

4. We have n jobs, where every job is scheduled to be done from $startTime[i]$ to $endTime[i]$, obtaining a profit of $profit[i]$. You're given the $startTime$, $endTime$ and $profit$ arrays, return the maximum profit you can take such that there are no two jobs in the subset with overlapping time range. If you choose a job that ends at time X you will be able to start another job that starts at time X .

Example 1:

Input: $startTime = [1, 2, 3, 3]$, $endTime = [3, 4, 5, 6]$, $profit = [50, 10, 40, 70]$

Output: 120

Example 1:

Input: $jobs = [3, 2, 3]$, $k = 3$

Output: 3

Program:

```
from bisect import bisect_right

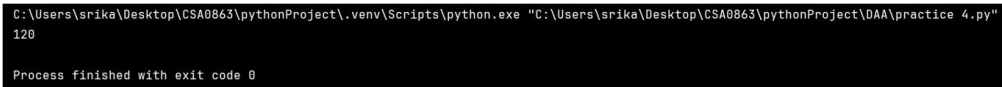
def jobScheduling(startTime, endTime, profit):
    jobs = sorted(zip(startTime, endTime, profit), key=lambda x: x[1])
    n = len(jobs)
    dp = [0] * (n + 1)
    end_times = [job[1] for job in jobs]
    for i in range(1, n + 1):
        curr_start, curr_end, curr_profit = jobs[i - 1]
        idx = bisect_right(end_times, curr_start) - 1
        if idx != -1:
            dp[i] = max(dp[i - 1], dp[idx + 1] + curr_profit)
        else:
            dp[i] = max(dp[i - 1], curr_profit)
    return dp[n]

startTime = [1, 2, 3, 3]
endTime = [3, 4, 5, 6]
```

```
profit = [50, 10, 40, 70]

print(jobScheduling(startTime, endTime, profit))
```

Output:

A terminal window with a black background and white text. The first line shows the command: C:\Users\srika\Desktop\CSA0863\pythonProject\.venv\Scripts\python.exe "C:\Users\srika\Desktop\CSA0863\pythonProject\DAA\practice 4.py". The second line shows the output: 120. The third line shows the message: Process finished with exit code 0.

```
C:\Users\srika\Desktop\CSA0863\pythonProject\.venv\Scripts\python.exe "C:\Users\srika\Desktop\CSA0863\pythonProject\DAA\practice 4.py"
120
Process finished with exit code 0
```

Time complexity:

$O(n \log n)$