Class Practice on Arguments #1

Determine whether each argument below is valid.

1. If you graduate, then we will hire you.
   You graduate.
   Therefore, we will hire you.

2. If Mr. Scott is still with us, then the power will come on.
   Mr. Scott is not still with us.
   Therefore, the power will not come on.
1. If you graduate, then we will hire you.
   You graduate.
   Therefore, we will hire you.

Let $P = \text{you graduate}$ and let $Q = \text{we will hire you}$. The argument takes on the symbolic structure:

$$P \rightarrow Q$$
$$P$$
$$\therefore Q$$

In order to test this argument for validity we write: $(P \rightarrow Q) \land P \rightarrow Q$

Next we work out the truth table of this statement.

<table>
<thead>
<tr>
<th>$P$</th>
<th>$Q$</th>
<th>$(P \rightarrow Q)$</th>
<th>$P$</th>
<th>$Q$</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>T</td>
<td>F</td>
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<td>F</td>
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<td>F</td>
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<td>T</td>
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</tbody>
</table>

Final Result

All T's show that we have a tautology. The conjunction of all the premises implies the conclusion.

So the given argument is valid.
2. If Mr. Scott is still with us, then the power will come on.

Mr. Scott is not still with us.

Therefore, the power will not come on.

Let $S = \text{Mr. Scott is still with us}$ and let $P = \text{the power will come on}$. The argument takes on the symbolic structure:

$$S \rightarrow P$$

$$\sim S$$

$$\therefore \sim P$$

In order to test this argument for validity we write: $(S \rightarrow P) \land \sim S \rightarrow \sim P$

Next we work out the truth table of this statement.

<table>
<thead>
<tr>
<th>$S$</th>
<th>$P$</th>
<th>$(S \rightarrow P) \land \sim S \rightarrow \sim P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>T</td>
<td>T       T       T       T       F       F       T       F</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>F       F       F       F       F       T       T</td>
</tr>
<tr>
<td>F</td>
<td>T</td>
<td>F       T       T       T       T       F       F</td>
</tr>
<tr>
<td>F</td>
<td>F</td>
<td>F       F       F       F       F       T       T</td>
</tr>
</tbody>
</table>

Final Result

In this example we do not have all T's. The conjunction of all the premises does not imply the conclusion.

So the given argument is a fallacy.