Assignment 7

Designing a KB for a Gardening Chat Bot

1. Logic Symbols
   1. If you plant at the right time, water regularly, expose the plant to enough sun, and have good pollination, then you should expect a good yield.
      1. RightTimePlanting
      2. RegularWatering
      3. Sun
      4. Pollination
      5. ExpectedGoodYield
   2. If the seeds are not germinating, then they need more watering.
      1. GerminatingSeeds
      2. NeedMoreWatering
   3. If the plant is not blossoming, then it needs more fertilization.
      1. Blossoming
      2. NeedMoreFertilization
   4. If the flowers are not bearing fruits, then they need pollination.
      1. BearingFruit
      2. NeedPollination
   5. If the leaves are yellow but not dry, then the plant is overwatered.
      1. LeavesYellow
      2. LeavesDry
      3. OverWatered
   6. If the leaves are yellow and dry, then the plant is underwatered.
      1. LeavesYellow
      2. LeavesDry
      3. UnderWatered
   7. If the plant is growing slowly, then it needs more sunlight or more water
      1. GrowingSlowly
      2. NeedsSunlight
      3. NeedsMoreWatering
2. Knowledge Base
   1. If you plant at the right time, water regularly, expose the plant to enough sun, and have good pollination, then you should expect a good yield.
      1. RightTimePlanting ∧ RegularWatering ∧ Sun ∧ Pollination ⇒ ExpectedGoodYield
   2. If the seeds are not germinating, then they need more watering.
      1. ¬GerminatingSeeds ⇒ NeedMoreWatering
   3. If the plant is not blossoming, then it needs more fertilization.
      1. ¬Blossoming ⇒ NeedMoreFertilization
   4. If the flowers are not bearing fruits, then they need pollination.
      1. ¬BearingFruit ⇒ NeedPollination
   5. If the leaves are yellow but not dry, then the plant is overwatered.
      1. LeavesYellow ∧ ¬LeavesDry ⇒ OverWatered
   6. If the leaves are yellow and dry, then the plant is underwatered.
      1. LeavesYellow ∧ LeavesDry ⇒ UnderWatered
   7. If the plant is growing slowly, then it needs more sunlight or more water
      1. GrowingSlowly ⇒ NeedsSunlight ⋁ NeedsMoreWatering
3. Inference
   1. Rule 1: GrowingSlowly ∧ OverWatering ⇒ NeedsSunlight
   2. Rule 2: GrowingSlowly ∧ UnderWatered ⇒ NeedsMoreWatering

| Germinating | Blossoming | BearingFruit | YellowDry | YellowNonDry | SlowGrowth | OverWatering | UnderWatering | Rule 1 | Rule 2 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| True | True | False | False | True | True | True | True | True | True |
| True | True | False | False | True | True | True | False | True | False |
| True | True | False | False | True | True | False | True | False | True |
| True | True | False | False | True | True | False | False | False | False |