Assignment #3 – Naïve Bayes

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CSE 6363 – Machine Learning

Training: Gaussians

```
Console > yeast_training.txt yeast_test.txt gaussians

Class 1, attribute 0, mean = 0.52, std = 0.10
Class 1, attribute 1, mean = 0.54, std = 0.10
Class 1, attribute 2, mean = 0.52, std = 0.07
Class 1, attribute 3, mean = 0.41, std = 0.17
Class 1, attribute 4, mean = 0.50, std = 0.01
Class 1, attribute 5, mean = 0.00, std = 0.01
Class 1, attribute 6, mean = 0.50, std = 0.05
Class 1, attribute 7, mean = 0.24, std = 0.05
Class 2, attribute 0, mean = 0.45, std = 0.11
Class 2, attribute 1, mean = 0.45, std = 0.10
Class 2, attribute 2, mean = 0.53, std = 0.06
Class 2, attribute 3, mean = 0.23, std = 0.11
Class 2, attribute 4, mean = 0.50, std = 0.04
Class 2, attribute 5, mean = 0.00, std = 0.01
Class 2, attribute 6, mean = 0.49, std = 0.06
Class 2, attribute 7, mean = 0.33, std = 0.14
Class 3, attribute 0, mean = 0.43, std = 0.10
Class 3, attribute 1, mean = 0.48, std = 0.11
Class 3, attribute 2, mean = 0.36, std = 0.06
Class 3, attribute 3, mean = 0.22, std = 0.08
Class 3, attribute 4, mean = 0.51, std = 0.05
Class 3, attribute 5, mean = 0.00, std = 0.01
Class 3, attribute 6, mean = 0.51, std = 0.04
Class 3, attribute 7, mean = 0.27, std = 0.09
Class 4, attribute 0, mean = 0.79, std = 0.07
Class 4, attribute 1, mean = 0.76, std = 0.07
Class 4, attribute 2, mean = 0.38, std = 0.06
Class 4, attribute 3, mean = 0.32, std = 0.11
Class 4, attribute 4, mean = 0.50, std = 0.01
Class 4, attribute 5, mean = 0.00, std = 0.01
Class 4, attribute 6, mean = 0.51, std = 0.07
Class 4, attribute 7, mean = 0.27, std = 0.09
Class 5, attribute 0, mean = 0.74, std = 0.16
Class 5, attribute 1, mean = 0.62, std = 0.13
Class 5, attribute 2, mean = 0.42, std = 0.08
Class 5, attribute 3, mean = 0.30, std = 0.12
Class 5, attribute 4, mean = 0.50, std = 0.01
Class 5, attribute 5, mean = 0.00, std = 0.01
Class 5, attribute 6, mean = 0.51, std = 0.06
Class 5, attribute 7, mean = 0.24, std = 0.04
Class 6, attribute 0, mean = 0.54, std = 0.14
Class 6, attribute 1, mean = 0.50, std = 0.12
Class 6, attribute 2, mean = 0.51, std = 0.05
Class 6, attribute 3, mean = 0.24, std = 0.10
Class 6, attribute 4, mean = 0.50, std = 0.01
Class 6, attribute 5, mean = 0.49, std = 0.39
Class 6, attribute 6, mean = 0.51, std = 0.03
Class 6, attribute 7, mean = 0.24, std = 0.05
Class 7, attribute 0, mean = 0.48, std = 0.11
Class 7, attribute 1, mean = 0.47, std = 0.09
Class 7, attribute 2, mean = 0.54, std = 0.06
Class 7, attribute 3, mean = 0.22, std = 0.12
Class 7, attribute 4, mean = 0.50, std = 0.04
Class 7, attribute 5, mean = 0.00, std = 0.03
Class 7, attribute 6, mean = 0.50, std = 0.06
Class 7, attribute 7, mean = 0.26, std = 0.09
```

```
Class 8, attribute 0, mean = 0.74, std = 0.11
Class 8, attribute 1, mean = 0.73, std = 0.11
Class 8, attribute 2, mean = 0.49, std = 0.05
Class 8, attribute 3, mean = 0.29, std = 0.07
Class 8, attribute 4, mean = 0.50, std = 0.01
Class 8, attribute 5, mean = 0.00, std = 0.01
Class 8, attribute 6, mean = 0.46, std = 0.08
Class 8, attribute 7, mean = 0.23, std = 0.02
Class 9, attribute 0, mean = 0.55, std = 0.14
Class 9, attribute 1, mean = 0.56, std = 0.16
Class 9, attribute 2, mean = 0.51, std = 0.07
Class 9, attribute 3, mean = 0.20, std = 0.07
Class 9, attribute 4, mean = 0.50, std = 0.01
Class 9, attribute 5, mean = 0.00, std = 0.01
Class 9, attribute 6, mean = 0.53, std = 0.05
Class 9, attribute 7, mean = 0.24, std = 0.05
Class 10, attribute 0, mean = 0.77, std = 0.06
Class 10, attribute 1, mean = 0.73, std = 0.12
Class 10, attribute 2, mean = 0.48, std = 0.11
Class 10, attribute 3, mean = 0.33, std = 0.07
Class 10, attribute 4, mean = 1.00, std = 0.01
Class 10, attribute 5, mean = 0.00, std = 0.01
Class 10, attribute 6, mean = 0.55, std = 0.02
Class 10, attribute 7, mean = 0.23, std = 0.02
```

Testing: Gaussians

```
classification accuracy= 0.4483
```

Training: Mixtures of Gaussians

```
yeast_training.txt yeast_test.txt mixtures 3
Class 1, attribute 0, Gaussian 0, mean = 0.50, std = 0.06
Class 1, attribute 0, Gaussian 1, mean = 0.53, std = 0.10
Class 1, attribute 0, Gaussian 2, mean = 0.52, std = 0.12
Class 1, attribute 1, Gaussian 0, mean = 0.54, std = 0.08
Class 1, attribute 1, Gaussian 1, mean = 0.53, std = 0.09
Class 1, attribute 1, Gaussian 2, mean = 0.53, std = 0.18
Class 1, attribute 2, Gaussian 0, mean = 0.50, std = 0.10
Class 1, attribute 2, Gaussian 1, mean = 0.53, std = 0.06
Class 1, attribute 2, Gaussian 2, mean = 0.51, std = 0.05
Class 1, attribute 3, Gaussian 0, mean = 0.39, std = 0.17
Class 1, attribute 3, Gaussian 1, mean = 0.41, std = 0.17
Class 1, attribute 3, Gaussian 2, mean = 0.42, std = 0.17
Class 1, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 1, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 1, attribute 4, Gaussian 2, mean = 0.50, std = 0.01
Class 1, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 1, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 1, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 1, attribute 6, Gaussian 0, mean = 0.46, std = 0.09
Class 1, attribute 6, Gaussian 1, mean = 0.51, std = 0.03
Class 1, attribute 6, Gaussian 2, mean = 0.51, std = 0.03
Class 1, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 1, attribute 7, Gaussian 1, mean = 0.27, std = 0.01
Class 1, attribute 7, Gaussian 2, mean = 0.32, std = 0.10
Class 2, attribute 0, Gaussian 0, mean = 0.44, std = 0.10
Class 2, attribute 0, Gaussian 1, mean = 0.45, std = 0.10
```

```
Class 2, attribute 0, Gaussian 2, mean = 0.54, std = 0.17
Class 2, attribute 1, Gaussian 0, mean = 0.45, std = 0.10
Class 2, attribute 1, Gaussian 1, mean = 0.45, std = 0.10
Class 2, attribute 1, Gaussian 2, mean = 0.46, std = 0.11
Class 2, attribute 2, Gaussian 0, mean = 0.51, std = 0.07
