In[1]:=
```
Clear["Global`*"]
```

In[2]:=
```
a = {5.1, 3.5, 1.4, 0.2, "Iris-setosa",
4.9, 3.0, 1.4, 0.2, "Iris-setosa",
4.7, 3.2, 1.3, 0.2, "Iris-setosa",
4.6, 3.1, 1.5, 0.2, "Iris-setosa",
5.0, 3.6, 1.4, 0.2, "Iris-setosa",
5.4, 3.9, 1.7, 0.4, "Iris-setosa",
4.6, 3.4, 1.4, 0.3, "Iris-setosa",
5.0, 3.4, 1.5, 0.2, "Iris-setosa",
4.4, 2.9, 1.4, 0.2, "Iris-setosa",
4.9, 3.1, 1.5, 0.1, "Iris-setosa",
5.4, 3.7, 1.5, 0.2, "Iris-setosa",
4.8, 3.4, 1.6, 0.2, "Iris-setosa",
4.8, 3.0, 1.4, 0.1, "Iris-setosa",
4.3, 3.0, 1.1, 0.1, "Iris-setosa",
5.8, 4.0, 1.2, 0.2, "Iris-setosa",
5.7, 4.4, 1.5, 0.4, "Iris-setosa",
5.4, 3.9, 1.3, 0.4, "Iris-setosa",
5.1, 3.5, 1.4, 0.3, "Iris-setosa",
5.7, 3.8, 1.7, 0.3, "Iris-setosa",
5.1, 3.8, 1.5, 0.3, "Iris-setosa",
5.4, 3.4, 1.7, 0.2, "Iris-setosa",
5.1, 3.7, 1.5, 0.4, "Iris-setosa",
4.6, 3.6, 1.0, 0.2, "Iris-setosa",
5.1, 3.3, 1.7, 0.5, "Iris-setosa",
4.8, 3.4, 1.9, 0.2, "Iris-setosa",
5.0, 3.0, 1.6, 0.2, "Iris-setosa",
5.0, 3.4, 1.6, 0.4, "Iris-setosa",
5.2, 3.5, 1.5, 0.2, "Iris-setosa",
5.2, 3.4, 1.4, 0.2, "Iris-setosa",
4.7, 3.2, 1.6, 0.2, "Iris-setosa",
4.8, 3.1, 1.6, 0.2, "Iris-setosa",
5.4, 3.4, 1.5, 0.4, "Iris-setosa",
5.2, 4.1, 1.5, 0.1, "Iris-setosa",
5.5, 4.2, 1.4, 0.2, "Iris-setosa",
4.9, 3.1, 1.5, 0.1, "Iris-setosa",
5.0, 3.2, 1.2, 0.2, "Iris-setosa",
5.5, 3.5, 1.3, 0.2, "Iris-setosa",
4.9, 3.1, 1.5, 0.1, "Iris-setosa",
4.4, 3.0, 1.3, 0.2, "Iris-setosa",
5.1, 3.4, 1.5, 0.2, "Iris-setosa",
5.0, 3.5, 1.3, 0.3, "Iris-setosa",
4.5, 2.3, 1.3, 0.3, "Iris-setosa",
4.4, 3.2, 1.3, 0.2, "Iris-setosa",
5.0, 3.5, 1.6, 0.6, "Iris-setosa",
5.1, 3.8, 1.9, 0.4, "Iris-setosa",
4.8, 3.0, 1.4, 0.3, "Iris-setosa",
5.1, 3.8, 1.6, 0.2, "Iris-setosa",
4.6, 3.2, 1.4, 0.2, "Iris-setosa",
5.3, 3.7, 1.5, 0.2, "Iris-setosa",
5.0, 3.3, 1.4, 0.2, "Iris-setosa",
7.0, 3.2, 4.7, 1.4, "Iris-versicolor",
6.4, 3.2, 4.5, 1.5, "Iris-versicolor",
6.9, 3.1, 4.9, 1.5, "Iris-versicolor",
5.5, 2.3, 4.0, 1.3, "Iris-versicolor",
6.5, 2.8, 4.6, 1.5, "Iris-versicolor",
5.7, 2.8, 4.5, 1.3, "Iris-versicolor",
6.3, 3.3, 4.7, 1.6, "Iris-versicolor",
4.9, 2.4, 3.3, 1.0, "Iris-versicolor",
6.6, 2.9, 4.6, 1.3, "Iris-versicolor",
5.2, 2.7, 3.9, 1.4, "Iris-versicolor",
5.0, 2.0, 3.5, 1.0, "Iris-versicolor",
5.9, 3.0, 4.2, 1.5, "Iris-versicolor",
6.0, 2.2, 4.0, 1.0, "Iris-versicolor",
6.1, 2.9, 4.7, 1.4, "Iris-versicolor",
5.6, 2.9, 3.6, 1.3, "Iris-versicolor",
6.7, 3.1, 4.4, 1.4, "Iris-versicolor",
5.6, 3.0, 4.5, 1.5, "Iris-versicolor",
5.8, 2.7, 4.1, 1.0, "Iris-versicolor",
6.2, 2.2, 4.5, 1.5, "Iris-versicolor",
5.6, 2.5, 3.9, 1.1, "Iris-versicolor",
5.9, 3.2, 4.8, 1.8, "Iris-versicolor",
6.1, 2.8, 4.0, 1.3, "Iris-versicolor",
6.3, 2.5, 4.9, 1.5, "Iris-versicolor",
6.1, 2.8, 4.7, 1.2, "Iris-versicolor",
6.4, 2.9, 4.3, 1.3, "Iris-versicolor",
6.6, 3.0, 4.4, 1.4, "Iris-versicolor",
6.8, 2.8, 4.8, 1.4, "Iris-versicolor",
6.7, 3.0, 5.0, 1.7, "Iris-versicolor",
6.0, 2.9, 4.5, 1.5, "Iris-versicolor",
5.7, 2.6, 3.5, 1.0, "Iris-versicolor",
5.5, 2.4, 3.8, 1.1, "Iris-versicolor",
5.5, 2.4, 3.7, 1.0, "Iris-versicolor",
5.8, 2.7, 3.9, 1.2, "Iris-versicolor",
6.0, 2.7, 5.1, 1.6, "Iris-versicolor",
5.4, 3.0, 4.5, 1.5, "Iris-versicolor",
6.0, 3.4, 4.5, 1.6, "Iris-versicolor",
6.7, 3.1, 4.7, 1.5, "Iris-versicolor",
```

```
6.3, 2.3, 4.4, 1.3, "Iris-versicolor",
5.6, 3.0, 4.1, 1.3, "Iris-versicolor",
5.5, 2.5, 4.0, 1.3, "Iris-versicolor",
5.5, 2.6, 4.4, 1.2, "Iris-versicolor",
6.1, 3.0, 4.6, 1.4, "Iris-versicolor",
5.8, 2.6, 4.0, 1.2, "Iris-versicolor",
5.0, 2.3, 3.3, 1.0, "Iris-versicolor",
5.6, 2.7, 4.2, 1.3, "Iris-versicolor",
5.7, 3.0, 4.2, 1.2, "Iris-versicolor",
5.7, 2.9, 4.2, 1.3, "Iris-versicolor",
6.2, 2.9, 4.3, 1.3, "Iris-versicolor",
5.1, 2.5, 3.0, 1.1, "Iris-versicolor",
5.7, 2.8, 4.1, 1.3, "Iris-versicolor",
6.3, 3.3, 6.0, 2.5, "Iris-virginica",
5.8, 2.7, 5.1, 1.9, "Iris-virginica",
7.1, 3.0, 5.9, 2.1, "Iris-virginica",
6.3, 2.9, 5.6, 1.8, "Iris-virginica",
6.5, 3.0, 5.8, 2.2, "Iris-virginica",
7.6, 3.0, 6.6, 2.1, "Iris-virginica",
4.9, 2.5, 4.5, 1.7, "Iris-virginica",
7.3, 2.9, 6.3, 1.8, "Iris-virginica",
6.7, 2.5, 5.8, 1.8, "Iris-virginica",
7.2, 3.6, 6.1, 2.5, "Iris-virginica",
6.5, 3.2, 5.1, 2.0, "Iris-virginica",
6.4, 2.7, 5.3, 1.9, "Iris-virginica",
6.8, 3.0, 5.5, 2.1, "Iris-virginica",
5.7, 2.5, 5.0, 2.0, "Iris-virginica",
5.8, 2.8, 5.1, 2.4, "Iris-virginica",
6.4, 3.2, 5.3, 2.3, "Iris-virginica",
6.5, 3.0, 5.5, 1.8, "Iris-virginica",
7.7, 3.8, 6.7, 2.2, "Iris-virginica",
7.7, 2.6, 6.9, 2.3, "Iris-virginica",
6.0, 2.2, 5.0, 1.5, "Iris-virginica",
6.9, 3.2, 5.7, 2.3, "Iris-virginica",
5.6, 2.8, 4.9, 2.0, "Iris-virginica",
7.7, 2.8, 6.7, 2.0, "Iris-virginica",
6.3, 2.7, 4.9, 1.8, "Iris-virginica",
6.7, 3.3, 5.7, 2.1, "Iris-virginica",
7.2, 3.2, 6.0, 1.8, "Iris-virginica",
6.2, 2.8, 4.8, 1.8, "Iris-virginica",
6.1, 3.0, 4.9, 1.8, "Iris-virginica",
6.4, 2.8, 5.6, 2.1, "Iris-virginica",
7.2, 3.0, 5.8, 1.6, "Iris-virginica",
7.4, 2.8, 6.1, 1.9, "Iris-virginica",
7.9, 3.8, 6.4, 2.0, "Iris-virginica",
6.4, 2.8, 5.6, 2.2, "Iris-virginica",
6.3, 2.8, 5.1, 1.5, "Iris-virginica",
6.1, 2.6, 5.6, 1.4, "Iris-virginica",
7.7, 3.0, 6.1, 2.3, "Iris-virginica",
6.3, 3.4, 5.6, 2.4, "Iris-virginica",
6.4, 3.1, 5.5, 1.8, "Iris-virginica",
6.0, 3.0, 4.8, 1.8, "Iris-virginica",
6.9, 3.1, 5.4, 2.1, "Iris-virginica",
6.7, 3.1, 5.6, 2.4, "Iris-virginica",
6.9, 3.1, 5.1, 2.3, "Iris-virginica",
5.8, 2.7, 5.1, 1.9, "Iris-virginica",
6.8, 3.2, 5.9, 2.3, "Iris-virginica",
6.7, 3.3, 5.7, 2.5, "Iris-virginica",
6.7, 3.0, 5.2, 2.3, "Iris-virginica",
6.3, 2.5, 5.0, 1.9, "Iris-virginica",
6.5, 3.0, 5.2, 2.0, "Iris-virginica",
6.2, 3.4, 5.4, 2.3, "Iris-virginica",
5.9, 3.0, 5.1, 1.8, "Iris-virginica"};
```

