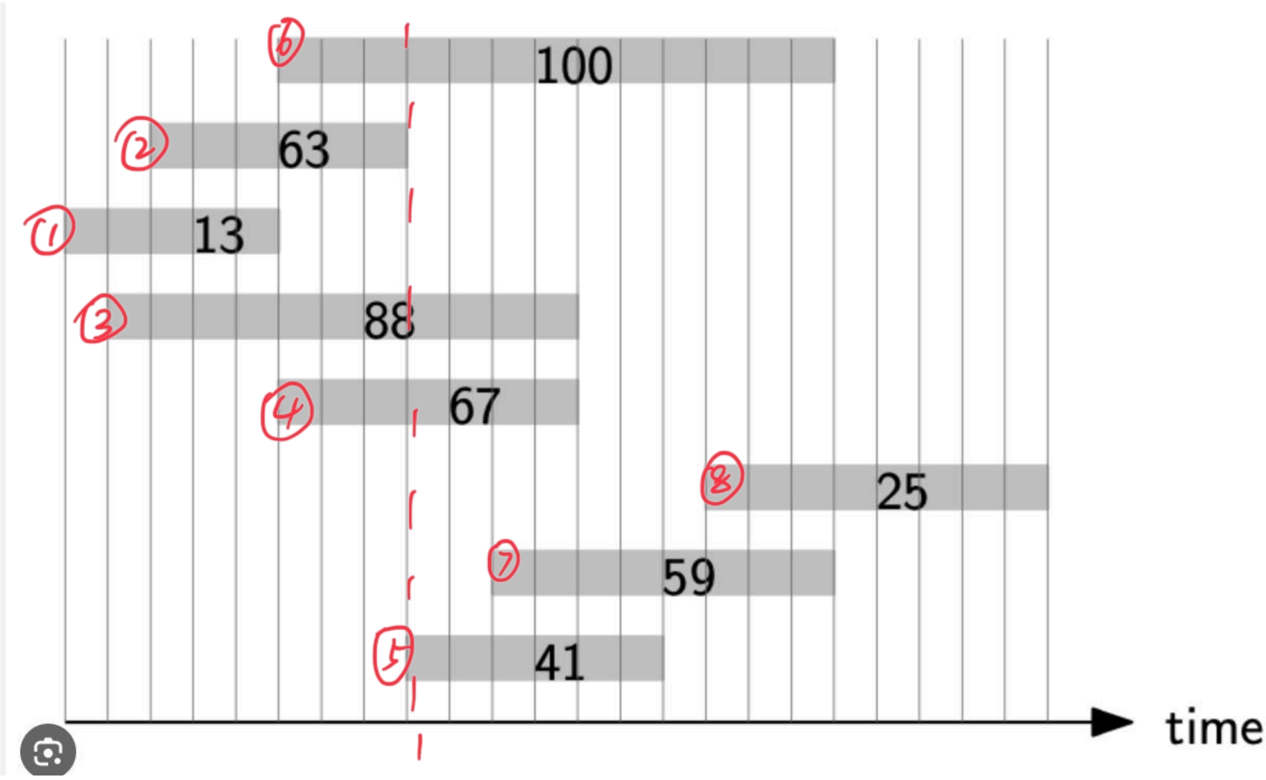
Question 1

0 / 1 point

In the weighted interval selection problem, we have the following instance of 8 intervals with different weights:



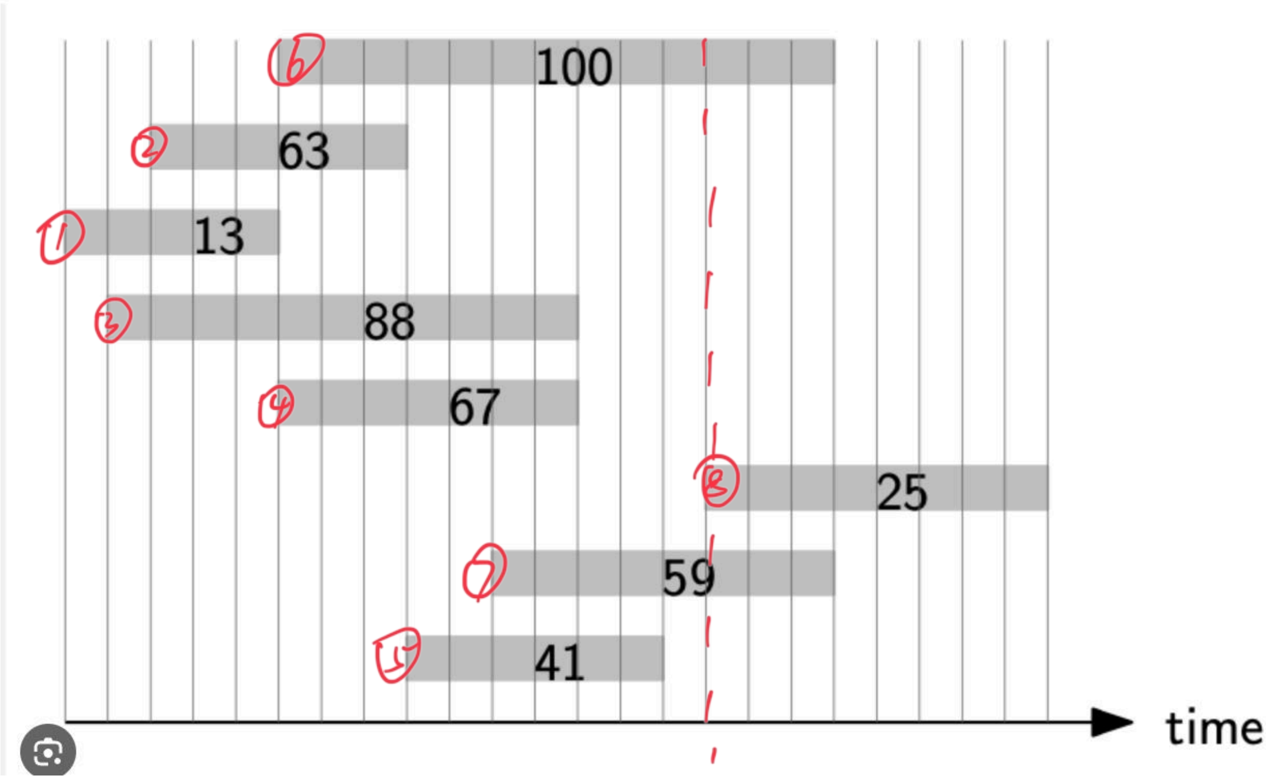
Recall the DP algorithm we used in the lecture. What are we storing in opt[5]? opt[i] is the subproblem considering interval 1 to i by some order we used in the lecture.

- We store p_5 = null. opt[5] = 88.
- We store p_5 = 2. opt[5] = 104. = max { opt[4] = 88, 41 + opt[2] = 104 }
- We store p_5 = null. opt[5] = 104.
- We store p_5 = 2. opt[5] = 88.

Question 2

0 / 1 point

In the weighted interval selection problem, we have the following instance of 8 intervals with different weights:



Recall the DP algorithm we used in the lecture. What are we storing in opt[8]? opt[i] is the subproblem considering interval 1 to i by some order we used in the lecture.

- We store p_8 = 5. opt[8] = 112.
- We store p_8 = 7. opt[8] = 112.
- ✓ We store p_8 = 5. opt[8] = 129. $= \max \begin{cases} opt[7] \\ 25 + opt[5] \end{cases}$
- We store p_8 = 7. opt[8] = 129.

Question 3

0 / 1 point

Given a Subset Sum instance: W = 7

item	weight
1	2
2	3
3	5

We try to run the DP algorithm in the lecture. opt[i,W'] is defined as the solution from item 1 to i given weight W' just like in the lecture.

What is the value at opt[2,7]? $= \max \begin{cases} opt[1,7] \\ 3 + opt[1,4] \end{cases}$

- ○ 2
- ○ 3
- ✓ 5
- ○ 7

Question 4

0 / 1 point

Given a Subset Sum instance: W = 7

item	weight
1	2
2	3
3	5

3	5

We try to run the DP algorithm and recover solution algorithm in the lecture. opt[i,W'] is defined as the solution from item 1 to i given weight W' just like in the lecture.

What is the solution for opt[3, 7]? $= \max \begin{cases} opt[2,7] = 5 \\ \underline{5} + \underline{opt[2,2]} = 7 \end{cases}$

item 3 item 1

- {item 1, item 2}
- {item 3}
- ✓ {item 1, item 3}
- {item 1, item 2, item 3}

Question 5

0 / 1 point

Given a Subset Sum instance: W = 7

item	weight
1	2
2	3
3	5

We try to run the DP algorithm and recover solution algorithm in the lecture. opt[i,W'] is defined as the solution from item 1 to i given weight W' just like in the lecture.

What is the solution for opt[3, 5]?

What is the solution for opt[3, 5]? = max { opt[2, 5] = 5 ; 5 + opt[2, 0] = 5 }

By alg in lecture notes

" if $w_i \le w'$ and $opt[i-1, w'-w_i] + w_i \ge opt[i, w']$ then $b[i, w'] \leftarrow Y$.

- {item 1, item 2}
- {item 1, item 3}
- {item 2, item 3}
- ✓ {item 3}

Question 6

0 / 1 point

Given a 0/1 Knapsack instance: W = 7

item	weight	value
1	2	10
2	3	25
3	5	55

We try to run the DP algorithm in the lecture. opt[i,W'] is defined as the solution from item 1 to i given capacity W' just like in the lecture.

What is the value at opt[1,5]? = max { opt[0, 5] ; 10 + opt[0, 3] = 10 }

- ✓ 10
- 25
- 35
- 55