Constraints Satisfaction Problem Solving in Python

Using python-constraint mainly for AllDifferentConstraint(), NotInSetConstraint() and InSetConstraint().

These functions help to easily generate comparison between each value in constraints.

Then initializing Dog name, its breed and what its bestAt with default set of values provided in puzzle(in no particular order).

1. Used AllDifferentConstraint() for each variable to specify that all values within are different from each other.
2. “The Boxer ranked 1 position after the Shepherd”, NotInSetConstraint() Is used here as boxer cannot be First and Shepherd cannot be last.
3. “Cheetah and the dog who loves the poles were 1st and 3rd”, it is clear that Cheetah and dog who loves poles are different, so Cheetah does not love poles.
4. “Only the winning dog has the same initial letter in name and breed”, We now know that Cheetah is first so its breed would be collie. Rest all matching initial letters of Name and breed would come under NotInSetConstraint().
5. “Thor doesn’t like the plank and didn’t come 2nd”, Both NotInSetConstraint().
6. “Cheetah either loves the tunnel or she came 4th”, We know that Cheetah cannot be 4th so she loves tunnel.
7. “The dog who loves the plank came 1 position after the dog who loves the poles”, NotInSetConstraint() Is used here as dog who loves plank cannot be First and dog who love poles cannot be last.
8. “Suzie is not a Shepherd and Beany doesn’t like the tunnel”, We don’t require the second part of this statement as tunnel is already assigned to Cheetah.

Lastly, Printed the output ranking-wise in table format. So the correct answer for breed of the dog named Thor is **Shepherd**.

Output :

```
Raking  Dog        Breed       BestAt
1       Cheetah     Collie       Tunnel
2       Beany     Terrier       Tire
3       Thor     Shepherd       Poles
4       Suzie     Boxer       Plank
```