Back-Chaining: Discuss in your group how the back-chaining procedure will answer questions from a given knowledge-base.

Consider the back-chaining procedure:

> To establish a sentence Q:
>
> 1. Try to locate Q itself in the KB. If you can then return *success*.
> 2. Otherwise, try to locate a conditional sentence of the form
>   if P_1 and … and P_n then Q
>   in the KB. If you cannot, then return *failure*.
> 3. Otherwise, use back-chaining to try to establish each of P_1 and P_2, and … P_n.
>   If all are successful the return *success.*
> 4. Otherwise, go back to step 2 and look for another conditional.

Given the KB:

Zork flibbers Zeek.
Quonk blubs Zeek.
Xylk blubs Zeek.
Queek burbles Zork.
Zax burbles Zeek.

If X blubs Y then Y flibbers X.
If X burbles Y and Y flibbers Z the X flibbers Z.

1. What steps are performed in the back-chaining procedure to answer the question "*Does Zork flibber Zeek?*"

2. What steps are performed in the back-chaining procedure to answer the question "*Does Zeek flibber Quonk?*"

3. What steps are performed in the back-chaining procedure to answer the question "*Does Queek flibber Zeek?*"

4. What steps are performed in the back-chaining procedure to answer the question "*Does Zax flibber Xylk?*"

5. What steps are performed in the back-chaining procedure to answer the question "*Does Zax flibber Zax?*"

6. If we change the rule *If X burbles Y and Y flibbers Z the X flibbers Z to If Y flibbers Z and X burbles Y and the X flibbers Z* then the back-chaining procedure to the question "*Does Zax flibber Zax?*" goes into an infinite loop. Why does that happen?