In[3]:=
```
a02 = Partition[a, 5]; Dimensions[a02]
```

Out[3]=
```
{150, 5}
```

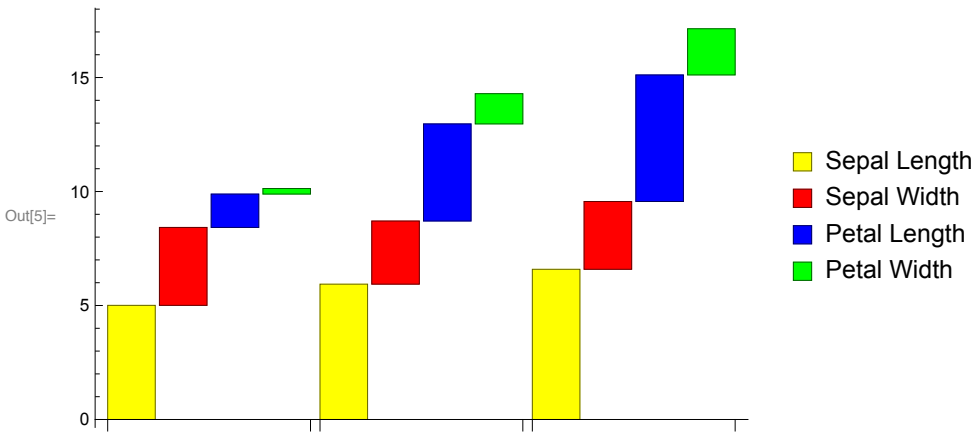
PREPARING DATA;

In[4]:=
```
a2 = Partition[Drop[a02[[#]], -1] & /@ Table[k, {k, 1, Dimensions[a02][[1]], 1}], 50]
```

