```python
def mySqrt(x):
    if x == 0:
        return 0

    left = 1
    right = x

    while left <= right:
        mid = (left + right) // 2

        if mid * mid == x:
            return mid
        elif mid * mid < x:
            left = mid + 1
        else:
            right = mid - 1

    return right

# Test case
x = 8

result = mySqrt(x)
print(result)
```
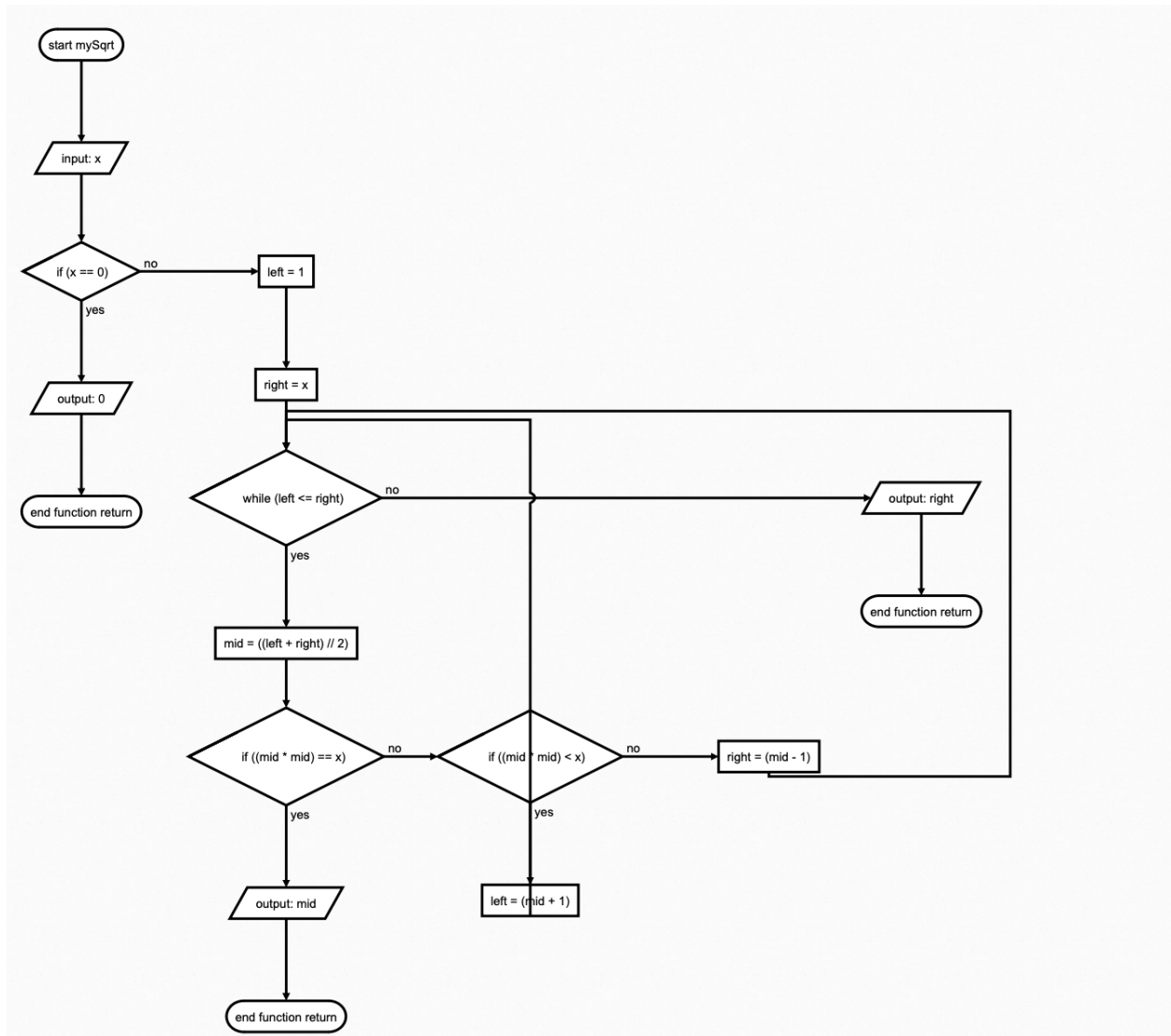
Trace table:

Line	X	X==0	Left	Right	Left <= right	Mid	Mid * mid ==x	Mid * mid <x	return
1	8								
2		false							
5			1						
6				8					
8					True				
9						9//2 =4			
11							false		
13								false	
16				4-1 =3					
8					true				
9						4//2=2			
11							false		
13								true	

14			2+1=3						
8					true				
9						6//2 = 3			
11							false		
13								false	
16			3−1=2						
18									2

Test cases :

```python
def mySqrt(x):
    if x == 0:
        return 0
```

```python
    left = 1
    right = x

    while left <= right:
        mid = (left + right) // 2

        if mid * mid == x:
            return mid
        elif mid * mid < x:
            left = mid + 1
        else:
            right = mid - 1

    return right

# Test case
x = 8

result = mySqrt(x)
print(result)

x1 = 4
result1 = mySqrt(x1)
print(result1)
```