HW10.R

xboxv

2020-04-19

```
library("kernlab")
library("ggplot2")
```

```
## Warning: package 'ggplot2' was built under R version 3.6.3
```

```
##
## Attaching package: 'ggplot2'
```

```
## The following object is masked from 'package:kernlab':
##
##     alpha
```

```
library(e1071)
```

```
## Warning: package 'e1071' was built under R version 3.6.3
```

```
library(gridExtra)
```

```
## Warning: package 'gridExtra' was built under R version 3.6.3
```

```
airquality
```

```
##     Ozone Solar.R Wind Temp Month Day
## 1      41     190  7.4   67     5   1
## 2      36     118  8.0   72     5   2
## 3      12     149 12.6   74     5   3
## 4      18     313 11.5   62     5   4
## 5      NA      NA 14.3   56     5   5
## 6      28      NA 14.9   66     5   6
## 7      23     299  8.6   65     5   7
## 8      19      99 13.8   59     5   8
## 9       8      19 20.1   61     5   9
## 10     NA     194  8.6   69     5  10
## 11      7      NA  6.9   74     5  11
## 12     16     256  9.7   69     5  12
## 13     11     290  9.2   66     5  13
## 14     14     274 10.9   68     5  14
## 15     18      65 13.2   58     5  15
## 16     14     334 11.5   64     5  16
## 17     34     307 12.0   66     5  17
## 18      6      78 18.4   57     5  18
## 19     30     322 11.5   68     5  19
## 20     11      44  9.7   62     5  20
## 21      1       8  9.7   59     5  21
```

```
## 22     11     320 16.6   73     5  22
## 23      4      25  9.7   61     5  23
## 24     32      92 12.0   61     5  24
## 25     NA      66 16.6   57     5  25
## 26     NA     266 14.9   58     5  26
## 27     NA      NA  8.0   57     5  27
## 28     23      13 12.0   67     5  28
## 29     45     252 14.9   81     5  29
## 30    115     223  5.7   79     5  30
## 31     37     279  7.4   76     5  31
## 32     NA     286  8.6   78     6   1
## 33     NA     287  9.7   74     6   2
## 34     NA     242 16.1   67     6   3
## 35     NA     186  9.2   84     6   4
## 36     NA     220  8.6   85     6   5
## 37     NA     264 14.3   79     6   6
## 38     29     127  9.7   82     6   7
## 39     NA     273  6.9   87     6   8
## 40     71     291 13.8   90     6   9
## 41     39     323 11.5   87     6  10
## 42     NA     259 10.9   93     6  11
## 43     NA     250  9.2   92     6  12
## 44     23     148  8.0   82     6  13
## 45     NA     332 13.8   80     6  14
## 46     NA     322 11.5   79     6  15
## 47     21     191 14.9   77     6  16
## 48     37     284 20.7   72     6  17
## 49     20      37  9.2   65     6  18
## 50     12     120 11.5   73     6  19
## 51     13     137 10.3   76     6  20
## 52     NA     150  6.3   77     6  21
## 53     NA      59  1.7   76     6  22
## 54     NA      91  4.6   76     6  23
## 55     NA     250  6.3   76     6  24
## 56     NA     135  8.0   75     6  25
## 57     NA     127  8.0   78     6  26
## 58     NA      47 10.3   73     6  27
## 59     NA      98 11.5   80     6  28
## 60     NA      31 14.9   77     6  29
## 61     NA     138  8.0   83     6  30
## 62    135     269  4.1   84     7   1
## 63     49     248  9.2   85     7   2
## 64     32     236  9.2   81     7   3
## 65     NA     101 10.9   84     7   4
## 66     64     175  4.6   83     7   5
## 67     40     314 10.9   83     7   6
## 68     77     276  5.1   88     7   7
## 69     97     267  6.3   92     7   8
## 70     97     272  5.7   92     7   9
## 71     85     175  7.4   89     7  10
```

```