Out[4]=
```
{{{5.1, 3.5, 1.4, 0.2}, {4.9, 3., 1.4, 0.2}, {4.7, 3.2, 1.3, 0.2}, {4.6, 3.1, 1.5, 0.2}, {5., 3.6, 1.4, 0.2}, {5.4, 3.9, 1.7, 0.4},
  {4.6, 3.4, 1.4, 0.3}, {5., 3.4, 1.5, 0.2}, {4.4, 2.9, 1.4, 0.2}, {4.9, 3.1, 1.5, 0.1}, {5.4, 3.7, 1.5, 0.2},
  {4.8, 3.4, 1.6, 0.2}, {4.8, 3., 1.4, 0.1}, {4.3, 3., 1.1, 0.1}, {5.8, 4., 1.2, 0.2}, {5.7, 4.4, 1.5, 0.4}, {5.4, 3.9, 1.3, 0.4},
  {5.1, 3.5, 1.4, 0.3}, {5.7, 3.8, 1.7, 0.3}, {5.1, 3.8, 1.5, 0.3}, {5.4, 3.4, 1.7, 0.2}, {5.1, 3.7, 1.5, 0.4},
  {4.6, 3.6, 1., 0.2}, {5.1, 3.3, 1.7, 0.5}, {4.8, 3.4, 1.9, 0.2}, {5., 3., 1.6, 0.2}, {5., 3.4, 1.6, 0.4}, {5.2, 3.5, 1.5, 0.2},
  {5.2, 3.4, 1.4, 0.2}, {4.7, 3.2, 1.6, 0.2}, {4.8, 3.1, 1.6, 0.2}, {5.4, 3.4, 1.5, 0.4}, {5.2, 4.1, 1.5, 0.1},
  {5.5, 4.2, 1.4, 0.2}, {4.9, 3.1, 1.5, 0.1}, {5., 3.2, 1.2, 0.2}, {5.5, 3.5, 1.3, 0.2}, {4.9, 3.1, 1.5, 0.1}, {4.4, 3., 1.3, 0.2},
  {5.1, 3.4, 1.5, 0.2}, {5., 3.5, 1.3, 0.3}, {4.5, 2.3, 1.3, 0.3}, {4.4, 3.2, 1.3, 0.2}, {5., 3.5, 1.6, 0.6}, {5.1, 3.8, 1.9, 0.4},
  {4.8, 3., 1.4, 0.3}, {5.1, 3.8, 1.6, 0.2}, {4.6, 3.2, 1.4, 0.2}, {5.3, 3.7, 1.5, 0.2}, {5., 3.3, 1.4, 0.2}},
 {{7., 3.2, 4.7, 1.4}, {6.4, 3.2, 4.5, 1.5}, {6.9, 3.1, 4.9, 1.5}, {5.5, 2.3, 4., 1.3}, {6.5, 2.8, 4.6, 1.5},
  {5.7, 2.8, 4.5, 1.3}, {6.3, 3.3, 4.7, 1.6}, {4.9, 2.4, 3.3, 1.}, {6.6, 2.9, 4.6, 1.3}, {5.2, 2.7, 3.9, 1.4},
  {5., 2., 3.5, 1.}, {5.9, 3., 4.2, 1.5}, {6., 2.2, 4., 1.}, {6.1, 2.9, 4.7, 1.4}, {5.6, 2.9, 3.6, 1.3}, {6.7, 3.1, 4.4, 1.4},
  {5.6, 3., 4.5, 1.5}, {5.8, 2.7, 4.1, 1.}, {6.2, 2.2, 4.5, 1.5}, {5.6, 2.5, 3.9, 1.1}, {5.9, 3.2, 4.8, 1.8}, {6.1, 2.8, 4., 1.3},
  {6.3, 2.5, 4.9, 1.5}, {6.1, 2.8, 4.7, 1.2}, {6.4, 2.9, 4.3, 1.3}, {6.6, 3., 4.4, 1.4}, {6.8, 2.8, 4.8, 1.4},
  {6.7, 3., 5., 1.7}, {6., 2.9, 4.5, 1.5}, {5.7, 2.6, 3.5, 1.}, {5.5, 2.4, 3.8, 1.1}, {5.5, 2.4, 3.7, 1.}, {5.8, 2.7, 3.9, 1.2},
  {6., 2.7, 5.1, 1.6}, {5.4, 3., 4.5, 1.5}, {6., 3.4, 4.5, 1.6}, {6.7, 3.1, 4.7, 1.5}, {6.3, 2.3, 4.4, 1.3}, {5.6, 3., 4.1, 1.3},
  {5.5, 2.5, 4., 1.3}, {5.5, 2.6, 4.4, 1.2}, {6.1, 3., 4.6, 1.4}, {5.8, 2.6, 4., 1.2}, {5., 2.3, 3.3, 1.}, {5.6, 2.7, 4.2, 1.3},
  {5.7, 3., 4.2, 1.2}, {5.7, 2.9, 4.2, 1.3}, {6.2, 2.9, 4.3, 1.3}, {5.1, 2.5, 3., 1.1}, {5.7, 2.8, 4.1, 1.3}},
 {{6.3, 3.3, 6., 2.5}, {5.8, 2.7, 5.1, 1.9}, {7.1, 3., 5.9, 2.1}, {6.3, 2.9, 5.6, 1.8}, {6.5, 3., 5.8, 2.2},
  {7.6, 3., 6.6, 2.1}, {4.9, 2.5, 4.5, 1.7}, {7.3, 2.9, 6.3, 1.8}, {6.7, 2.5, 5.8, 1.8}, {7.2, 3.6, 6.1, 2.5},
  {6.5, 3.2, 5.1, 2.}, {6.4, 2.7, 5.3, 1.9}, {6.8, 3., 5.5, 2.1}, {5.7, 2.5, 5., 2.}, {5.8, 2.8, 5.1, 2.4}, {6.4, 3.2, 5.3, 2.3},
  {6.5, 3., 5.5, 1.8}, {7.7, 3.8, 6.7, 2.2}, {7.7, 2.6, 6.9, 2.3}, {6., 2.2, 5., 1.5}, {6.9, 3.2, 5.7, 2.3}, {5.6, 2.8, 4.9, 2.},
  {7.7, 2.8, 6.7, 2.}, {6.3, 2.7, 4.9, 1.8}, {6.7, 3.3, 5.7, 2.1}, {7.2, 3.2, 6., 1.8}, {6.2, 2.8, 4.8, 1.8}, {6.1, 3., 4.9, 1.8},
  {6.4, 2.8, 5.6, 2.1}, {7.2, 3., 5.8, 1.6}, {7.4, 2.8, 6.1, 1.9}, {7.9, 3.8, 6.4, 2.}, {6.4, 2.8, 5.6, 2.2},
  {6.3, 2.8, 5.1, 1.5}, {6.1, 2.6, 5.6, 1.4}, {7.7, 3., 6.1, 2.3}, {6.3, 3.4, 5.6, 2.4}, {6.4, 3.1, 5.5, 1.8}, {6., 3., 4.8, 1.8},
  {6.9, 3.1, 5.4, 2.1}, {6.7, 3.1, 5.6, 2.4}, {6.9, 3.1, 5.1, 2.3}, {5.8, 2.7, 5.1, 1.9}, {6.8, 3.2, 5.9, 2.3},
  {6.7, 3.3, 5.7, 2.5}, {6.7, 3., 5.2, 2.3}, {6.3, 2.5, 5., 1.9}, {6.5, 3., 5.2, 2.}, {6.2, 3.4, 5.4, 2.3}, {5.9, 3., 5.1, 1.8}}}
```