Class 2, attribute 2, Gaussian 1, mean = 0.53, std = 0.05
Class 2, attribute 2, Gaussian 2, mean = 0.54, std = 0.05
Class 2, attribute 3, Gaussian 0, mean = 0.16, std = 0.04
Class 2, attribute 3, Gaussian 1, mean = 0.24, std = 0.07
Class 2, attribute 3, Gaussian 2, mean = 0.36, std = 0.16
Class 2, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 2, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 2, attribute 4, Gaussian 2, mean = 1.00, std = 0.01
Class 2, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 2, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 2, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 2, attribute 6, Gaussian 0, mean = 0.45, std = 0.11
Class 2, attribute 6, Gaussian 1, mean = 0.49, std = 0.04
Class 2, attribute 6, Gaussian 2, mean = 0.51, std = 0.02
Class 2, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 2, attribute 7, Gaussian 1, mean = 0.31, std = 0.06
Class 2, attribute 7, Gaussian 2, mean = 0.50, std = 0.16
Class 3, attribute 0, Gaussian 0, mean = 0.42, std = 0.10
Class 3, attribute 0, Gaussian 1, mean = 0.43, std = 0.10
Class 3, attribute 0, Gaussian 2, mean = 0.44, std = 0.10
Class 3, attribute 1, Gaussian 0, mean = 0.45, std = 0.12
Class 3, attribute 1, Gaussian 1, mean = 0.48, std = 0.10
Class 3, attribute 1, Gaussian 2, mean = 0.49, std = 0.10
Class 3, attribute 2, Gaussian 0, mean = 0.33, std = 0.07
Class 3, attribute 2, Gaussian 1, mean = 0.39, std = 0.05
Class 3, attribute 2, Gaussian 2, mean = 0.35, std = 0.03
Class 3, attribute 3, Gaussian 0, mean = 0.17, std = 0.04
Class 3, attribute 3, Gaussian 1, mean = 0.23, std = 0.05
Class 3, attribute 3, Gaussian 2, mean = 0.34, std = 0.10
Class 3, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 3, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 3, attribute 4, Gaussian 2, mean = 1.00, std = 0.01
Class 3, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 3, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 3, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 3, attribute 6, Gaussian 0, mean = 0.46, std = 0.04
Class 3, attribute 6, Gaussian 1, mean = 0.52, std = 0.02
Class 3, attribute 6, Gaussian 2, mean = 0.53, std = 0.02
Class 3, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 3, attribute 7, Gaussian 1, mean = 0.29, std = 0.03
Class 3, attribute 7, Gaussian 2, mean = 0.48, std = 0.15
Class 4, attribute 0, Gaussian 0, mean = 0.76, std = 0.05
Class 4, attribute 0, Gaussian 1, mean = 0.76, std = 0.05
Class 4, attribute 0, Gaussian 2, mean = 0.87, std = 0.07
Class 4, attribute 1, Gaussian 0, mean = 0.76, std = 0.07
Class 4, attribute 1, Gaussian 1, mean = 0.76, std = 0.07
Class 4, attribute 1, Gaussian 2, mean = 0.76, std = 0.07
Class 4, attribute 2, Gaussian 0, mean = 0.33, std = 0.03
Class 4, attribute 2, Gaussian 1, mean = 0.40, std = 0.05
Class 4, attribute 2, Gaussian 2, mean = 0.41, std = 0.05
Class 4, attribute 3, Gaussian 0, mean = 0.29, std = 0.06
Class 4, attribute 3, Gaussian 1, mean = 0.30, std = 0.06
Class 4, attribute 3, Gaussian 2, mean = 0.39, std = 0.19
Class 4, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 4, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 4, attribute 4, Gaussian 2, mean = 0.50, std = 0.01
Class 4, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 4, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
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Class 4, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 4, attribute 6, Gaussian 0, mean = 0.40, std = 0.09
Class 4, attribute 6, Gaussian 1, mean = 0.50, std = 0.05
Class 4, attribute 6, Gaussian 2, mean = 0.55, std = 0.01
Class 4, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 4, attribute 7, Gaussian 1, mean = 0.31, std = 0.02
Class 4, attribute 7, Gaussian 2, mean = 0.43, std = 0.11
Class 5, attribute 0, Gaussian 0, mean = 0.50, std = 0.14
Class 5, attribute 0, Gaussian 1, mean = 0.73, std = 0.09
Class 5, attribute 0, Gaussian 2, mean = 0.84, std = 0.08
Class 5, attribute 1, Gaussian 0, mean = 0.59, std = 0.13
Class 5, attribute 1, Gaussian 1, mean = 0.61, std = 0.13
Class 5, attribute 1, Gaussian 2, mean = 0.66, std = 0.10
Class 5, attribute 2, Gaussian 0, mean = 0.38, std = 0.05
Class 5, attribute 2, Gaussian 1, mean = 0.45, std = 0.08
Class 5, attribute 2, Gaussian 2, mean = 0.51, std = 0.07
Class 5, attribute 3, Gaussian 0, mean = 0.19, std = 0.04
Class 5, attribute 3, Gaussian 1, mean = 0.37, std = 0.10
Class 5, attribute 3, Gaussian 2, mean = 0.39, std = 0.09
Class 5, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 5, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 5, attribute 4, Gaussian 2, mean = 0.50, std = 0.01
Class 5, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 5, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 5, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 5, attribute 6, Gaussian 0, mean = 0.38, std = 0.05
Class 5, attribute 6, Gaussian 1, mean = 0.56, std = 0.03
Class 5, attribute 6, Gaussian 2, mean = 0.52, std = 0.02
Class 5, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 5, attribute 7, Gaussian 1, mean = 0.22, std = 0.01
Class 5, attribute 7, Gaussian 2, mean = 0.30, std = 0.05
Class 6, attribute 0, Gaussian 0, mean = 0.44, std = 0.04
Class 6, attribute 0, Gaussian 1, mean = 0.58, std = 0.09
Class 6, attribute 0, Gaussian 2, mean = 0.73, std = 0.06
Class 6, attribute 1, Gaussian 0, mean = 0.48, std = 0.07
Class 6, attribute 1, Gaussian 1, mean = 0.49, std = 0.13
Class 6, attribute 1, Gaussian 2, mean = 0.53, std = 0.13
Class 6, attribute 2, Gaussian 0, mean = 0.49, std = 0.04
Class 6, attribute 2, Gaussian 1, mean = 0.51, std = 0.05
Class 6, attribute 2, Gaussian 2, mean = 0.52, std = 0.05
Class 6, attribute 3, Gaussian 0, mean = 0.19, std = 0.01
Class 6, attribute 3, Gaussian 1, mean = 0.22, std = 0.07
Class 6, attribute 3, Gaussian 2, mean = 0.45, std = 0.01
