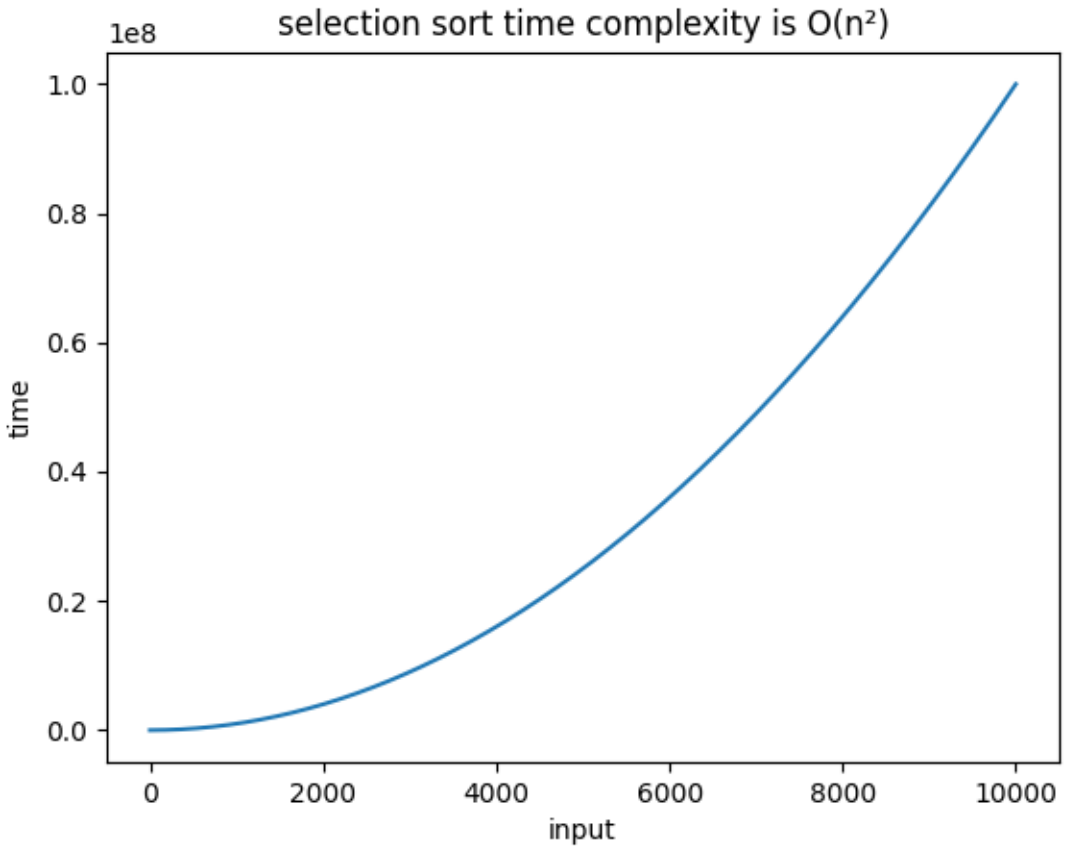
```
#selection_sort
import time
import tracemalloc
import matplotlib.pyplot as plt
start=time.time()

def selection_sort(nums):
    for i in range(len(nums)-1):
        minpos=i
        for j in range(i,len(nums)):
            if(nums[j]<nums[minpos]):
                minpos=j

            temp=nums[i]
            nums[i]=nums[minpos]
            nums[minpos]=temp
        print(nums)

nums=[5,3,8,4,7,2]
print("before sorting the element:")
print(nums)
print("\n")
selection_sort(nums)
print("after sorting the element:")
print(nums)
print("Memory space=",tracemalloc.get_tracemalloc_memory())
end=time.time()
print("Run time of program:",end-start)
tracemalloc.stop()

x=list(range(1,10000))
plt.plot(x,[y*y for y in x])
plt.title("selection sort time complexity is O(n\u00b2)")
plt.xlabel("input")
plt.ylabel("time")
plt.show()
```

**********output**********

```
before sorting the element:
[5, 3, 8, 4, 7, 2]


[2, 3, 8, 4, 7, 5]
[2, 3, 8, 4, 7, 5]
[2, 3, 4, 8, 7, 5]
[2, 3, 4, 5, 8, 7]
[2, 3, 4, 5, 7, 8]
after sorting the element:
[2, 3, 4, 5, 7, 8]
Memory space= 624
Run time of program: 0.07809138298034668
```


selection sort time complexity is O(n²)
1e8
1.0
0.8
0.6
0.4
0.2
0.0
time
0
2000
4000
6000
8000
10000
input