In[5]:=
```
BarChart[Mean[a2[[#]]] & /@ {1, 2, 3}, ChartLayout → "Stepped", ChartStyle → {Yellow, Red, Blue, Green},
 ChartLegends → {"Sepal Length", "Sepal Width", "Petal Length", "Petal Width"}]
```

Out[5]=



ITERATIVE BACKPROPAGATION ALGORITHM FOR IRIS SETOSA;

In[6]:=
```
abg = {}; Do[AppendTo[abg,
   pp = 1;
   p = a2[[pp]][[nv]];
   t = 1;
   o = a2[[pp]][[nv]][[1]] + a2[[pp]][[nv]][[2]] + a2[[pp]][[nv]][[3]] + a2[[pp]][[nv]][[4]];
   erro1 = o (1 - o) (t - o);
   erro2 = o (1 - o) erro1;
   w4 = .0001 erro2 p[[4]];
   oadj0 = (p[[1]] + p[[2]] + p[[3]] + w4 p[[4]]);
   diff = oadj0 - t;
   o3 = a2[[1]][[1]][[1]] + a2[[1]][[1]][[2]] + a2[[1]][[1]][[3]];
   erro13 = o3 (1 - o3) (t - o3);
   erro23 = o3 (1 - o3) erro13;
   w3 = 0.0001 erro23 p[[3]];
   oadj03 = (p[[1]] + p[[2]] + w3 p[[3]] + w4 p[[4]]);
   diff3 = oadj03 - t;
   o2 = a2[[1]][[1]][[1]] + a2[[1]][[1]][[2]];
   erro12 = o2 (1 - o2) (t - o2);
   erro22 = o2 (1 - o2) erro12;
   w2 = 0.0001 erro22 p[[2]];
   oadj02 = (p[[1]] + w2 p[[2]] + w3 p[[3]] + w4 p[[4]]);
   diff2 = oadj02 - t;
   w1 = 1 - diff2 / p[[1]];
   {w1, w2, w3, w4}], {nv, Table[k, {k, 1, 50, 1}]}]; abg
```

Out[6]=
```
{{10.8596, -11.3633, -10.206, -1.62029}, {9.12859, -9.74, -10.206, -1.1085},
 {9.95222, -10.3893, -9.477, -1.04743}, {10.6114, -10.0647, -10.935, -1.04743}, {11.5379, -11.688, -10.206, -1.62029},
 {13.6646, -12.662, -12.393, -5.84749}, {11.6038, -11.0387, -10.206, -1.85876}, {11.0483, -11.0387, -10.935, -1.53744},
 {9.7157, -9.41533, -10.206, -0.781072}, {9.93094, -10.0647, -10.935, -0.586189}, {11.5349, -12.0127, -10.935, -2.19561},
 {11.9761, -11.0387, -11.664, -1.458}, {9.28289, -9.74, -10.206, -0.494539}, {9.08637, -9.74, -8.019, -0.304805},
 {11.0305, -12.9867, -8.748, -2.66236}, {14.6183, -14.2853, -10.935, -7.66656}, {11.97, -12.662, -9.477, -4.84},
 {10.9467, -11.3633, -10.206, -2.56003}, {12.3382, -12.3373, -12.393, -4.59288}, {12.7892, -12.3373, -10.935, -3.13476},
 {11.1144, -11.0387, -12.393, -2.08984}, {12.4551, -12.0127, -10.935, -4.17968}, {10.9948, -11.688, -7.29, -1.04743},
 {11.747, -10.714, -12.393, -4.97045}, {13.5812, -11.0387, -13.851, -1.70668}, {9.82884, -9.74, -11.664, -1.30897},
 {11.7262, -11.0387, -11.664, -3.59344}, {11.0641, -11.3633, -10.935, -1.79672}, {10.22, -11.0387, -10.206, -1.62029},
 {11.3098, -10.3893, -11.664, -1.23917}, {10.6481, -10.0647, -11.664, -1.23917}, {10.4826, -11.0387, -10.935, -4.17968},
 {13.8643, -13.3113, -10.935, -1.15281}, {13.2941, -13.636, -10.206, -2.79061}, {9.93094, -10.0647, -10.935, -0.586189},
 {8.99559, -10.3893, -8.748, -1.17238}, {9.72179, -11.3633, -9.477, -1.89051}, {9.93094, -10.0647, -10.935, -0.586189},
 {9.70371, -9.74, -9.477, -0.781072}, {10.8349, -11.0387, -10.935, -1.62029}, {10.7567, -11.3633, -9.477, -2.30615},
 {6.83384, -7.46733, -9.477, -0.857778}, {10.6232, -10.3893, -9.477, -0.880173}, {12.6392, -11.3633, -11.664, -6.26952},
 {14.9664, -12.3373, -13.851, -5.32472}, {9.3765, -9.74, -10.206, -1.66274}, {13.1298, -12.3373, -11.664, -2.08984},
 {10.5965, -10.3893, -10.206, -1.04743}, {11.7486, -12.0127, -10.935, -2.08984}, {10.1842, -10.714, -10.206, -1.38188}}
```

ITERATIVE BACKPROPAGATION ALGORITHM FOR IRIS VERSICOLOR;