Class 6, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 6, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 6, attribute 4, Gaussian 2, mean = 0.50, std = 0.01
Class 6, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 6, attribute 5, Gaussian 1, mean = 0.50, std = 0.01
Class 6, attribute 5, Gaussian 2, mean = 0.83, std = 0.01
Class 6, attribute 6, Gaussian 0, mean = 0.42, std = 0.01
Class 6, attribute 6, Gaussian 1, mean = 0.51, std = 0.02
Class 6, attribute 6, Gaussian 2, mean = 0.52, std = 0.02
Class 6, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 6, attribute 7, Gaussian 1, mean = 0.22, std = 0.01
Class 6, attribute 7, Gaussian 2, mean = 0.34, std = 0.07
Class 7, attribute 0, Gaussian 0, mean = 0.48, std = 0.11
Class 7, attribute 0, Gaussian 1, mean = 0.48, std = 0.11
Class 7, attribute 0, Gaussian 2, mean = 0.48, std = 0.11
Class 7, attribute 1, Gaussian 0, mean = 0.45, std = 0.07
Class 7, attribute 1, Gaussian 1, mean = 0.47, std = 0.09
Class 7, attribute 1, Gaussian 2, mean = 0.49, std = 0.11
Class 7, attribute 2, Gaussian 0, mean = 0.52, std = 0.04
Class 7, attribute 2, Gaussian 1, mean = 0.53, std = 0.05
```

```
Class 7, attribute 2, Gaussian 2, mean = 0.65, std = 0.12
Class 7, attribute 3, Gaussian 0, mean = 0.16, std = 0.04
Class 7, attribute 3, Gaussian 1, mean = 0.24, std = 0.06
Class 7, attribute 3, Gaussian 2, mean = 0.41, std = 0.19
Class 7, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 7, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 7, attribute 4, Gaussian 2, mean = 1.00, std = 0.01
Class 7, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 7, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 7, attribute 5, Gaussian 2, mean = 0.50, std = 0.01
Class 7, attribute 6, Gaussian 0, mean = 0.45, std = 0.12
Class 7, attribute 6, Gaussian 1, mean = 0.49, std = 0.05
Class 7, attribute 6, Gaussian 2, mean = 0.52, std = 0.03
Class 7, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 7, attribute 7, Gaussian 1, mean = 0.27, std = 0.03
Class 7, attribute 7, Gaussian 2, mean = 0.31, std = 0.16
Class 8, attribute 0, Gaussian 0, mean = 0.45, std = 0.04
Class 8, attribute 0, Gaussian 1, mean = 0.77, std = 0.05
Class 8, attribute 0, Gaussian 2, mean = 0.77, std = 0.05
Class 8, attribute 1, Gaussian 0, mean = 0.54, std = 0.14
Class 8, attribute 1, Gaussian 1, mean = 0.71, std = 0.08
Class 8, attribute 1, Gaussian 2, mean = 0.78, std = 0.05
Class 8, attribute 2, Gaussian 0, mean = 0.49, std = 0.05
Class 8, attribute 2, Gaussian 1, mean = 0.49, std = 0.05
Class 8, attribute 2, Gaussian 2, mean = 0.50, std = 0.05
Class 8, attribute 3, Gaussian 0, mean = 0.29, std = 0.07
Class 8, attribute 3, Gaussian 1, mean = 0.29, std = 0.07
Class 8, attribute 3, Gaussian 2, mean = 0.29, std = 0.07
Class 8, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 8, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 8, attribute 4, Gaussian 2, mean = 0.50, std = 0.01
Class 8, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 8, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 8, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 8, attribute 6, Gaussian 0, mean = 0.36, std = 0.04
Class 8, attribute 6, Gaussian 1, mean = 0.53, std = 0.03
Class 8, attribute 6, Gaussian 2, mean = 0.48, std = 0.01
Class 8, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 8, attribute 7, Gaussian 1, mean = 0.22, std = 0.01
Class 8, attribute 7, Gaussian 2, mean = 0.27, std = 0.01
Class 9, attribute 0, Gaussian 0, mean = 0.53, std = 0.13
Class 9, attribute 0, Gaussian 1, mean = 0.55, std = 0.14
Class 9, attribute 0, Gaussian 2, mean = 0.56, std = 0.14
Class 9, attribute 1, Gaussian 0, mean = 0.55, std = 0.15
Class 9, attribute 1, Gaussian 1, mean = 0.56, std = 0.15
Class 9, attribute 1, Gaussian 2, mean = 0.56, std = 0.15
Class 9, attribute 2, Gaussian 0, mean = 0.37, std = 0.02
Class 9, attribute 2, Gaussian 1, mean = 0.48, std = 0.02
Class 9, attribute 2, Gaussian 2, mean = 0.55, std = 0.02
Class 9, attribute 3, Gaussian 0, mean = 0.20, std = 0.06
Class 9, attribute 3, Gaussian 1, mean = 0.20, std = 0.06
Class 9, attribute 3, Gaussian 2, mean = 0.20, std = 0.06
Class 9, attribute 4, Gaussian 0, mean = 0.50, std = 0.01
Class 9, attribute 4, Gaussian 1, mean = 0.50, std = 0.01
Class 9, attribute 4, Gaussian 2, mean = 0.50, std = 0.01
Class 9, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 9, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 9, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 9, attribute 6, Gaussian 0, mean = 0.42, std = 0.05
Class 9, attribute 6, Gaussian 1, mean = 0.56, std = 0.04
Class 9, attribute 6, Gaussian 2, mean = 0.52, std = 0.03
Class 9, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 9, attribute 7, Gaussian 1, mean = 0.26, std = 0.01
```

```
Class 9, attribute 7, Gaussian 2, mean = 0.40, std = 0.01
Class 10, attribute 0, Gaussian 0, mean = 0.77, std = 0.05
Class 10, attribute 0, Gaussian 1, mean = 0.78, std = 0.05
Class 10, attribute 0, Gaussian 2, mean = 0.78, std = 0.05
Class 10, attribute 1, Gaussian 0, mean = 0.56, std = 0.01
Class 10, attribute 1, Gaussian 1, mean = 0.74, std = 0.01
Class 10, attribute 1, Gaussian 2, mean = 0.82, std = 0.02
Class 10, attribute 2, Gaussian 0, mean = 0.33, std = 0.01
Class 10, attribute 2, Gaussian 1, mean = 0.50, std = 0.01
Class 10, attribute 2, Gaussian 2, mean = 0.53, std = 0.04
Class 10, attribute 3, Gaussian 0, mean = 0.33, std = 0.06
Class 10, attribute 3, Gaussian 1, mean = 0.33, std = 0.06
Class 10, attribute 3, Gaussian 2, mean = 0.33, std = 0.06
Class 10, attribute 4, Gaussian 0, mean = 1.00, std = 0.01
Class 10, attribute 4, Gaussian 1, mean = 1.00, std = 0.01
Class 10, attribute 4, Gaussian 2, mean = 1.00, std = 0.01
Class 10, attribute 5, Gaussian 0, mean = 0.00, std = 0.01
