Lecture 04 - Interval Scheduling

February 10, 2021

[3]:

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import random
```

[4]:

```
def random_request():
    return sorted(random.sample(range(100),2))

def make_requests(n):
    #requests = []
    #for i in range(n):
    #    requests.append(random_request())
    #return requests
    return [random_request() for i in range(n)]
```

[5]:

```
R = make_requests(5)
print(R)
print(sorted(R, key=lambda x : x[1]))
```

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[[24, 51], [26, 52], [16, 45], [29, 70], [27, 62]]
[[16, 45], [24, 51], [26, 52], [27, 62], [29, 70]]
```

[6]:

```
def greedy_solution(requests):
    sorted_requests = sorted(requests, key=lambda x : x[1])
    solution = []

    # pop gives you back the element at that index and
    # removes it from the lists
    solution.append(sorted_requests.pop(0))

    while len(sorted_requests) > 0:
        request = sorted_requests.pop(0)
        # if request can be added to solution, then add it
        if request[0] >= solution[-1][1]:
            solution.append(request)

    return solution
```

[7]:

```
print(R)
greedy_solution(R)
```

```
[[24, 51], [26, 52], [16, 45], [29, 70], [27, 62]]
```

```
[7]: [[16, 45]]
```

```
[8]: def plot_requests(requests):
         for r in sorted(requests, key=lambda x:x[1]):
             print(" " * r[0] + "-" * (r[1]-r[0]))
```

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[ ]:
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[9]: R = make_requests(500)
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[10]: #plot_requests(R)
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[11]: plot_requests(greedy_solution(R))
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