In[7]:=
```
abg2 = {}; Do[AppendTo[abg2,

   pp = 2;
   p = a2[[pp]][[nv]];
   t = 0;
   o = a2[[pp]][[nv]][[1]] + a2[[pp]][[nv]][[2]] + a2[[pp]][[nv]][[3]] + a2[[pp]][[nv]][[4]];
   erro1 = o (1 - o) (t - o);
   erro2 = o (1 - o) erro1;
   w4 = .0001 erro2 p[[4]];
   oadj0 = (p[[1]] + p[[2]] + p[[3]] + w4 p[[4]]);
   diff = oadj0 - t;
   o3 = a2[[1]][[1]][[1]] + a2[[1]][[1]][[2]] + a2[[1]][[1]][[3]];
   erro13 = o3 (1 - o3) (t - o3);
   erro23 = o3 (1 - o3) erro13;
   w3 = 0.0001 erro23 p[[3]];
   oadj03 = (p[[1]] + p[[2]] + w3 p[[3]] + w4 p[[4]]);
   diff3 = oadj03 - t;
   o2 = a2[[1]][[1]][[1]] + a2[[1]][[1]][[2]];
   erro12 = o2 (1 - o2) (t - o2);
   erro22 = o2 (1 - o2) erro12;
   w2 = 0.0001 erro22 p[[2]];
   oadj02 = (p[[1]] + w2 p[[2]] + w3 p[[3]] + w4 p[[4]]);
   diff2 = oadj02 - t;
   w1 = 1 - diff2 / p[[1]];
   {w1, w2, w3, w4}], {nv, Table[k, {k, 1, 50, 1}]}]; abg2
```

Out[7]=
```
{{59.3216, -11.7564, -38.07, -141.93}, {59.9571, -11.7564, -36.45, -121.387},
 {67.4144, -11.389, -39.69, -156.915}, {37.2109, -8.44988, -32.4, -42.7886}, {57.0152, -10.2868, -37.26, -113.6},
 {49.1659, -10.2868, -36.45, -67.2442}, {71.0149, -12.1237, -38.07, -142.785}, {25.8997, -8.81726, -26.73, -17.5382},
 {50.0428, -10.6542, -37.26, -98.4534}, {41.7461, -9.91942, -31.59, -47.9258}, {26.1376, -7.34772, -28.35, -16.7676},
 {51.7735, -11.0216, -34.02, -86.3431}, {30.269, -8.08249, -32.4, -34.2327}, {56.3913, -10.6542, -38.07, -95.829},
 {35.428, -10.6542, -29.16, -48.0951}, {52.3483, -11.389, -35.64, -113.294}, {58.3222, -11.0216, -36.45, -86.3431},
 {34.9791, -9.91942, -33.21, -39.9354}, {48.7812, -8.08249, -36.45, -80.4245}, {33.2123, -9.18465, -31.59, -36.2057},
 {83.9301, -11.7564, -38.88, -150.524}, {39.7897, -10.2868, -32.4, -64.8569}, {59.8047, -9.18465, -39.69, -106.218},
 {48.6283, -10.2868, -38.07, -74.084}, {45.1061, -10.6542, -34.83, -83.0867}, {51.2603, -11.0216, -35.64, -106.027},
 {56.5829, -10.2868, -38.88, -120.955}, {80.2817, -11.0216, -40.5, -177.837}, {56.4544, -10.6542, -36.45, -95.8693},
 {26.8879, -9.55203, -28.35, -29.2007}, {31.5379, -8.81726, -30.78, -32.1208}, {28.9032, -8.81726, -29.97, -26.9171},
 {35.7742, -9.91942, -31.59, -47.9225}, {71.8901, -9.91942, -41.31, -121.173}, {58.8382, -11.0216, -36.45, -80.4245},
 {67.8214, -12.4911, -36.45, -125.271}, {62.9246, -11.389, -38.07, -138.24}, {41.8521, -8.44988, -35.64, -67.2442},
 {44.2138, -11.0216, -33.21, -60.2857}, {38.6752, -9.18465, -32.4, -46.271}, {43.886, -9.55203, -35.64, -49.768},
 {55.5117, -11.0216, -37.26, -95.829}, {36.5418, -9.55203, -32.4, -47.9225}, {25.0364, -8.44988, -26.73, -17.5382},
 {43.292, -9.91942, -34.02, -55.9758}, {43.0213, -11.0216, -34.02, -57.7273}, {44.751, -10.6542, -34.02, -62.5379},
 {45.391, -10.6542, -34.83, -77.5062}, {23.1469, -9.18465, -24.3, -20.1706}, {42.1917, -10.2868, -33.21, -58.0988}}
```

ITERATIVE BACKPROPAGATION ALGORITHM FOR IRIS VRGINICA;

In[8]:=
```
abg3 = {}; Do[AppendTo[abg3,

  pp = 3;
  p = a2[[pp]][[nv]];
  t = -1;
  o = a2[[pp]][[nv]][[1]] + a2[[pp]][[nv]][[2]] + a2[[pp]][[nv]][[3]] + a2[[pp]][[nv]][[4]];
  erro1 = o (1 - o) (t - o);
  erro2 = o (1 - o) erro1;
  w4 = .0001 erro2 p[[4]];
  oadj0 = (p[[1]] + p[[2]] + p[[3]] + w4 p[[4]]);
  diff = oadj0 - t;
  o3 = a2[[1]][[1]][[1]] + a2[[1]][[1]][[2]] + a2[[1]][[1]][[3]];
  erro13 = o3 (1 - o3) (t - o3);
  erro23 = o3 (1 - o3) erro13;
  w3 = 0.0001 erro23 p[[3]];
  oadj03 = (p[[1]] + p[[2]] + w3 p[[3]] + w4 p[[4]]);
  diff3 = oadj03 - t;
  o2 = a2[[1]][[1]][[1]] + a2[[1]][[1]][[2]];
  erro12 = o2 (1 - o2) (t - o2);
  erro22 = o2 (1 - o2) erro12;
  w2 = 0.0001 erro22 p[[2]];
  oadj02 = (p[[1]] + w2 p[[2]] + w3 p[[3]] + w4 p[[4]]);
  diff2 = oadj02 - t;
  w1 = 1 - diff2 / p[[1]];
  {w1, w2, w3, w4}], {nv, Table[k, {k, 1, 50, 1}]}]; abg3
```