Class 10, attribute 5, Gaussian 1, mean = 0.00, std = 0.01
Class 10, attribute 5, Gaussian 2, mean = 0.00, std = 0.01
Class 10, attribute 6, Gaussian 0, mean = 0.54, std = 0.01
Class 10, attribute 6, Gaussian 1, mean = 0.58, std = 0.01
Class 10, attribute 6, Gaussian 2, mean = 0.58, std = 0.01
Class 10, attribute 7, Gaussian 0, mean = 0.22, std = 0.01
Class 10, attribute 7, Gaussian 1, mean = 0.24, std = 0.01
Class 10, attribute 7, Gaussian 2, mean = 0.25, std = 0.01
```

Training: Histograms

```
yeast_training.txt yeast_test.txt histograms 7
Class 1, attribute 0, bin 0, P(bin | class) = 0.0
Class 1, attribute 0, bin 1, P(bin | class) = 0.16
Class 1, attribute 0, bin 2, P(bin | class) = 1.1
Class 1, attribute 0, bin 3, P(bin | class) = 4.24
Class 1, attribute 0, bin 4, P(bin | class) = 1.22
Class 1, attribute 0, bin 5, P(bin | class) = 0.16
Class 1, attribute 0, bin 6, P(bin | class) = 0.0
Class 1, attribute 1, bin 0, P(bin | class) = 0.0
Class 1, attribute 1, bin 1, P(bin | class) = 0.06
Class 1, attribute 1, bin 2, P(bin | class) = 1.27
Class 1, attribute 1, bin 3, P(bin | class) = 3.32
Class 1, attribute 1, bin 4, P(bin | class) = 0.2
Class 1, attribute 1, bin 5, P(bin | class) = 0.03
Class 1, attribute 1, bin 6, P(bin | class) = 0.0
Class 1, attribute 2, bin 0, P(bin | class) = 0.0
Class 1, attribute 2, bin 1, P(bin | class) = 0.33
Class 1, attribute 2, bin 2, P(bin | class) = 1.32
Class 1, attribute 2, bin 3, P(bin | class) = 5.06
Class 1, attribute 2, bin 4, P(bin | class) = 2.42
Class 1, attribute 2, bin 5, P(bin | class) = 0.17
Class 1, attribute 2, bin 6, P(bin | class) = 0.0
Class 1, attribute 3, bin 0, P(bin | class) = 0.0
Class 1, attribute 3, bin 1, P(bin | class) = 0.81
Class 1, attribute 3, bin 2, P(bin | class) = 1.46
Class 1, attribute 3, bin 3, P(bin | class) = 2.12
Class 1, attribute 3, bin 4, P(bin | class) = 0.81
Class 1, attribute 3, bin 5, P(bin | class) = 0.06
Class 1, attribute 3, bin 6, P(bin | class) = 0.0
Class 1, attribute 4, bin 0, P(bin | class) = 0.0
Class 1, attribute 4, bin 1, P(bin | class) = 10000.0
```

```
Class 1, attribute 4, bin 2, P(bin | class) = 0.0
Class 1, attribute 4, bin 3, P(bin | class) = 0.0
Class 1, attribute 4, bin 4, P(bin | class) = 0.0
Class 1, attribute 4, bin 5, P(bin | class) = 0.0
Class 1, attribute 4, bin 6, P(bin | class) = 0.0
Class 1, attribute 5, bin 0, P(bin | class) = 0.0
Class 1, attribute 5, bin 1, P(bin | class) = 10000.0
Class 1, attribute 5, bin 2, P(bin | class) = 0.0
Class 1, attribute 5, bin 3, P(bin | class) = 0.0
Class 1, attribute 5, bin 4, P(bin | class) = 0.0
Class 1, attribute 5, bin 5, P(bin | class) = 0.0
Class 1, attribute 5, bin 6, P(bin | class) = 0.0
Class 1, attribute 6, bin 0, P(bin | class) = 0.0
Class 1, attribute 6, bin 1, P(bin | class) = 0.06
Class 1, attribute 6, bin 2, P(bin | class) = 0.55
Class 1, attribute 6, bin 3, P(bin | class) = 5.72
Class 1, attribute 6, bin 4, P(bin | class) = 2.92
Class 1, attribute 6, bin 5, P(bin | class) = 0.06
Class 1, attribute 6, bin 6, P(bin | class) = 0.0
Class 1, attribute 7, bin 0, P(bin | class) = 0.0
Class 1, attribute 7, bin 1, P(bin | class) = 0.09
Class 1, attribute 7, bin 2, P(bin | class) = 6.83
Class 1, attribute 7, bin 3, P(bin | class) = 0.58
Class 1, attribute 7, bin 4, P(bin | class) = 0.0
Class 1, attribute 7, bin 5, P(bin | class) = 0.04
Class 1, attribute 7, bin 6, P(bin | class) = 0.0
Class 2, attribute 0, bin 0, P(bin | class) = 0.0
Class 2, attribute 0, bin 1, P(bin | class) = 0.19
Class 2, attribute 0, bin 2, P(bin | class) = 2.38
Class 2, attribute 0, bin 3, P(bin | class) = 2.66
Class 2, attribute 0, bin 4, P(bin | class) = 0.2
Class 2, attribute 0, bin 5, P(bin | class) = 0.06
Class 2, attribute 0, bin 6, P(bin | class) = 0.0
Class 2, attribute 1, bin 0, P(bin | class) = 0.0
Class 2, attribute 1, bin 1, P(bin | class) = 0.17
Class 2, attribute 1, bin 2, P(bin | class) = 1.97
Class 2, attribute 1, bin 3, P(bin | class) = 3.28
Class 2, attribute 1, bin 4, P(bin | class) = 0.98
Class 2, attribute 1, bin 5, P(bin | class) = 0.04
Class 2, attribute 1, bin 6, P(bin | class) = 0.0
Class 2, attribute 2, bin 0, P(bin | class) = 0.0
Class 2, attribute 2, bin 1, P(bin | class) = 0.08
Class 2, attribute 2, bin 2, P(bin | class) = 0.56
Class 2, attribute 2, bin 3, P(bin | class) = 5.82
Class 2, attribute 2, bin 4, P(bin | class) = 4.55
Class 2, attribute 2, bin 5, P(bin | class) = 0.76
Class 2, attribute 2, bin 6, P(bin | class) = 0.0
Class 2, attribute 3, bin 0, P(bin | class) = 0.0
Class 2, attribute 3, bin 1, P(bin | class) = 0.19
Class 2, attribute 3, bin 2, P(bin | class) = 3.74
Class 2, attribute 3, bin 3, P(bin | class) = 0.66
Class 2, attribute 3, bin 4, P(bin | class) = 0.03
Class 2, attribute 3, bin 5, P(bin | class) = 0.03
Class 2, attribute 3, bin 6, P(bin | class) = 0.0
Class 2, attribute 4, bin 0, P(bin | class) = 0.0
Class 2, attribute 4, bin 1, P(bin | class) = 7.95
Class 2, attribute 4, bin 2, P(bin | class) = 0.0
Class 2, attribute 4, bin 3, P(bin | class) = 0.0
Class 2, attribute 4, bin 4, P(bin | class) = 0.0
Class 2, attribute 4, bin 5, P(bin | class) = 0.05
Class 2, attribute 4, bin 6, P(bin | class) = 0.0
Class 2, attribute 5, bin 0, P(bin | class) = 0.0
Class 2, attribute 5, bin 1, P(bin | class) = 10000.0
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Class 2, attribute 5, bin 2, P(bin | class) = 0.0
Class 2, attribute 5, bin 3, P(bin | class) = 0.0
Class 2, attribute 5, bin 4, P(bin | class) = 0.0
Class 2, attribute 5, bin 5, P(bin | class) = 0.0
Class 2, attribute 5, bin 6, P(bin | class) = 0.0
Class 2, attribute 6, bin 0, P(bin | class) = 0.0
Class 2, attribute 6, bin 1, P(bin | class) = 0.03
Class 2, attribute 6, bin 2, P(bin | class) = 0.13
Class 2, attribute 6, bin 3, P(bin | class) = 1.88
Class 2, attribute 6, bin 4, P(bin | class) = 5.32
Class 2, attribute 6, bin 5, P(bin | class) = 0.05
