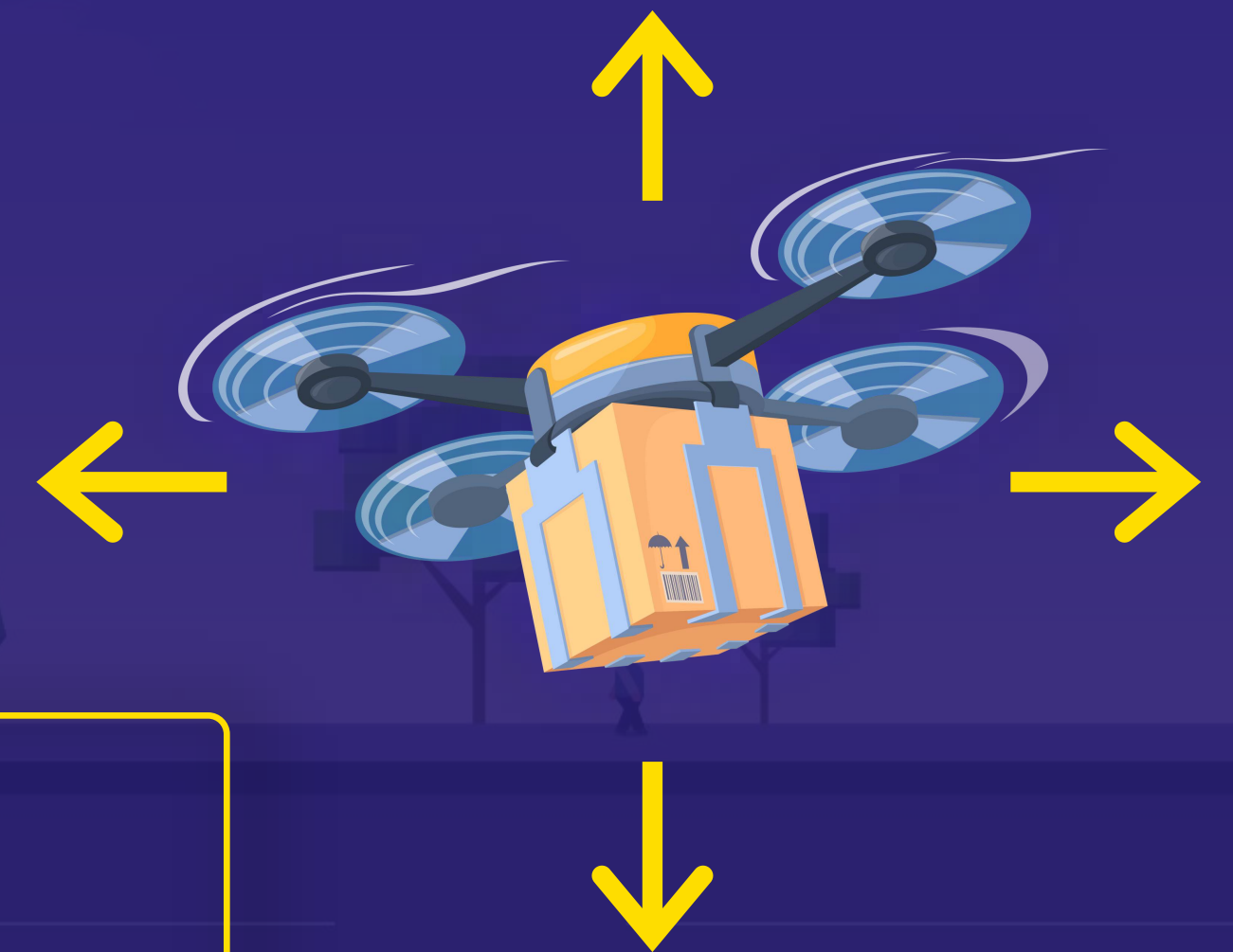


LEVEL 4



- So far, the drone was able to fly up or down by accelerating in the y dimension
- The drone can now also fly left or right by accelerating in the x dimension
- A positive x acceleration means going right, a negative means going left
- The drone's velocity and position are calculated the same way for x and y but independently from each other
- Gravity only affects the y dimension (same as before)
- The drone's total acceleration (absolute x + absolute y) must be between 0 and 20 (no Pythagorean theorem needed)
- A landing pad is positioned on the ground for the drone to land on
- The landing pad cannot be at $x=0$
- The drone's initial position is $x=0$ and $y=0$
- A minimum height is still given (same as before)
- **Land the drone softly on the landing pad**
- **During the flight, fly the drone up to at least the given height at least once**



»» QUICK «« TIPS

- The time limit is VERY generous; you don't need a fast solution!
- There is a visualizer.html in the input folder. You can use it to visualize your flights.



Valid Flight Checklist

- The drone's total acceleration (absolute $x + y$) must be between 0 and 20
- y acceleration must not be negative
- The drone must take off at the first tick
- The drone's x velocity must be 0 when landing
- The drone's y velocity must be -1 or 0 when landing
- The drone must reach the minimum height at least once
- After take-off, the drone is only allowed to touch ground to land on the landing pad
- The acceleration sequence must end after landing on the landing pad
- The flight must not take more ticks than the given time limit



Input

Name	Description	Example
N	Number of drone flights	4
Landing Pad x <i>and</i> Minimum Height <i>and</i> Time limit (repeated N times)	The x position of the landing pad, the minimum height, <i>and</i> the maximum number of ticks per flight; separated by a space	5 1 10 -12 15 12 161 2 40 4 224 94

Output

Name	Description	Example
Flight (repeated N times)	A list of acceleration vectors separated by spaces. An acceleration vector consists out of two integers separated by a comma. First integer: x acceleration Second integer: y acceleration	5,11 -5,9 0,9 -1,15 0,15 -9,0 10,6 0,4 0,20 0,9 0,12 0,8 1,10 9,10 10,10 10,10 10,10 -10,10 -10,10 -10,10 -10,10 0,9 0,10 4,14 -4,16 0,20 0,10 0,20 0,20 0,10 0,0 0,0 0,0 0,0 0,7 0,3 0,0 0,10 0,0 0,0 0,10 0,20 0,20 0,20 0,20 0,9





Happy 40th Coding Contest

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Autonomous
Drone

