

STEP 4

The previous solution can still be improved. Indeed, we will make a for-loop to take only the balls that are in motion, by using an already existing function, the `how_many_moving_balls` function.

```
def how_many_moving_balls(balls):
    moving_balls = 0
    for ball in balls:
        if ball["dx"] != 0 or ball["dy"] != 0:
            moving_balls += 1

    return moving_balls
```

We will convert the `moving_balls` variable into a list, so that it can contain only moving balls and can be used again by changing the benchmark and the pool. We won't forget to initialize the list in order to use it later.

```
def how_many_moving_balls(balls):
    moving_balls = []
    for ball in balls:
        if ball["dx"] != 0 or ball["dy"] != 0:
            moving_balls.append(ball)

    return moving_balls
```

There is the change in the pool :

```
else :
    moving_balls = engine.how_many_moving_balls(balls) # We initialize the list here

    if current_state == constants.STATE_BALLS_MOVING:

        # collision detection
        colls = engine.computeCollisions(balls)

        # collision resolution
        engine.processCollisions(balls, previous_collisions, colls)
        previous_collisions = colls

        for ball in moving_balls:
            for i in range(16):
                engine.update(ball, 1)

        # draw
        draw(scene, geometry, balls)

        #

    if moving_balls == []: #We have changed the condition here to check the list instead of an integer
        current_state = constants.STATE_PAUSE
    else:
        current_state = constants.STATE_BALLS_MOVING
```

And here is the change in the benchmark :

```
while running:
    moving_balls = engine.how_many_moving_balls(balls) #####

    colls = engine.computeCollisions(balls)

    # collision resolution
    engine.processCollisions(balls, previous_collisions, colls)
    previous_collisions = colls

    for ball in moving_balls :
        for i in range(16):
            engine.update(ball, 1)

    running = (moving_balls != [])
```

We also have to check that running is paired with the list and not the variable that doesn't exist anymore.