REPORT - ASSIGNMENT 2

**Report your output as follows:**

**Tree parameters:**

**Data Set 1:**

|  |  |  |
| --- | --- | --- |
|  | Average Depth | Number of nodes |
| Tree constructed using ID3 | 9.2 | 275 |
| Tree constructed using random attribute selection | 15.6 (Varies on each run) | 1121 (Varies on each run) |

**Data Set 2:**

|  |  |  |
| --- | --- | --- |
|  | Average Depth | Number of nodes |
| Tree constructed using ID3 | 9.8 | 303 |
| Tree constructed using random attribute selection | 14.9 (Varies on each run) | 1013 (Varies on each run) |

**Accuracy:**

Report accuracy for 5 different values of "number of nodes pruned" parameter. One of these should be for 0 nodes pruned i.e. comparing the accuracy without any post-pruning

**Data Set 1:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of nodes pruned | Accuracy of tree constructed using ID3 | | Accuracy of tree constructed using random attribute selection | |
|  | Validation | Test | Validation | Test |
| 0 | 75.9 | 75.85 | 56.3 | 57.65 |
| 1 | 76.75 | 77.05 | 52.85 | 51.85 |
| 3 | 75.15 | 76.15 | 52.85 | 53.30 |
| 5 | 75.10 | 76.40 | 58.60 | 57.35 |
| 7 | 73.5 | 75.5 | 57.0 | 55.3 |

**Data Set 2:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of nodes pruned | Accuracy of tree constructed using ID3 | | Accuracy of tree constructed using random attribute selection | |
|  | Validation | Test | Validation | Test |
| 0 | 77.16 | 72.33 | 51.16 | 51.0 |
| 1 | 78.0 | 74.16 | 57.16 | 55.8 |
| 3 | 76.16 | 74.16 | 56.6 | 59.5 |
| 5 | 75.33 | 73.83 | 55.3 | 54.5 |
| 7 | 74.8 | 73.3 | 52.16 | 52.0 |

**Sample ID3 tree from dataset1:**

XO : 1

| XI : 1

| | XT : 1

| | | XS : 1

| | | | XL : 1

| | | | | XH : 1

| | | | | | 0 : 0

| | | | | XH : 0

| | | | | | XD : 1

| | | | | | | XB : 1

| | | | | | | | 0 : 0

| | | | | | | XB : 0

| | | | | | | | 1 : 1

| | | | | | XD : 0

| | | | | | | XQ : 1

| | | | | | | | XB : 1

| | | | | | | | | 1 : 1

| | | | | | | | XB : 0

| | | | | | | | | 0 : 0

| | | | | | | XQ : 0

| | | | | | | | 0 : 0

| | | | XL : 0

| | | | | XD : 1

| | | | | | XG : 1

| | | | | | | 1 : 1

| | | | | | XG : 0

| | | | | | | 0 : 0

| | | | | XD : 0

| | | | | | XU : 1

| | | | | | | XB : 1

| | | | | | | | XG : 1

| | | | | | | | | 0 : 0

| | | | | | | | XG : 0

| | | | | | | | | XH : 1

| | | | | | | | | | 1 : 1

| | | | | | | | | XH : 0

| | | | | | | | | | 0 : 0

| | | | | | | XB : 0

| | | | | | | | XE : 1

| | | | | | | | | XC : 1

| | | | | | | | | | 0 : 0

| | | | | | | | | XC : 0

| | | | | | | | | | 1 : 1

| | | | | | | | XE : 0

| | | | | | | | | 1 : 1

| | | | | | XU : 0

| | | | | | | 1 : 1

| | | XS : 0

| | | | XQ : 1

| | | | | XM : 1

| | | | | | 0 : 0

| | | | | XM : 0

| | | | | | XN : 1

| | | | | | | XP : 1

| | | | | | | | 1 : 1

| | | | | | | XP : 0

| | | | | | | | XB : 1

| | | | | | | | | 1 : 1

| | | | | | | | XB : 0

| | | | | | | | | XF : 1

| | | | | | | | | | 1 : 1

| | | | | | | | | XF : 0

| | | | | | | | | | 0 : 0

| | | | | | XN : 0

| | | | | | | XU : 1

| | | | | | | | 0 : 0

| | | | | | | XU : 0

| | | | | | | | 1 : 1

| | | | XQ : 0

| | | | | XK : 1

| | | | | | XD : 1

| | | | | | | 0 : 0

| | | | | | XD : 0

| | | | | | | XF : 1

| | | | | | | | 1 : 1

| | | | | | | XF : 0

| | | | | | | | 0 : 0

| | | | | XK : 0

| | | | | | XC : 1

| | | | | | | 1 : 1

| | | | | | XC : 0

| | | | | | | XR : 1

| | | | | | | | XB : 1

| | | | | | | | | 0 : 0

| | | | | | | | XB : 0

| | | | | | | | | XD : 1

| | | | | | | | | | 1 : 1

| | | | | | | | | XD : 0

| | | | | | | | | | 0 : 0

| | | | | | | XR : 0

| | | | | | | | XH : 1

| | | | | | | | | 1 : 1

| | | | | | | | XH : 0

| | | | | | | | | XE : 1

| | | | | | | | | | 1 : 1

| | | | | | | | | XE : 0

| | | | | | | | | | 0 : 0

| | XT : 0

| | | XH : 1

| | | | XJ : 1

| | | | | XS : 1

| | | | | | XG : 1

| | | | | | | XC : 1

| | | | | | | | XD : 1

| | | | | | | | | 0 : 0

| | | | | | | | XD : 0

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| | | | | | XM : 0

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| | | | | XC : 0

| | | | | | XN : 1

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| | | | | | | XF : 0

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