<table>
<thead>
<tr>
<th>Seq</th>
<th>Length</th>
<th>Topics covered</th>
<th>10 #</th>
<th>Topics Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>[welcome]</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>[skiing, views]</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>[welcome, AI, robots]</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>[graphics, dragons]</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>[skiing, robots]</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

1. \( S_0 < [\text{welcome, skiing, robot}], [] \) (initial state)

2. \( S_0(10) < [\text{skiing, robot}], [\text{seg}0] > [\text{skiing}], [\text{seg}2] > (50) S_0 \)
(40) \( \in \) \{ [robots], [seg0, seg1] \} \(<\) \{3, [seg0, seg4] \}(60)

(90) \( \in \) \{ [seg0, seg1, seg2] \} \(<\) \{3, [seg0, seg1, seg4] \}(90)

(b) Give a heuristic.

Let \( \mu \) be \(<\) ToCover, Segs.

\[ h(\mu) = 10 \times |ToCover| \]

To show monotonicity, \( h(\mu) - h(\mu') \leq cost(\mu, \mu') \) if \( \mu', \mu' \in SCS(\mu) \)

You can check this on every pair of node
There are better heuristics

(a) For each topic, let $s(t)$ be the length of the smallest segment that covers topic $t$. Then,

$$h\left(\left\{ c \in \mathcal{T}_C, \text{seg} \right\}\right) = \max_{t \in \mathcal{T}_C} s(t) = h_t\left(\left\{ c \in \mathcal{T}_C, \text{seg} \right\}\right)$$

(b) For each segment, let the contribution of the segments be the time of the segment divided by the number of topics covered.
the segment. For each topic $t$, let $c(t)$ be the smallest contribution over all segments that cover the topic. Then

$$h(TC, Segs) = \sum_{t \in TC} s(t)$$

$\text{Topic } s(t)$ (used to compute $h$)

AI 50
Oregon 40
Graphics 40

Note that usually, only 3 nodes are closed
robots 50 by AT.

skiing 30
views 20
welcome 10