Class 2, attribute 6, bin 6, P(bin | class) = 0.0
Class 2, attribute 7, bin 0, P(bin | class) = 0.0
Class 2, attribute 7, bin 1, P(bin | class) = 2.02
Class 2, attribute 7, bin 2, P(bin | class) = 2.11
Class 2, attribute 7, bin 3, P(bin | class) = 0.5
Class 2, attribute 7, bin 4, P(bin | class) = 0.1
Class 2, attribute 7, bin 5, P(bin | class) = 0.03
Class 2, attribute 7, bin 6, P(bin | class) = 0.0
Class 3, attribute 0, bin 0, P(bin | class) = 0.0
Class 3, attribute 0, bin 1, P(bin | class) = 0.37
Class 3, attribute 0, bin 2, P(bin | class) = 2.22
Class 3, attribute 0, bin 3, P(bin | class) = 3.61
Class 3, attribute 0, bin 4, P(bin | class) = 2.13
Class 3, attribute 0, bin 5, P(bin | class) = 0.56
Class 3, attribute 0, bin 6, P(bin | class) = 0.0
Class 3, attribute 1, bin 0, P(bin | class) = 0.0
Class 3, attribute 1, bin 1, P(bin | class) = 0.07
Class 3, attribute 1, bin 2, P(bin | class) = 0.89
Class 3, attribute 1, bin 3, P(bin | class) = 3.35
Class 3, attribute 1, bin 4, P(bin | class) = 2.05
Class 3, attribute 1, bin 5, P(bin | class) = 0.2
Class 3, attribute 1, bin 6, P(bin | class) = 0.0
Class 3, attribute 2, bin 0, P(bin | class) = 0.0
Class 3, attribute 2, bin 1, P(bin | class) = 0.57
Class 3, attribute 2, bin 2, P(bin | class) = 2.01
Class 3, attribute 2, bin 3, P(bin | class) = 7.9
Class 3, attribute 2, bin 4, P(bin | class) = 2.87
Class 3, attribute 2, bin 5, P(bin | class) = 0.43
Class 3, attribute 2, bin 6, P(bin | class) = 0.0
Class 3, attribute 3, bin 0, P(bin | class) = 0.0
Class 3, attribute 3, bin 1, P(bin | class) = 1.42
Class 3, attribute 3, bin 2, P(bin | class) = 5.3
Class 3, attribute 3, bin 3, P(bin | class) = 1.99
Class 3, attribute 3, bin 4, P(bin | class) = 0.28
Class 3, attribute 3, bin 5, P(bin | class) = 0.09
Class 3, attribute 3, bin 6, P(bin | class) = 0.0
Class 3, attribute 4, bin 0, P(bin | class) = 0.0
Class 3, attribute 4, bin 1, P(bin | class) = 7.92
Class 3, attribute 4, bin 2, P(bin | class) = 0.0
Class 3, attribute 4, bin 3, P(bin | class) = 0.0
Class 3, attribute 4, bin 4, P(bin | class) = 0.0
Class 3, attribute 4, bin 5, P(bin | class) = 0.08
Class 3, attribute 4, bin 6, P(bin | class) = 0.0
Class 3, attribute 5, bin 0, P(bin | class) = 0.0
Class 3, attribute 5, bin 1, P(bin | class) = 10000.0
Class 3, attribute 5, bin 2, P(bin | class) = 0.0
Class 3, attribute 5, bin 3, P(bin | class) = 0.0
Class 3, attribute 5, bin 4, P(bin | class) = 0.0
Class 3, attribute 5, bin 5, P(bin | class) = 0.0
Class 3, attribute 5, bin 6, P(bin | class) = 0.0
Class 3, attribute 6, bin 0, P(bin | class) = 0.0
Class 3, attribute 6, bin 1, P(bin | class) = 0.69
```

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Class 3, attribute 6, bin 2, P(bin | class) = 0.93
Class 3, attribute 6, bin 3, P(bin | class) = 5.56
Class 3, attribute 6, bin 4, P(bin | class) = 11.81
Class 3, attribute 6, bin 5, P(bin | class) = 3.24
Class 3, attribute 6, bin 6, P(bin | class) = 0.0
Class 3, attribute 7, bin 0, P(bin | class) = 0.0
Class 3, attribute 7, bin 1, P(bin | class) = 4.85
Class 3, attribute 7, bin 2, P(bin | class) = 1.3
Class 3, attribute 7, bin 3, P(bin | class) = 0.34
Class 3, attribute 7, bin 4, P(bin | class) = 0.0
Class 3, attribute 7, bin 5, P(bin | class) = 0.07
Class 3, attribute 7, bin 6, P(bin | class) = 0.0
Class 4, attribute 0, bin 0, P(bin | class) = 0.0
Class 4, attribute 0, bin 1, P(bin | class) = 1.89
Class 4, attribute 0, bin 2, P(bin | class) = 5.3
Class 4, attribute 0, bin 3, P(bin | class) = 3.41
Class 4, attribute 0, bin 4, P(bin | class) = 1.14
Class 4, attribute 0, bin 5, P(bin | class) = 0.38
Class 4, attribute 0, bin 6, P(bin | class) = 0.0
Class 4, attribute 1, bin 0, P(bin | class) = 0.0
Class 4, attribute 1, bin 1, P(bin | class) = 1.44
Class 4, attribute 1, bin 2, P(bin | class) = 2.88
Class 4, attribute 1, bin 3, P(bin | class) = 5.29
Class 4, attribute 1, bin 4, P(bin | class) = 3.85
Class 4, attribute 1, bin 5, P(bin | class) = 1.92
Class 4, attribute 1, bin 6, P(bin | class) = 0.0
Class 4, attribute 2, bin 0, P(bin | class) = 0.0
Class 4, attribute 2, bin 1, P(bin | class) = 2.0
Class 4, attribute 2, bin 2, P(bin | class) = 6.5
Class 4, attribute 2, bin 3, P(bin | class) = 3.0
Class 4, attribute 2, bin 4, P(bin | class) = 4.0
Class 4, attribute 2, bin 5, P(bin | class) = 0.5
Class 4, attribute 2, bin 6, P(bin | class) = 0.0
Class 4, attribute 3, bin 0, P(bin | class) = 0.0
Class 4, attribute 3, bin 1, P(bin | class) = 0.2
Class 4, attribute 3, bin 2, P(bin | class) = 3.83
Class 4, attribute 3, bin 3, P(bin | class) = 2.02
Class 4, attribute 3, bin 4, P(bin | class) = 0.2
Class 4, attribute 3, bin 5, P(bin | class) = 0.2
Class 4, attribute 3, bin 6, P(bin | class) = 0.0
Class 4, attribute 4, bin 0, P(bin | class) = 0.0
Class 4, attribute 4, bin 1, P(bin | class) = 10000.0
Class 4, attribute 4, bin 2, P(bin | class) = 0.0
Class 4, attribute 4, bin 3, P(bin | class) = 0.0
Class 4, attribute 4, bin 4, P(bin | class) = 0.0
Class 4, attribute 4, bin 5, P(bin | class) = 0.0
Class 4, attribute 4, bin 6, P(bin | class) = 0.0
Class 4, attribute 5, bin 0, P(bin | class) = 0.0
Class 4, attribute 5, bin 1, P(bin | class) = 10000.0
Class 4, attribute 5, bin 2, P(bin | class) = 0.0
Class 4, attribute 5, bin 3, P(bin | class) = 0.0
Class 4, attribute 5, bin 4, P(bin | class) = 0.0
Class 4, attribute 5, bin 5, P(bin | class) = 0.0
Class 4, attribute 5, bin 6, P(bin | class) = 0.0
Class 4, attribute 6, bin 0, P(bin | class) = 0.0
Class 4, attribute 6, bin 1, P(bin | class) = 0.39
Class 4, attribute 6, bin 2, P(bin | class) = 0.39
Class 4, attribute 6, bin 3, P(bin | class) = 2.34
Class 4, attribute 6, bin 4, P(bin | class) = 6.25
Class 4, attribute 6, bin 5, P(bin | class) = 3.13
Class 4, attribute 6, bin 6, P(bin | class) = 0.0
Class 4, attribute 7, bin 0, P(bin | class) = 0.0
