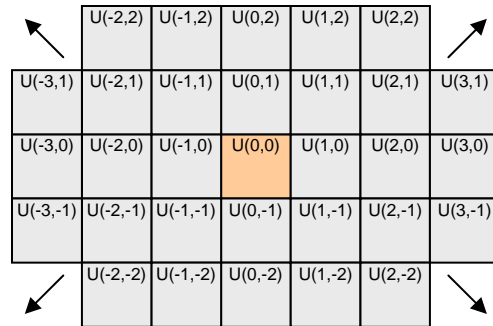
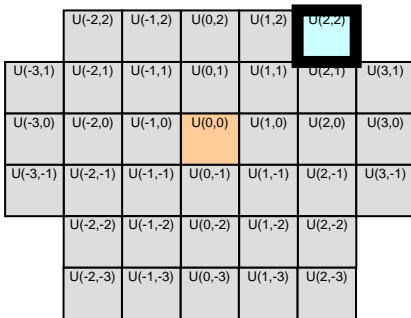


P6 :: Box This!

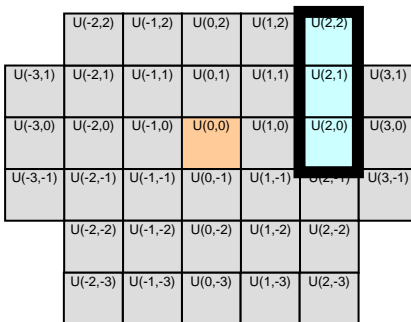
You are the operator of a fleet of unmanned drone spacecraft. You must track the movement of a set of drones moving in an imaginary two-dimensional plane divided into square unit regions. Each region is determined by an (x,y) label. The center square is $U(0,0)$.



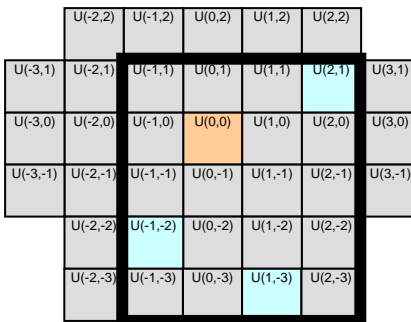
Given a set of drones in the plane, we define the concept of a *BoundingRectangle* to be the smallest rectangle (with purely horizontal and vertical edges) that wholly contains all drones in the fleet. The area of the rectangle is the sum total of the unit regions contained within the BoundingRectangle. Assume there is a drone fleet composed of three drones:



If the drones are all located within the region $U(2,2)$, then the area of the BoundingRectangle is 1.



If the drones are located within regions $U(2,0)$, $U(2,2)$, and $U(2,1)$ then the area of the BoundingRectangle is 3.



If the drones are located within regions $U(-1,-2)$, $U(2,1)$, and $U(1,-3)$ then the area of the BoundingRectangle is 20.

Each drone is assigned an initial $U(x,y)$ region and a velocity determined by two integers (dx, dy) . After one second of flight, a drone located originally in the $U(x,y)$ region moves

itself to the region $U(x+dx, y+dy)$. You can assume that all drone movements are perfectly precise and that drone's cannot interfere and hit each other, even if two drones find themselves located at the exact same (x,y) location at the exact same time.

Your task is to project the movement of the fleet of drones 180 seconds into the future given their original locations and initial velocity. You must identify the earliest time (in seconds) when the BoundingBox of the fleet has the smallest area. Note that it may be possible for two distinct drone fleet configurations to have BoundingBoxes with the same minimal area; if this happens, you must report the earliest one that occurs. You should only compute the BoundingBox at second intervals; do not concern yourself with fractions of a second.

Input Format

Your program will read from standard input. The first line of input will contain a positive integer N on a line by itself. Thereafter, there will be N lines each containing four integers "x y dx dy" separated by spaces that represent the location (x,y) of a drone and its initial velocity (dx, dy) . It is guaranteed that $2 < N < 10$.

The N lines therefore contain the location (at time $T=0$) of the N drones and their initial velocity.

Output Format

Your program will write to standard output. Your output will be a single line containing the two integers T and M separated by a space. The integer T represents the time $0 \leq T \leq 180$ and the second integer M represents the area of the smallest BoundingBox of the drone fleet, which occurs at time T . In the event there is a tie, then output the smallest T (i.e., the earliest) for which the minimum BoundingBox occurs.

Sample Input and Corresponding Sample Output

Sample Input	Sample Output
2 -2 2 1 0 4 -2 -1 1	3 2
3 -2 3 1 -1 -2 0 1 0 1 -3 0 1	3 1
4 -20 -17 1 2 -11 15 1 -1 90 1 -5 1 60 -20 -2 3	10 459
3 -2 2 1 0 -2 0 1 0 -2 -2 1 0	0 5