In this lecture we consider formal descriptions of the relationships between a finite number of individuals. We may have different types of individual.

From the resolution proof we can derive a refutation. The lower tree demonstrates the fact that whatever values we choose for the variables, we will arrive at a clause that is false for our chosen values. This suffices to show that, no matter what choice of values we make, the conjunction is true.

We normally grow refutation trees downwards. A refutation tree demonstrates the fact that whatever values we choose for the variables, we will arrive at a clause that is false for our chosen values. This suffices to show that, no matter what choice of values we make, the
If we can satisfy all the Xs, then making A true will do the trick. If we cannot satisfy Xi then we must be able to satisfy all the Ys, and so making A false will do the trick.

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If we can satisfy all the Xs, then making A true will do the trick. If we cannot satisfy Xi then we must be able to satisfy all the Ys, and so making A false will do the trick.
Any assignment of truth values that makes all the premises true will make the conclusion true.
For any valid inference, any assignment of truth values that makes the conclusion false will make at least one of the premises false.

A special property of this inference: If some assignment XYZ of values for ABC makes the conclusion false, then the assignments XYZD and XYZD each make one or other of the two premises false.

Resolution
Resolution

\[ U \lor V \lor W \lor X \lor \neg C \quad X \lor Y \lor Z \lor C \]
\[ U \lor V \lor W \lor X \lor Y \lor Z \]

Refutation
Ideal! Use the problem to simplify the search.

Unit Propagation