Class 4, attribute 7, bin 1, P(bin | class) = 6.4
```

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Class 4, attribute 7, bin 2, P(bin | class) = 2.13
Class 4, attribute 7, bin 3, P(bin | class) = 0.91
Class 4, attribute 7, bin 4, P(bin | class) = 0.0
Class 4, attribute 7, bin 5, P(bin | class) = 0.3
Class 4, attribute 7, bin 6, P(bin | class) = 0.0
Class 5, attribute 0, bin 0, P(bin | class) = 0.0
Class 5, attribute 0, bin 1, P(bin | class) = 0.36
Class 5, attribute 0, bin 2, P(bin | class) = 0.73
Class 5, attribute 0, bin 3, P(bin | class) = 1.45
Class 5, attribute 0, bin 4, P(bin | class) = 3.08
Class 5, attribute 0, bin 5, P(bin | class) = 0.73
Class 5, attribute 0, bin 6, P(bin | class) = 0.0
Class 5, attribute 1, bin 0, P(bin | class) = 0.0
Class 5, attribute 1, bin 1, P(bin | class) = 0.61
Class 5, attribute 1, bin 2, P(bin | class) = 1.22
Class 5, attribute 1, bin 3, P(bin | class) = 3.27
Class 5, attribute 1, bin 4, P(bin | class) = 1.84
Class 5, attribute 1, bin 5, P(bin | class) = 0.2
Class 5, attribute 1, bin 6, P(bin | class) = 0.0
Class 5, attribute 2, bin 0, P(bin | class) = 0.0
Class 5, attribute 2, bin 1, P(bin | class) = 0.69
Class 5, attribute 2, bin 2, P(bin | class) = 4.85
Class 5, attribute 2, bin 3, P(bin | class) = 3.81
Class 5, attribute 2, bin 4, P(bin | class) = 1.39
Class 5, attribute 2, bin 5, P(bin | class) = 1.39
Class 5, attribute 2, bin 6, P(bin | class) = 0.0
Class 5, attribute 3, bin 0, P(bin | class) = 0.0
Class 5, attribute 3, bin 1, P(bin | class) = 1.63
Class 5, attribute 3, bin 2, P(bin | class) = 3.54
Class 5, attribute 3, bin 3, P(bin | class) = 1.63
Class 5, attribute 3, bin 4, P(bin | class) = 1.63
Class 5, attribute 3, bin 5, P(bin | class) = 1.09
Class 5, attribute 3, bin 6, P(bin | class) = 0.0
Class 5, attribute 4, bin 0, P(bin | class) = 0.0
Class 5, attribute 4, bin 1, P(bin | class) = 10000.0
Class 5, attribute 4, bin 2, P(bin | class) = 0.0
Class 5, attribute 4, bin 3, P(bin | class) = 0.0
Class 5, attribute 4, bin 4, P(bin | class) = 0.0
Class 5, attribute 4, bin 5, P(bin | class) = 0.0
Class 5, attribute 4, bin 6, P(bin | class) = 0.0
Class 5, attribute 5, bin 0, P(bin | class) = 0.0
Class 5, attribute 5, bin 1, P(bin | class) = 10000.0
Class 5, attribute 5, bin 2, P(bin | class) = 0.0
Class 5, attribute 5, bin 3, P(bin | class) = 0.0
Class 5, attribute 5, bin 4, P(bin | class) = 0.0
Class 5, attribute 5, bin 5, P(bin | class) = 0.0
Class 5, attribute 5, bin 6, P(bin | class) = 0.0
Class 5, attribute 6, bin 0, P(bin | class) = 0.0
Class 5, attribute 6, bin 1, P(bin | class) = 0.38
Class 5, attribute 6, bin 2, P(bin | class) = 0.76
Class 5, attribute 6, bin 3, P(bin | class) = 1.14
Class 5, attribute 6, bin 4, P(bin | class) = 10.29
Class 5, attribute 6, bin 5, P(bin | class) = 0.76
Class 5, attribute 6, bin 6, P(bin | class) = 0.0
Class 5, attribute 7, bin 0, P(bin | class) = 0.0
Class 5, attribute 7, bin 1, P(bin | class) = 18.82
Class 5, attribute 7, bin 2, P(bin | class) = 2.02
Class 5, attribute 7, bin 3, P(bin | class) = 1.34
Class 5, attribute 7, bin 4, P(bin | class) = 0.67
Class 5, attribute 7, bin 5, P(bin | class) = 0.67
Class 5, attribute 7, bin 6, P(bin | class) = 0.0
Class 6, attribute 0, bin 0, P(bin | class) = 0.0
Class 6, attribute 0, bin 1, P(bin | class) = 1.9
```

```
Class 6, attribute 0, bin 2, P(bin | class) = 3.81
Class 6, attribute 0, bin 3, P(bin | class) = 0.63
Class 6, attribute 0, bin 4, P(bin | class) = 1.9
Class 6, attribute 0, bin 5, P(bin | class) = 0.63
Class 6, attribute 0, bin 6, P(bin | class) = 0.0
Class 6, attribute 1, bin 0, P(bin | class) = 0.0
Class 6, attribute 1, bin 1, P(bin | class) = 0.6
Class 6, attribute 1, bin 2, P(bin | class) = 2.38
Class 6, attribute 1, bin 3, P(bin | class) = 2.98
Class 6, attribute 1, bin 4, P(bin | class) = 1.79
Class 6, attribute 1, bin 5, P(bin | class) = 0.6
Class 6, attribute 1, bin 6, P(bin | class) = 0.0
Class 6, attribute 2, bin 0, P(bin | class) = 0.0
Class 6, attribute 2, bin 1, P(bin | class) = 5.04
Class 6, attribute 2, bin 2, P(bin | class) = 5.04
Class 6, attribute 2, bin 3, P(bin | class) = 6.72
Class 6, attribute 2, bin 4, P(bin | class) = 3.36
Class 6, attribute 2, bin 5, P(bin | class) = 3.36
Class 6, attribute 2, bin 6, P(bin | class) = 0.0
Class 6, attribute 3, bin 0, P(bin | class) = 0.0
Class 6, attribute 3, bin 1, P(bin | class) = 1.73
Class 6, attribute 3, bin 2, P(bin | class) = 6.93
Class 6, attribute 3, bin 3, P(bin | class) = 1.73
Class 6, attribute 3, bin 4, P(bin | class) = 0.0
Class 6, attribute 3, bin 5, P(bin | class) = 1.73
Class 6, attribute 3, bin 6, P(bin | class) = 0.0
Class 6, attribute 4, bin 0, P(bin | class) = 0.0
Class 6, attribute 4, bin 1, P(bin | class) = 10000.0
Class 6, attribute 4, bin 2, P(bin | class) = 0.0
Class 6, attribute 4, bin 3, P(bin | class) = 0.0
Class 6, attribute 4, bin 4, P(bin | class) = 0.0
Class 6, attribute 4, bin 5, P(bin | class) = 0.0
Class 6, attribute 4, bin 6, P(bin | class) = 0.0
Class 6, attribute 5, bin 0, P(bin | class) = 0.0
Class 6, attribute 5, bin 1, P(bin | class) = 1.72
Class 6, attribute 5, bin 2, P(bin | class) = 0.0
Class 6, attribute 5, bin 3, P(bin | class) = 0.69
Class 6, attribute 5, bin 4, P(bin | class) = 0.0
Class 6, attribute 5, bin 5, P(bin | class) = 2.41
Class 6, attribute 5, bin 6, P(bin | class) = 0.0
Class 6, attribute 6, bin 0, P(bin | class) = 0.0
Class 6, attribute 6, bin 1, P(bin | class) = 2.2
Class 6, attribute 6, bin 2, P(bin | class) = 0.0
Class 6, attribute 6, bin 3, P(bin | class) = 10.99
Class 6, attribute 6, bin 4, P(bin | class) = 8.79
Class 6, attribute 6, bin 5, P(bin | class) = 8.79
Class 6, attribute 6, bin 6, P(bin | class) = 0.0
Class 6, attribute 7, bin 0, P(bin | class) = 0.0
Class 6, attribute 7, bin 1, P(bin | class) = 18.05
Class 6, attribute 7, bin 2, P(bin | class) = 1.5
