$ ——— $(5,1)$
6. $(5,1)$ ——— $(6,5)$
7. $(6,5)$ ——— $(7,7)$
8. $(7,7)$ ——— $(8,4)$
9. $(8,4)$ ——— $(9,3)$
10. $(9,3)$ ——— $(10,0)$

1. $(0,0)$ — $(1,2)$
2. $(1,2)$ — $(2,4)$
3. $(2,4)$ — $(3,3)$
4. $(3,3)$ — $(4,4)$
5. $(4,4)$ — $(5,1)$
6. $(5,1)$ — $(6,5)$
7. $(6,5)$ — $(7,7)$
8. $(7,7)$ — $(8,4)$
9. $(8,4)$ — $(9,3)$
10. $(9,3)$ — $(10,0)$

1.	(0,0)	(1,2)
2.	(1,2)	(2,4)
3.	(2,4)	(3,3)
4.	(3,3)	(4,4)
5.	(4,4)	(5,1)
6.	(5,1)	(6,5)
7.	(6,5)	(7,7)
8.	(7,7)	(8,4)
9.	(8,4)	(9,3)
10.	(9,3)	(10,0)

(0,0)	(1,2)
(1,2)	(2,4)
(2,4)	(3,3)
(3,3)	(4,4)
(4,4)	(5,1)
(5,1)	(6,5)
(6,5)	(7,7)
(7,7)	(8,4)
(8,4)	(9,3)
(9,3)	(10,0)

(0,0) (10,0)

(5,1) (5,1)

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 1

(5,1) (5,1)

max = 1

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 2

(5,1) (5,1)

max = 2

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 3

(5,1) (5,1)

max = 3

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 4

(5,1) (5,1)

max = 4

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 3

(5,1) (5,1)

max = 4

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 4

(5,1) (5,1)

max = 4

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 3

(5,1) (5,1)

max = 4

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 4

(5,1) (5,1)

max = 4

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 5

(5,1) (5,1)

max = 5

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 6

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 5

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 4

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 3

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 2

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 1

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 2

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 1

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 2

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 1

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

(0,0) (10,0)

cpt = 0

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7)

L'algorithme n'était pas correct. Il faut tenir compte d'un dernier point !

(0,0) (10,0)

cpt = 1

(5,1) (5,1)

max = 6

(1,2) (1,2)

(9,3) (3,3) (3,3) (9,3)

(2,4) (2,4) (4,4) (4,4) (8,4) (8,4)

(6,5) (6,5)

(7,7) (7,7) (7,7)