1. (6 points) Consider a sequential circuit with two inputs $A$, $B$ a single output $X$ and two state flip flops. The next-state and output equations for the circuit are

$$D_1 = s_0 A + s_0 s_1' (A' + B)$$
$$D_0 = s_1 A + s_0' s_1 AB$$
$$X = s_0 A + s_1 A'$$

Complete the schematic diagram shown below so that it implements this circuit.
2. (4 points) Is the state table shown below for a Mealy model sequential circuit, or a Moore Model circuit?

<table>
<thead>
<tr>
<th>current state</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_1 S_0$</td>
</tr>
<tr>
<td>AB</td>
</tr>
<tr>
<td>input</td>
</tr>
<tr>
<td>output</td>
</tr>
<tr>
<td>$X_1 X_0$</td>
</tr>
<tr>
<td>$D_1 D_0$</td>
</tr>
<tr>
<td>next state</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>current state</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_1 S_0$</td>
</tr>
<tr>
<td>AB</td>
</tr>
<tr>
<td>input</td>
</tr>
<tr>
<td>output</td>
</tr>
<tr>
<td>$X_1 X_0$</td>
</tr>
<tr>
<td>$D_1 D_0$</td>
</tr>
<tr>
<td>next state</td>
</tr>
</tbody>
</table>

| 00  | 0x  | 11  | 10  |
| 00  | 1x  | 11  | 11  |
| 10  | x0  | 01  | 11  |
| 10  | x1  | 01  | 00  |
| 11  | 00  | 10  | 10  |
| 11  | 01  | 10  | 11  |
| 11  | 1x  | 10  | 00  |

Draw a state transition diagram corresponding to the state table.