Major Task ---> Randomize the dot, Bounce the dot

Q1. Consider a window of dimensions w and h. A dot of radius, r, needs to be placed within the window at a random coordinate, x,y. How could you randomly generate the coordinates of the dot so that the dot is always entirely visible within the window? Note, Python has a function that allows you to generate random numbers:

The documentation of Python's randint function is as follows:

random.randint(a, b)

Return a random integer N such that a <= N <= b.

```
x = random.randint( ____r____ , ____w - r____ )

y = random.randint( ____r____ , ____h - r____ )
```

Q2 Consider the same window and dot from the above question. Write the condition that can be used for detection of each of the cases 1-4 where a dot collides with the window's edge.

	Case	Condition
1.	dot has touched or gone over the left edge of the window	x < r
2.	dot has touched or gone over the top edge of the window	y < r
3.	dot has touched or gone over the right edge of the window	x + r > w
4.	dot has touched or gone over the bottom edge of the window	x+ r > h

Q3 The direction of movement of the dot can be determined by the sign (plus or minus) of velocity. Write the horizontal (Left, Right) and vertical (Up, Down) component of the movement of the dot for each of the cases specified in 1 - 9.

	Velocity	**Movement**	
		Horizontal Component	**Vertical Component**
1	Horizontal velocity is positive, vertical velocity is positive	R	D
2.	Horizontal velocity is positive, vertical velocity is negative	R	U
3.	Horizontal velocity is negative,	L	D

	vertical velocity is positive		
4.	Horizontal velocity is negative, vertical velocity is negative	L	U
5.	Horizontal velocity is positive, vertical velocity 0	R	
6.	Horizontal velocity is negative, vertical velocity 0	L	
7.	Horizontal Velocity is 0, Vertical Velocity is positive		D
8.	Horizontal Velocity is 0, Vertical Velocity is negative		U
9.	Horizontal Velocity is 0, Vertical Velocity is 0	stopped	

Q4 If a dot collides with the edge of the window, how can we change the direction of the movement of the dot.

by reversing the sign of the velocity