Class 6, attribute 7, bin 3, P(bin | class) = 0.0
Class 6, attribute 7, bin 4, P(bin | class) = 0.0
Class 6, attribute 7, bin 5, P(bin | class) = 1.5
Class 6, attribute 7, bin 6, P(bin | class) = 0.0
Class 7, attribute 0, bin 0, P(bin | class) = 0.0
Class 7, attribute 0, bin 1, P(bin | class) = 0.15
Class 7, attribute 0, bin 2, P(bin | class) = 1.7
Class 7, attribute 0, bin 3, P(bin | class) = 3.22
Class 7, attribute 0, bin 4, P(bin | class) = 1.49
Class 7, attribute 0, bin 5, P(bin | class) = 0.11
Class 7, attribute 0, bin 6, P(bin | class) = 0.0
Class 7, attribute 1, bin 0, P(bin | class) = 0.0
Class 7, attribute 1, bin 1, P(bin | class) = 0.12
```

```
Class 7, attribute 1, bin 2, P(bin | class) = 2.23
Class 7, attribute 1, bin 3, P(bin | class) = 3.64
Class 7, attribute 1, bin 4, P(bin | class) = 0.54
Class 7, attribute 1, bin 5, P(bin | class) = 0.02
Class 7, attribute 1, bin 6, P(bin | class) = 0.0
Class 7, attribute 2, bin 0, P(bin | class) = 0.0
Class 7, attribute 2, bin 1, P(bin | class) = 0.6
Class 7, attribute 2, bin 2, P(bin | class) = 5.46
Class 7, attribute 2, bin 3, P(bin | class) = 0.46
Class 7, attribute 2, bin 4, P(bin | class) = 0.02
Class 7, attribute 2, bin 5, P(bin | class) = 0.02
Class 7, attribute 2, bin 6, P(bin | class) = 0.0
Class 7, attribute 3, bin 0, P(bin | class) = 0.0
Class 7, attribute 3, bin 1, P(bin | class) = 0.43
Class 7, attribute 3, bin 2, P(bin | class) = 3.22
Class 7, attribute 3, bin 3, P(bin | class) = 0.28
Class 7, attribute 3, bin 4, P(bin | class) = 0.06
Class 7, attribute 3, bin 5, P(bin | class) = 0.01
Class 7, attribute 3, bin 6, P(bin | class) = 0.0
Class 7, attribute 4, bin 0, P(bin | class) = 0.0
Class 7, attribute 4, bin 1, P(bin | class) = 7.95
Class 7, attribute 4, bin 2, P(bin | class) = 0.0
Class 7, attribute 4, bin 3, P(bin | class) = 0.0
Class 7, attribute 4, bin 4, P(bin | class) = 0.0
Class 7, attribute 4, bin 5, P(bin | class) = 0.05
Class 7, attribute 4, bin 6, P(bin | class) = 0.0
Class 7, attribute 5, bin 0, P(bin | class) = 0.0
Class 7, attribute 5, bin 1, P(bin | class) = 7.97
Class 7, attribute 5, bin 2, P(bin | class) = 0.0
Class 7, attribute 5, bin 3, P(bin | class) = 0.0
Class 7, attribute 5, bin 4, P(bin | class) = 0.0
Class 7, attribute 5, bin 5, P(bin | class) = 0.03
Class 7, attribute 5, bin 6, P(bin | class) = 0.0
Class 7, attribute 6, bin 0, P(bin | class) = 0.0
Class 7, attribute 6, bin 1, P(bin | class) = 0.02
Class 7, attribute 6, bin 2, P(bin | class) = 0.21
Class 7, attribute 6, bin 3, P(bin | class) = 2.99
Class 7, attribute 6, bin 4, P(bin | class) = 3.39
Class 7, attribute 6, bin 5, P(bin | class) = 0.06
Class 7, attribute 6, bin 6, P(bin | class) = 0.0
Class 7, attribute 7, bin 0, P(bin | class) = 0.0
Class 7, attribute 7, bin 1, P(bin | class) = 0.03
Class 7, attribute 7, bin 2, P(bin | class) = 4.06
Class 7, attribute 7, bin 3, P(bin | class) = 0.86
Class 7, attribute 7, bin 4, P(bin | class) = 0.05
Class 7, attribute 7, bin 5, P(bin | class) = 0.06
Class 7, attribute 7, bin 6, P(bin | class) = 0.0
Class 8, attribute 0, bin 0, P(bin | class) = 0.0
Class 8, attribute 0, bin 1, P(bin | class) = 0.4
Class 8, attribute 0, bin 2, P(bin | class) = 0.4
Class 8, attribute 0, bin 3, P(bin | class) = 0.79
Class 8, attribute 0, bin 4, P(bin | class) = 5.53
Class 8, attribute 0, bin 5, P(bin | class) = 1.58
Class 8, attribute 0, bin 6, P(bin | class) = 0.0
Class 8, attribute 1, bin 0, P(bin | class) = 0.0
Class 8, attribute 1, bin 1, P(bin | class) = 0.38
Class 8, attribute 1, bin 2, P(bin | class) = 0.0
Class 8, attribute 1, bin 3, P(bin | class) = 1.52
Class 8, attribute 1, bin 4, P(bin | class) = 4.17
Class 8, attribute 1, bin 5, P(bin | class) = 2.27
Class 8, attribute 1, bin 6, P(bin | class) = 0.0
Class 8, attribute 2, bin 0, P(bin | class) = 0.0
Class 8, attribute 2, bin 1, P(bin | class) = 0.91
```

```
Class 8, attribute 2, bin 2, P(bin | class) = 2.73
Class 8, attribute 2, bin 3, P(bin | class) = 8.18
Class 8, attribute 2, bin 4, P(bin | class) = 5.45
Class 8, attribute 2, bin 5, P(bin | class) = 2.73
Class 8, attribute 2, bin 6, P(bin | class) = 0.0
Class 8, attribute 3, bin 0, P(bin | class) = 0.0
Class 8, attribute 3, bin 1, P(bin | class) = 0.76
Class 8, attribute 3, bin 2, P(bin | class) = 4.55
Class 8, attribute 3, bin 3, P(bin | class) = 4.55
Class 8, attribute 3, bin 4, P(bin | class) = 1.52
Class 8, attribute 3, bin 5, P(bin | class) = 5.3
Class 8, attribute 3, bin 6, P(bin | class) = 0.0
Class 8, attribute 4, bin 0, P(bin | class) = 0.0
Class 8, attribute 4, bin 1, P(bin | class) = 10000.0
Class 8, attribute 4, bin 2, P(bin | class) = 0.0
Class 8, attribute 4, bin 3, P(bin | class) = 0.0
Class 8, attribute 4, bin 4, P(bin | class) = 0.0
Class 8, attribute 4, bin 5, P(bin | class) = 0.0
Class 8, attribute 4, bin 6, P(bin | class) = 0.0
Class 8, attribute 5, bin 0, P(bin | class) = 0.0
Class 8, attribute 5, bin 1, P(bin | class) = 10000.0
Class 8, attribute 5, bin 2, P(bin | class) = 0.0
Class 8, attribute 5, bin 3, P(bin | class) = 0.0
Class 8, attribute 5, bin 4, P(bin | class) = 0.0
Class 8, attribute 5, bin 5, P(bin | class) = 0.0
Class 8, attribute 5, bin 6, P(bin | class) = 0.0
Class 8, attribute 6, bin 0, P(bin | class) = 0.0
Class 8, attribute 6, bin 1, P(bin | class) = 0.57
Class 8, attribute 6, bin 2, P(bin | class) = 2.27
Class 8, attribute 6, bin 3, P(bin | class) = 1.7
Class 8, attribute 6, bin 4, P(bin | class) = 6.82
Class 8, attribute 6, bin 5, P(bin | class) = 1.14
Class 8, attribute 6, bin 6, P(bin | class) = 0.0
Class 8, attribute 7, bin 0, P(bin | class) = 0.0
Class 8, attribute 7, bin 1, P(bin | class) = 69.09
Class 8, attribute 7, bin 2, P(bin | class) = 0.0
Class 8, attribute 7, bin 3, P(bin | class) = 0.0
Class 8, attribute 7, bin 4, P(bin | class) = 3.64
Class 8, attribute 7, bin 5, P(bin | class) = 7.27