## 72     NA     139  8.6   82     7  11
## 73     10     264 14.3   73     7  12
## 74     27     175 14.9   81     7  13
## 75     NA     291 14.9   91     7  14
## 76      7      48 14.3   80     7  15
## 77     48     260  6.9   81     7  16
## 78     35     274 10.3   82     7  17
## 79     61     285  6.3   84     7  18
## 80     79     187  5.1   87     7  19
## 81     63     220 11.5   85     7  20
## 82     16       7  6.9   74     7  21
## 83     NA     258  9.7   81     7  22
## 84     NA     295 11.5   82     7  23
## 85     80     294  8.6   86     7  24
## 86    108     223  8.0   85     7  25
## 87     20      81  8.6   82     7  26
## 88     52      82 12.0   86     7  27
## 89     82     213  7.4   88     7  28
## 90     50     275  7.4   86     7  29
## 91     64     253  7.4   83     7  30
## 92     59     254  9.2   81     7  31
## 93     39      83  6.9   81     8   1
## 94      9      24 13.8   81     8   2
## 95     16      77  7.4   82     8   3
## 96     78      NA  6.9   86     8   4
## 97     35      NA  7.4   85     8   5
## 98     66      NA  4.6   87     8   6
## 99    122     255  4.0   89     8   7
## 100    89     229 10.3   90     8   8
## 101   110     207  8.0   90     8   9
## 102    NA     222  8.6   92     8  10
## 103    NA     137 11.5   86     8  11
## 104    44     192 11.5   86     8  12
## 105    28     273 11.5   82     8  13
## 106    65     157  9.7   80     8  14
## 107    NA      64 11.5   79     8  15
## 108    22      71 10.3   77     8  16
## 109    59      51  6.3   79     8  17
## 110    23     115  7.4   76     8  18
## 111    31     244 10.9   78     8  19
## 112    44     190 10.3   78     8  20
## 113    21     259 15.5   77     8  21
## 114     9      36 14.3   72     8  22
## 115    NA     255 12.6   75     8  23
## 116    45     212  9.7   79     8  24
## 117   168     238  3.4   81     8  25
## 118    73     215  8.0   86     8  26
## 119    NA     153  5.7   88     8  27
## 120    76     203  9.7   97     8  28
## 121   118     225  2.3   94     8  29
```

```
## 122    84     237  6.3   96     8  30
## 123    85     188  6.3   94     8  31
## 124    96     167  6.9   91     9   1
## 125    78     197  5.1   92     9   2
## 126    73     183  2.8   93     9   3
## 127    91     189  4.6   93     9   4
## 128    47      95  7.4   87     9   5
## 129    32      92 15.5   84     9   6
## 130    20     252 10.9   80     9   7
## 131    23     220 10.3   78     9   8
## 132    21     230 10.9   75     9   9
## 133    24     259  9.7   73     9  10
## 134    44     236 14.9   81     9  11
## 135    21     259 15.5   76     9  12
## 136    28     238  6.3   77     9  13
## 137     9      24 10.9   71     9  14
## 138    13     112 11.5   71     9  15
## 139    46     237  6.9   78     9  16
## 140    18     224 13.8   67     9  17
## 141    13      27 10.3   76     9  18
## 142    24     238 10.3   68     9  19
## 143    16     201  8.0   82     9  20
## 144    13     238 12.6   64     9  21
## 145    23      14  9.2   71     9  22
## 146    36     139 10.3   81     9  23
## 147     7      49 10.3   69     9  24
## 148    14      20 16.6   63     9  25
## 149    30     193  6.9   70     9  26
## 150    NA     145 13.2   77     9  27
## 151    14     191 14.3   75     9  28
## 152    18     131  8.0   76     9  29
## 153    20     223 11.5   68     9  30
```

```
#removs na's
airquality <- airquality
airquality[is.na(airquality)] <- 0
airquality
```

```
##     Ozone Solar.R Wind Temp Month Day
## 1      41     190  7.4   67     5   1
## 2      36     118  8.0   72     5   2
## 3      12     149 12.6   74     5   3
## 4      18     313 11.5   62     5   4
## 5       0       0 14.3   56     5   5
## 6      28       0 14.9   66     5   6
## 7      23     299  8.6   65     5   7
## 8      19      99 13.8   59     5   8
## 9       8      19 20.1   61     5   9
## 10      0     194  8.6   69     5  10
## 11      7       0  6.9   74     5  11
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## 12     16     256  9.7   69     5  12
