Problems on Choices: Nested Ifs

In the following pieces of program, a, b are conditions (such as “age < 12” which have values true and false only), and X, Y are actions (such as output, assign, etc). For each of these pieces make a truth table describing the actions for all four possible combinations of conditions. It may be helpful to draw some diagrams. An example follows.

-- Example Code

If (a) then
  X
EndIf
If (b) then
  Y
EndIf

<table>
<thead>
<tr>
<th>a b</th>
<th>action</th>
</tr>
</thead>
<tbody>
<tr>
<td>ff</td>
<td>-</td>
</tr>
<tr>
<td>ft</td>
<td>Y</td>
</tr>
<tr>
<td>tf</td>
<td>X</td>
</tr>
<tr>
<td>tt</td>
<td>XY</td>
</tr>
</tbody>
</table>

-- first

If (a) then
  If (b) then
    X
  EndIf
Else
  Y
EndIf

-- second

If (a) then
  If (b) then
    X
  EndIf
  Y
EndIf

-- third

If (a) then
  X
  If (b) then
    Y
  EndIf
EndIf

-- fourth

If (a) then
  X
ElseIf (b) then
  Y
EndIf