Out[8]=
```
{{239.364, -13.5335, -53.46, -457.428}, {96.8145, -11.0728, -45.441, -158.357},
 {162.39, -12.3032, -52.569, -384.24}, {110.367, -11.8931, -49.896, -212.447}, {166.492, -12.3032, -51.678, -339.343},
 {202.733, -12.3032, -58.806, -531.78}, {67.1344, -10.2526, -40.095, -72.8821}, {138.888, -11.8931, -56.133, -348.196},
 {109.061, -10.2526, -51.678, -225.749}, {278.931, -14.7638, -54.351, -649.844}, {119.14, -13.1234, -45.441, -250.832},
 {104.314, -11.0728, -47.223, -204.436}, {142.088, -12.3032, -49.005, -314.647}, {96.3622, -10.2526, -44.55, -150.942},
 {145.696, -11.4829, -45.441, -242.557}, {162.31, -13.1234, -47.223, -325.002}, {109.505, -12.3032, -49.005, -225.749},
 {270.189, -15.584, -59.697, -737.395}, {241.849, -10.6627, -61.479, -613.613}, {64.145, -9.02232, -44.55, -95.5139},
 {188.174, -13.1234, -50.787, -420.834}, {99.4978, -11.4829, -43.659, -156.053}, {184.124, -11.4829, -59.697, -493.318},
 {84.29, -11.0728, -43.659, -160.112}, {160.381, -13.5335, -50.787, -353.05}, {134.911, -13.1234, -53.46, -338.667},
 {83.1357, -11.4829, -42.768, -155.001}, {89.7507, -12.3032, -43.659, -165.356}, {137.586, -11.4829, -49.896, -271.419},
 {103.067, -12.3032, -51.678, -254.024}, {140.799, -11.4829, -54.351, -357.482}, {211.028, -15.584, -57.024, -621.973},
 {149.237, -11.4829, -49.896, -292.977}, {73.4986, -11.4829, -45.441, -133.426}, {78.768, -10.6627, -49.896, -124.531},
 {212.759, -12.3032, -54.351, -552.52}, {201.102, -13.9436, -49.896, -392.132}, {111.607, -12.7133, -49.005, -225.749},
 {86.6997, -12.3032, -42.768, -155.001}, {141.805, -12.7133, -48.114, -323.918}, {191.969, -12.7133, -49.896, -403.485},
 {154.025, -12.7133, -45.441, -344.613}, {96.8145, -11.0728, -45.441, -158.357}, {198.008, -13.1234, -52.569, -432.742},
 {225.235, -13.5335, -50.787, -470.371}, {152.887, -12.3032, -46.332, -325.002}, {90.2372, -10.2526, -44.55, -169.007},
 {117.468, -12.3032, -46.332, -243.352}, {173.551, -13.9436, -48.114, -334.693}, {95.8134, -12.3032, -45.441, -165.356}}
```

OUTPUT;

In[9]:=
```
w1 p[[1]] + w2 p[[2]] + w3 p[[3]] + w4 p[[4]]
```

Out[9]=
```
-1.
```

RANDOM DATASET;

In[10]:=
```
d = Transpose[{Table[RandomReal[{4.6, 5.5}], {50}],
    Table[RandomReal[{3, 4.4}], {50}], Table[RandomReal[{1, 1.9}], {50}], Table[RandomReal[{0.1, 0.4}], {50}]}]
```

Out[10]=
```
{{5.00485, 3.66976, 1.72824, 0.121845}, {5.00242, 3.35564, 1.51949, 0.353782},
 {4.92933, 4.22761, 1.62141, 0.227208}, {5.3929, 4.39003, 1.89383, 0.120412}, {5.0521, 3.84548, 1.21131, 0.362942},
 {5.41415, 3.95496, 1.18806, 0.200505}, {4.63496, 4.21224, 1.06371, 0.253254}, {5.10405, 4.32084, 1.3479, 0.112206},
 {5.42742, 4.188, 1.76905, 0.382776}, {4.8904, 3.93274, 1.04156, 0.101751}, {4.76371, 3.80104, 1.59601, 0.335712},
 {5.12206, 3.06801, 1.07298, 0.39598}, {5.41108, 3.42353, 1.06346, 0.24896}, {5.234, 3.00127, 1.37135, 0.346475},
 {5.26903, 3.05058, 1.48657, 0.106451}, {5.39124, 3.4217, 1.05395, 0.245806}, {5.38929, 3.66096, 1.81053, 0.277622},
 {5.37227, 3.18993, 1.4784, 0.208041}, {4.83073, 3.65122, 1.18243, 0.128951}, {5.14978, 3.10034, 1.33647, 0.114708},
 {4.61418, 4.30317, 1.67701, 0.203749}, {5.30865, 3.82711, 1.82179, 0.389778}, {5.20784, 3.58299, 1.2595, 0.189094},
 {5.19914, 3.90112, 1.57572, 0.174874}, {5.12261, 3.40883, 1.81839, 0.234367}, {4.72982, 3.34639, 1.85208, 0.373659},
 {4.96694, 4.19535, 1.13031, 0.351697}, {4.85842, 4.28049, 1.68818, 0.171709}, {4.6377, 3.89928, 1.05892, 0.198634},
 {5.42872, 3.27391, 1.46039, 0.168677}, {4.98629, 3.61149, 1.0472, 0.325513}, {4.91448, 3.91402, 1.75016, 0.117398},
 {5.2872, 3.1621, 1.24537, 0.196619}, {5.402, 3.71772, 1.83854, 0.217447}, {4.75762, 3.62385, 1.18092, 0.384609},
 {4.98602, 3.91847, 1.34144, 0.281487}, {5.49939, 3.76392, 1.40563, 0.385663}, {5.36068, 4.07019, 1.59643, 0.20856},
 {5.49777, 3.90081, 1.0842, 0.27799}, {5.45539, 3.52098, 1.20102, 0.132859}, {5.1708, 3.31142, 1.30691, 0.212234},
 {5.17005, 3.47414, 1.09585, 0.159126}, {5.49265, 3.67666, 1.13095, 0.1944}, {4.94164, 3.52028, 1.16511, 0.262682},
 {5.00345, 3.26373, 1.37895, 0.141107}, {5.10181, 3.86732, 1.89317, 0.382555}, {4.89914, 4.27766, 1.85761, 0.395273},
 {4.6334, 3.48604, 1.64679, 0.367505}, {5.16063, 4.26902, 1.54035, 0.265195}, {4.94488, 3.0335, 1.0776, 0.192489}}
```

