

پگاه گورکانی

ساختمان داده

تمرین دوم

سکشن دوشنبه

دکتر اسکندری

```
import random

import string

import time

import matplotlib.pyplot as plt

def generate_random_names(num_names
, min_length=4, max_length=8):

    names = []

    for _ in range(num_names):

        first_name_length = random.randint
(min_length, max_length)

        last_name_length = random.randint(
min_length, max_length)

        first_name = ''.join(random.choice(s
tring.ascii_uppercase) for _ in range(first
_name_length)).capitalize()

        last_name = ''.join(random.choice(s
tring.ascii_uppercase) for _ in range(last
_name_length)).capitalize()

        names.append({"first_name": first_n
ame, "last_name": last_name})

    return names

def selection_sort(names_list):
```

```
n = len(names_list)

for i in range(n):
    min_index = i
    for j in range(i + 1, n):
        first_name_i = names_list[min_index]["first_name"]
        last_name_i = names_list[min_index]["last_name"]
        first_name_j = names_list[j]["first_name"]
        last_name_j = names_list[j]["last_name"]

        if first_name_i > first_name_j:
            min_index = j
        elif first_name_i == first_name_j:
            if last_name_i > last_name_j:
                min_index = j

    # Swap the minimum element with the current element
    names_list[i], names_list[min_index] = names_list[min_index], names_list[i]
```

```
    return names_list

time_ = []

for i in range(10, 10000):

    start = time.time()

    selection_sort(generate_random_names(i))

    end = time.time()

    time_.append(end-start)

x_axis = range(10, 10000)

plt.plot(x_axis, time_)
```