

## #PRAC1(26/11/19)---[R-Tool(R x64 3.6.2)]---

### #AIM: Practical on decision tree.

#### #THEORY:

Decision tree analysis is a predictive modelling tool; can be applied across many areas; can be constructed by an algorithmic approach that can split the dataset in different ways based on different conditions; these algos falls under the category of supervised algorithms; can be used for both classification and regression tasks; two main entities of a tree are decision nodes (where the data is split) and leaves (where we get outcome).

#### **About Iris dataset:**

The data set contains 3 classes of 50 instances each, where each class refers to a type of iris plant. One class is linearly separable from the other 2; the latter are NOT linearly separable from each other.

#### **Attribute Information:**

- sepal length (in cm)
- sepal width (in cm)
- petal length (in cm)
- petal width (in cm)
- class:
  - Iris Setosa
  - Iris Versicolour
  - Iris Virginica

#### #CODE:

```
> iris
```

	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3.0	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
.	.	.	.	.	.
28	5.2	3.5	1.5	0.2	setosa
29	5.2	3.4	1.4	0.2	setosa
.	.	.	.	.	.
149	6.2	3.4	5.4	2.3	virginica
150	5.9	3.0	5.1	1.8	virginica

```
> str(iris)
```

```
'data.frame': 150 obs. of 5 variables:
```

```
$ Sepal.Length: num 5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
```

```
$ Sepal.Width : num 3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
```

```
$ Petal.Length: num 1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
```

```
$ Petal.Width : num 0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
```

```
$ Species : Factor w/ 3 levels "setosa","versicolor",...: 1 1 1 1 1 1 1 1 1 1 ...
```

```
> library(rpart)
```

```
> ctree1=rpart(Species~.,data=iris)
```

```
> install.packages("rpart.plot")
```

--- Please select a CRAN mirror for use in this session ---

There is a binary version available but the source version is later:

binary source needs\_compilation

rpart.plot 3.0.7 3.0.8 FALSE

installing the source package 'rpart.plot'

trying URL 'https://cloud.r-project.org/src/contrib/rpart.plot\_3.0.8.tar.gz'

Content type 'application/x-gzip' length 709029 bytes (692 KB)

downloaded 692 KB

The downloaded source packages are in

'C:\Users\Administrator\AppData\Local\Temp\RtmpodFXuu\downloaded\_packages'

```
> library(rpart.plot)
```

```
> rpart.plot(ctree1,extra="auto")
```