In[11]:=
```
Total[Total[a2[[2]] abg2]]
```

Out[11]=
```
0.
```

In[12]:=
```
Total[Total[a2[[3]] abg3]]
```

Out[12]=
```
-50.
```

In[13]:=
```
Total[Total[d abg]]
```

Out[13]=
```
8.01828
```

In[14]:=
```
Total[Total[d abg2]]
```

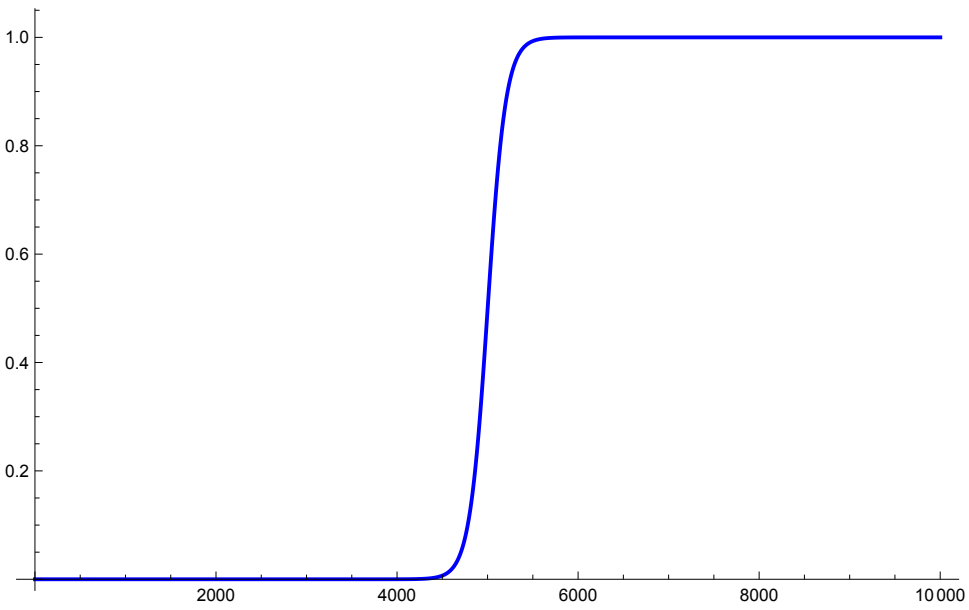
Out[14]=
```
6790.19
```

In[15]:=
```
Total[Total[d abg3]]
```
Out[15]=
```
27 419.6
```

In[16]:=
```
{SetAccuracy[1 / (1 + 2.71^+50), 3], 1 / (1 + 2.71^0), 1 / (1 + 2.71^-50)}
```
Out[16]=
```
{0. × 10^-3, 0.5, 1.}
```

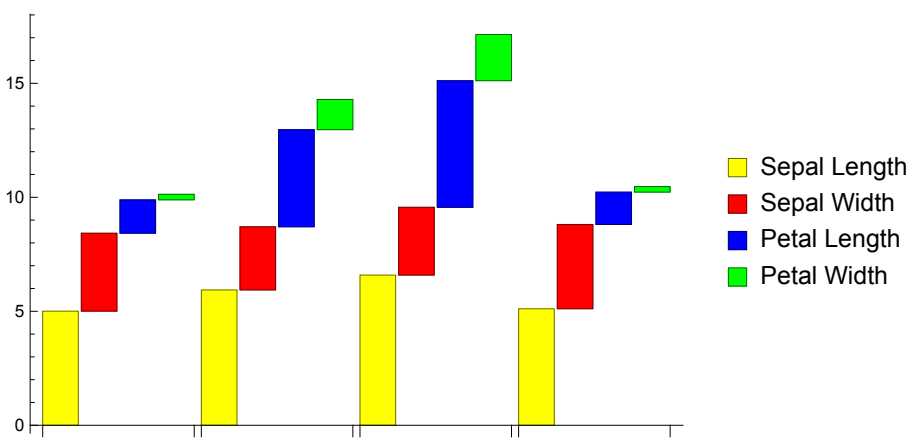
In[17]:=
```
Graphics[{Black, Disk[{0, 1 - 1 / (1 + 2.71^0)}, .4]}, ImageSize → 500, PlotRange → {{-1, 40}, {-1, 1.5}}]
```
Out[17]=

In[18]:=
```
ListLinePlot[1 / (1 + 2.71^-#) & /@ Table[k, {k, -50, 50, .01}], ImageSize → 500, PlotStyle → {Blue, Thick}]
```
Out[18]=



In[19]:=
```
Flatten[{Mean[a2[[#]]] & /@ {1, 2, 3}, {Mean[d]}}, 1]
```
Out[19]=
```
{{5.006, 3.418, 1.464, 0.244}, {5.936, 2.77, 4.26, 1.326}, {6.588, 2.974, 5.552, 2.026}, {5.1105, 3.69736, 1.41926, 0.244047}}
```

In[20]:=
```
BarChart[Flatten[{Mean[a2[[#]]] & /@ {1, 2, 3}, {Mean[d]}}, 1], ChartLayout → "Stepped",
 ChartStyle → {Yellow, Red, Blue, Green}, ChartLegends → {"Sepal Length", "Sepal Width", "Petal Length", "Petal Width"}]
```
Out[20]=



In[21]:=
```
z = Flatten[{abg, abg2, abg3}];
```

In[22]:=
```
z4 = Total[Abs[z[[#]]] & /@ Table[k, {k, 4, 600, 4}]]
```
Out[22]=
```
19 531.5
```

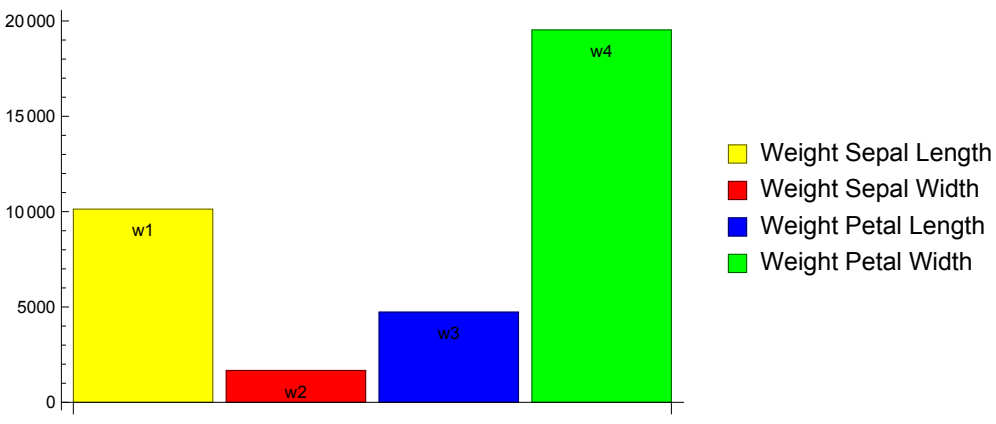
In[23]:=
```
z3 = Total[Abs[z[[#]]] & /@ Table[k, {k, 3, 599, 4}]]
```
Out[23]=
```
4732.34
```