Class 8, attribute 7, bin 6, P(bin | class) = 0.0
Class 9, attribute 0, bin 0, P(bin | class) = 0.0
Class 9, attribute 0, bin 1, P(bin | class) = 1.7
Class 9, attribute 0, bin 2, P(bin | class) = 3.41
Class 9, attribute 0, bin 3, P(bin | class) = 0.0
Class 9, attribute 0, bin 4, P(bin | class) = 3.41
Class 9, attribute 0, bin 5, P(bin | class) = 0.57
Class 9, attribute 0, bin 6, P(bin | class) = 0.0
Class 9, attribute 1, bin 0, P(bin | class) = 0.0
Class 9, attribute 1, bin 1, P(bin | class) = 2.0
Class 9, attribute 1, bin 2, P(bin | class) = 1.5
Class 9, attribute 1, bin 3, P(bin | class) = 1.5
Class 9, attribute 1, bin 4, P(bin | class) = 2.0
Class 9, attribute 1, bin 5, P(bin | class) = 1.0
Class 9, attribute 1, bin 6, P(bin | class) = 0.0
Class 9, attribute 2, bin 0, P(bin | class) = 0.0
Class 9, attribute 2, bin 1, P(bin | class) = 1.09
Class 9, attribute 2, bin 2, P(bin | class) = 1.09
Class 9, attribute 2, bin 3, P(bin | class) = 4.35
Class 9, attribute 2, bin 4, P(bin | class) = 6.52
Class 9, attribute 2, bin 5, P(bin | class) = 4.35
Class 9, attribute 2, bin 6, P(bin | class) = 0.0
Class 9, attribute 3, bin 0, P(bin | class) = 0.0
Class 9, attribute 3, bin 1, P(bin | class) = 1.14
```

```
Class 9, attribute 3, bin 2, P(bin | class) = 6.82
Class 9, attribute 3, bin 3, P(bin | class) = 3.41
Class 9, attribute 3, bin 4, P(bin | class) = 3.41
Class 9, attribute 3, bin 5, P(bin | class) = 3.41
Class 9, attribute 3, bin 6, P(bin | class) = 0.0
Class 9, attribute 4, bin 0, P(bin | class) = 0.0
Class 9, attribute 4, bin 1, P(bin | class) = 10000.0
Class 9, attribute 4, bin 2, P(bin | class) = 0.0
Class 9, attribute 4, bin 3, P(bin | class) = 0.0
Class 9, attribute 4, bin 4, P(bin | class) = 0.0
Class 9, attribute 4, bin 5, P(bin | class) = 0.0
Class 9, attribute 4, bin 6, P(bin | class) = 0.0
Class 9, attribute 5, bin 0, P(bin | class) = 0.0
Class 9, attribute 5, bin 1, P(bin | class) = 10000.0
Class 9, attribute 5, bin 2, P(bin | class) = 0.0
Class 9, attribute 5, bin 3, P(bin | class) = 0.0
Class 9, attribute 5, bin 4, P(bin | class) = 0.0
Class 9, attribute 5, bin 5, P(bin | class) = 0.0
Class 9, attribute 5, bin 6, P(bin | class) = 0.0
Class 9, attribute 6, bin 0, P(bin | class) = 0.0
Class 9, attribute 6, bin 1, P(bin | class) = 1.09
Class 9, attribute 6, bin 2, P(bin | class) = 0.0
Class 9, attribute 6, bin 3, P(bin | class) = 7.61
Class 9, attribute 6, bin 4, P(bin | class) = 6.52
Class 9, attribute 6, bin 5, P(bin | class) = 2.17
Class 9, attribute 6, bin 6, P(bin | class) = 0.0
Class 9, attribute 7, bin 0, P(bin | class) = 0.0
Class 9, attribute 7, bin 1, P(bin | class) = 15.28
Class 9, attribute 7, bin 2, P(bin | class) = 5.56
Class 9, attribute 7, bin 3, P(bin | class) = 0.0
Class 9, attribute 7, bin 4, P(bin | class) = 0.0
Class 9, attribute 7, bin 5, P(bin | class) = 1.39
Class 9, attribute 7, bin 6, P(bin | class) = 0.0
Class 10, attribute 0, bin 0, P(bin | class) = 0.0
Class 10, attribute 0, bin 1, P(bin | class) = 6.67
Class 10, attribute 0, bin 2, P(bin | class) = 0.0
Class 10, attribute 0, bin 3, P(bin | class) = 13.33
Class 10, attribute 0, bin 4, P(bin | class) = 0.0
Class 10, attribute 0, bin 5, P(bin | class) = 6.67
Class 10, attribute 0, bin 6, P(bin | class) = 0.0
Class 10, attribute 1, bin 0, P(bin | class) = 0.0
Class 10, attribute 1, bin 1, P(bin | class) = 3.57
Class 10, attribute 1, bin 2, P(bin | class) = 0.0
Class 10, attribute 1, bin 3, P(bin | class) = 0.0
Class 10, attribute 1, bin 4, P(bin | class) = 7.14
Class 10, attribute 1, bin 5, P(bin | class) = 3.57
Class 10, attribute 1, bin 6, P(bin | class) = 0.0
Class 10, attribute 2, bin 0, P(bin | class) = 0.0
Class 10, attribute 2, bin 1, P(bin | class) = 4.0
Class 10, attribute 2, bin 2, P(bin | class) = 0.0
Class 10, attribute 2, bin 3, P(bin | class) = 0.0
Class 10, attribute 2, bin 4, P(bin | class) = 8.0
Class 10, attribute 2, bin 5, P(bin | class) = 4.0
Class 10, attribute 2, bin 6, P(bin | class) = 0.0
Class 10, attribute 3, bin 0, P(bin | class) = 0.0
Class 10, attribute 3, bin 1, P(bin | class) = 6.67
Class 10, attribute 3, bin 2, P(bin | class) = 6.67
Class 10, attribute 3, bin 3, P(bin | class) = 0.0
Class 10, attribute 3, bin 4, P(bin | class) = 6.67
Class 10, attribute 3, bin 5, P(bin | class) = 6.67
Class 10, attribute 3, bin 6, P(bin | class) = 0.0
Class 10, attribute 4, bin 0, P(bin | class) = 0.0
Class 10, attribute 4, bin 1, P(bin | class) = 10000.0
```

```
Class 10, attribute 4, bin 2, P(bin | class) = 0.0
Class 10, attribute 4, bin 3, P(bin | class) = 0.0
Class 10, attribute 4, bin 4, P(bin | class) = 0.0
Class 10, attribute 4, bin 5, P(bin | class) = 0.0
Class 10, attribute 4, bin 6, P(bin | class) = 0.0
Class 10, attribute 5, bin 0, P(bin | class) = 0.0
Class 10, attribute 5, bin 1, P(bin | class) = 10000.0
Class 10, attribute 5, bin 2, P(bin | class) = 0.0
Class 10, attribute 5, bin 3, P(bin | class) = 0.0
Class 10, attribute 5, bin 4, P(bin | class) = 0.0
Class 10, attribute 5, bin 5, P(bin | class) = 0.0
Class 10, attribute 5, bin 6, P(bin | class) = 0.0
Class 10, attribute 6, bin 0, P(bin | class) = 0.0
Class 10, attribute 6, bin 1, P(bin | class) = 20.0
Class 10, attribute 6, bin 2, P(bin | class) = 20.0
Class 10, attribute 6, bin 3, P(bin | class) = 20.0
Class 10, attribute 6, bin 4, P(bin | class) = 0.0
Class 10, attribute 6, bin 5, P(bin | class) = 20.0
Class 10, attribute 6, bin 6, P(bin | class) = 0.0
Class 10, attribute 7, bin 0, P(bin | class) = 0.0
Class 10, attribute 7, bin 1, P(bin | class) = 100.0
Class 10, attribute 7, bin 2, P(bin | class) = 0.0
Class 10, attribute 7, bin 3, P(bin | class) = 0.0
Class 10, attribute 7, bin 4, P(bin | class) = 0.0
Class 10, attribute 7, bin 5, P(bin | class) = 33.33
Class 10, attribute 7, bin 6, P(bin | class) = 0.0
```

Testing: Histograms
```
classification accuracy= 0.2062
```