APPLICATIONS OF THE TRAVELING SALESMAN PROBLEM

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Each day, SUNCO manufactures four types of gasoline:

- lead-free premium (LFP)
- lead-free regular (LFR)
- leaded premium (LP)
- leaded regular (LR)
Because of cleaning and resetting of the processing equipment, the time required to produce a batch of gasoline depends on the type last produced:

<table>
<thead>
<tr>
<th>LAST-PRODUCED GASOLINE</th>
<th>GAS TO BE NEXT PRODUCED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LFR</td>
</tr>
<tr>
<td>LFR</td>
<td>--</td>
</tr>
<tr>
<td>LFP</td>
<td>60</td>
</tr>
<tr>
<td>LR</td>
<td>90</td>
</tr>
<tr>
<td>LP</td>
<td>130</td>
</tr>
</tbody>
</table>

In which order should the gasolines be produced each day?

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Consider a tour of the nodes in the network:
For example, if the order of the production is as shown:

\[\text{LFR} \xrightarrow{50} \text{LFP} \]

\[\text{LR} \xleftarrow{80} \text{LP} \]

then the total production time will be

\[50 + 110 + 80 + 90 = 330 \text{ minutes}\]

The best order will be that of the shortest "salesman's" tour!

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WALLPAPER CUTTING