In[24]:=
```
z2 = Total[Abs[z[[#]]] & /@ Table[k, {k, 2, 598, 4}]]
```
Out[24]=
```
1673.51
```

In[25]:=
```
z1 = Total[Abs[z[[#]]] & /@ Table[k, {k, 1, 597, 4}]]
```
Out[25]=
```
10 132.3
```

WEIGHTS AFTER BACKPROPAGATION;

In[26]:=
```
BarChart[{z1, z2, z3, z4}, ChartLabels → Placed[{"w1", "w2", "w3", "w4"}, Top], ChartStyle → {Yellow, Red, Blue, Green},
 ChartLegends → {"Weight Sepal Length", "Weight Sepal Width", "Weight Petal Length", "Weight Petal Width"}]
```
Out[26]=



In[27]:=
```
d1 = 1 - (abg[[#]][[1]] a2[[1]][[#]][[1]] + abg[[#]][[2]] a2[[1]][[#]][[2]] +
      abg[[#]][[3]] a2[[1]][[#]][[3]] + abg[[#]][[4]] a2[[1]][[#]][[4]]) & /@ Table[k, {k, 1, Dimensions[abg][[1]], 1}]
```

Out[27]=
$$\{-1.77636\times10^{-15},\ 8.88178\times10^{-15},\ -7.10543\times10^{-15},\ -3.55271\times10^{-15},\ -1.77636\times10^{-15},\ -1.06581\times10^{-14},\ 1.77636\times10^{-15},\ -3.55271\times10^{-15},\ -3.55271\times10^{-15},\ 7.10543\times10^{-15},\ -3.55271\times10^{-15},\ 0.,\ 3.55271\times10^{-15},\ 7.10543\times10^{-15},\ -3.55271\times10^{-15},\ 1.42109\times10^{-14},\ -3.55271\times10^{-15},\ -3.55271\times10^{-15},\ 1.06581\times10^{-14},\ -1.06581\times10^{-14},\ 0.,\ 0.,\ -3.55271\times10^{-15},\ -3.55271\times10^{-15},\ -7.10543\times10^{-15},\ 0.,\ -7.10543\times10^{-15},\ 0.,\ 5.32907\times10^{-15},\ -7.10543\times10^{-15},\ -3.55271\times10^{-15},\ 0.,\ 3.55271\times10^{-15},\ 7.10543\times10^{-15},\ 7.10543\times10^{-15},\ 3.55271\times10^{-15},\ -1.77636\times10^{-15},\ 7.10543\times10^{-15},\ -8.88178\times10^{-15},\ 0.,\ 0.,\ 0.,\ -8.88178\times10^{-15},\ 0.,\ -1.06581\times10^{-14},\ 3.55271\times10^{-15},\ 0.,\ -1.77636\times10^{-15},\ -7.10543\times10^{-15},\ 1.77636\times10^{-15}\}$$

In[28]:=
```
d2 =
 1 - (a2[[1]][[#]][[1]] + abg[[#]][[2]] a2[[1]][[#]][[2]] + abg[[#]][[3]] a2[[1]][[#]][[3]] + abg[[#]][[4]] a2[[1]][[#]][[4]]) & /@
  Table[k, {k, 1, Dimensions[abg][[1]], 1}]
```

Out[28]=
{50.2841, 39.8301, 42.0755, 44.2125, 52.6893, 68.3889, 48.7775, 50.2415, 38.3491, 43.7616, 56.8885, 52.6855, 39.7579, 34.7714, 58.1767, 77.6246, 59.2379, 50.7281, 64.6278, 60.1248, 54.6175, 58.4212, 45.9763, 54.8095, 60.3897, 44.1442, 53.6312, 52.3335, 47.9439, 48.4561, 46.3107, 51.2058, 66.8942, 67.6177, 43.7616, 39.9779, 47.9699, 43.7616, 38.2963, 50.158, 48.7836, 26.2523, 42.342, 58.1958, 71.2287, 40.2072, 61.8622, 44.1438, 56.9673, 45.921}

In[29]:=
```
d3 = 1 - (a2[[1]][[#]][[1]] + a2[[1]][[#]][[2]] + abg[[#]][[3]] a2[[1]][[#]][[3]] + abg[[#]][[4]] a2[[1]][[#]][[4]]) & /@
  Table[k, {k, 1, Dimensions[abg][[1]], 1}]
```

Out[29]=
{7.01246, 7.6101, 5.62959, 9.91199, 7.01246, 15.1071, 7.84603, 9.30999, 8.14461, 9.46112, 8.74162, 11.754, 7.53785, 2.55138, 2.23007, 10.3691, 5.9561, 7.45641, 13.946, 9.44293, 13.6861, 10.2744, 0.299485, 16.1533, 19.4582, 11.9242, 12.6998, 9.06184, 7.01246, 12.0102, 12.0102, 10.2744, 8.21778, 6.14652, 9.46112, 3.53208, 4.6982, 9.46112, 6.07631, 9.22656, 5.51195, 6.77743, 5.89613, 14.9241, 20.5468, 7.98722, 11.1804, 7.69789, 8.82047, 7.26478}

In[30]:=
```
d4 = 1 - (a2[[1]][[#]][[1]] + a2[[1]][[#]][[2]] + a2[[1]][[#]][[3]] + abg[[#]][[4]] a2[[1]][[#]][[4]]) & /@
  Table[k, {k, 1, Dimensions[abg][[1]], 1}]
```

Out[30]=
{-8.67594, -8.0783, -7.99051, -7.99051, -8.67594, -7.661, -7.84237, -8.59251, -7.54379, -8.44138, -9.16088, -8.5084, -8.15055, -7.36952, -9.46753, -7.53338, -7.664, -8.23199, -8.82214, -8.45957, -9.08203, -7.62813, -7.99051, -6.61478, -8.75866, -8.33821, -7.56262, -8.84066, -8.67594, -8.25217, -8.25217, -7.62813, -9.68472, -9.54188, -8.44138, -8.16552, -8.9219, -8.44138, -7.54379, -8.67594, -8.10815, -6.84267, -7.72397, -5.33829, -7.67011, -7.70118, -9.08203, -7.99051, -9.08203, -8.42362}

Image From Same Dataset from RapidMiner;