# ACI Assignment- II Problem Statement- II

# Group 250

Participants:

|  |  |  |  |
| --- | --- | --- | --- |
| **S.I.** | **Name** | **ID** | **Contribution %** |
| 1 | Rahul | 2024ad05284 | 100 |
| 2 | Brijesh | 2024ad05270 | 100 |
| 3 | Mandan | 2024ad05331 | 100 |
| 4 | Gayathri | 2024ad05359 | 100 |
| 5 | Pranav Deep | 2024ad05376 | 100 |

Part A:

Part B:

## Rules:

We can convert given decision tree into an **if-then** rule for Prolog programming as follows:

1. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is less than equal to 1006.375 **then** type is **Kecimen**.
2. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is less than equal to 0.7476 and Perimeter is less than equal to 1122.831 and Area is less than equal to 62835 and Extent is less than equal to 0.666255 **then** type is **Besni**.
3. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is less than equal to 0.7476 and perimeter is less than equal to 1122.831 and Area is less than equal to 62835 and Extent is less than equal to 0.701678 but greater than 0.666255 **then** type is **Kecimen**.
4. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is less than equal to 0.7476 and perimeter is less than equal to 1122.831 and Area is less than equal to 62835 and Extent is greater than 0.701678 **then** type is **Besni**.
5. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is less than equal to 0.7476 and Perimeter is less than equal to 1122.831 and Area is greater than 62835 **then** type is **Kecimen**.
6. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is less than equal to 0.7476 and Perimeter is greater than 1122.831 and Extent is less than equal to 0.671309 **then** type is **Besni**.
7. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is less than equal to 0.7476 and Perimeter is greater than 1122.831 and Extent is greater than 0.671309 and Eccentricity is less than equal to 0.75951 **then** type is **Besni**.
8. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is less than equal to 0.7476 and Perimeter is greater than 1122.831 and Extent is greater than 0.671309 and Eccentricity is greater than 0.75951 **then** type is **Kecimen**.
9. **If** MajorAxisLength is less than equal to 422.279133 and Perimeter is greater than 1006.375 and Extent is greater than 0.7476 **then** type is **Kecimen**.
10. **if** MajorAxisLength is greater than 422.279133 **then** type is **Besni**.

Please see attached **raisin\_classification\_g250.pl** for complete implementation of above rules in Prolog.

## Execution Screenshots:

Execution screen shot for below test data verified against implemented Prolog login for given decision tree.

1. classify\_raisin(422.279133, 1010.0, 0.68, 62000, 0.69951, Type).
2. classify\_raisin(422.279133, 1010.0, 0.65, 62000, 0.69951, Type).
3. classify\_raisin(422.279133, 1010.0, 0.72, 62900, 0.69951, Type).
4. classify\_raisin(422.279133, 1210.0, 0.72, 62900, 0.69951, Type).
5. classify\_raisin(422.279133, 1210.0, 0.72, 62900, 0.76951, Type).
6. classify\_raisin(422.279133, 1210.0, 0.62, 62900, 0.76951, Type).
7. classify\_raisin(422.289133, 1210.0, 0.62, 62900, 0.76951, Type).
8. classify\_raisin(422.289133, 1210.0, 0.62, 62900, \_, Type).