## 13     11     290  9.2   66     5  13
## 14     14     274 10.9   68     5  14
## 15     18      65 13.2   58     5  15
## 16     14     334 11.5   64     5  16
## 17     34     307 12.0   66     5  17
## 18      6      78 18.4   57     5  18
## 19     30     322 11.5   68     5  19
## 20     11      44  9.7   62     5  20
## 21      1       8  9.7   59     5  21
## 22     11     320 16.6   73     5  22
## 23      4      25  9.7   61     5  23
## 24     32      92 12.0   61     5  24
## 25      0      66 16.6   57     5  25
## 26      0     266 14.9   58     5  26
## 27      0       0  8.0   57     5  27
## 28     23      13 12.0   67     5  28
## 29     45     252 14.9   81     5  29
## 30    115     223  5.7   79     5  30
## 31     37     279  7.4   76     5  31
## 32      0     286  8.6   78     6   1
## 33      0     287  9.7   74     6   2
## 34      0     242 16.1   67     6   3
## 35      0     186  9.2   84     6   4
## 36      0     220  8.6   85     6   5
## 37      0     264 14.3   79     6   6
## 38     29     127  9.7   82     6   7
## 39      0     273  6.9   87     6   8
## 40     71     291 13.8   90     6   9
## 41     39     323 11.5   87     6  10
## 42      0     259 10.9   93     6  11
## 43      0     250  9.2   92     6  12
## 44     23     148  8.0   82     6  13
## 45      0     332 13.8   80     6  14
## 46      0     322 11.5   79     6  15
## 47     21     191 14.9   77     6  16
## 48     37     284 20.7   72     6  17
## 49     20      37  9.2   65     6  18
## 50     12     120 11.5   73     6  19
## 51     13     137 10.3   76     6  20
## 52      0     150  6.3   77     6  21
## 53      0      59  1.7   76     6  22
## 54      0      91  4.6   76     6  23
## 55      0     250  6.3   76     6  24
## 56      0     135  8.0   75     6  25
## 57      0     127  8.0   78     6  26
## 58      0      47 10.3   73     6  27
## 59      0      98 11.5   80     6  28
## 60      0      31 14.9   77     6  29
## 61      0     138  8.0   83     6  30
```

```
## 62    135     269  4.1   84     7   1
## 63     49     248  9.2   85     7   2
## 64     32     236  9.2   81     7   3
## 65      0     101 10.9   84     7   4
## 66     64     175  4.6   83     7   5
## 67     40     314 10.9   83     7   6
## 68     77     276  5.1   88     7   7
## 69     97     267  6.3   92     7   8
## 70     97     272  5.7   92     7   9
## 71     85     175  7.4   89     7  10
## 72      0     139  8.6   82     7  11
## 73     10     264 14.3   73     7  12
## 74     27     175 14.9   81     7  13
## 75      0     291 14.9   91     7  14
## 76      7      48 14.3   80     7  15
## 77     48     260  6.9   81     7  16
## 78     35     274 10.3   82     7  17
## 79     61     285  6.3   84     7  18
## 80     79     187  5.1   87     7  19
## 81     63     220 11.5   85     7  20
## 82     16       7  6.9   74     7  21
## 83      0     258  9.7   81     7  22
## 84      0     295 11.5   82     7  23
## 85     80     294  8.6   86     7  24
## 86    108     223  8.0   85     7  25
## 87     20      81  8.6   82     7  26
## 88     52      82 12.0   86     7  27
## 89     82     213  7.4   88     7  28
## 90     50     275  7.4   86     7  29
## 91     64     253  7.4   83     7  30
## 92     59     254  9.2   81     7  31
## 93     39      83  6.9   81     8   1
## 94      9      24 13.8   81     8   2
## 95     16      77  7.4   82     8   3
## 96     78       0  6.9   86     8   4
## 97     35       0  7.4   85     8   5
## 98     66       0  4.6   87     8   6
## 99    122     255  4.0   89     8   7
## 100    89     229 10.3   90     8   8
## 101   110     207  8.0   90     8   9
## 102     0     222  8.6   92     8  10
## 103     0     137 11.5   86     8  11
## 104    44     192 11.5   86     8  12
## 105    28     273 11.5   82     8  13
## 106    65     157  9.7   80     8  14
## 107     0      64 11.5   79     8  15
## 108    22      71 10.3   77     8  16
## 109    59      51  6.3   79     8  17
## 110    23     115  7.4   76     8  18
## 111    31     244 10.9   78     8  19
```

```
## 112    44     190 10.3   78     8  20
## 113    21     259 15.5   77     8  21
## 114     9      36 14.3   72     8  22
## 115     0     255 12.6   75     8  23
## 116    45     212  9.7   79     8  24
## 117   168     238  3.4   81     8  25
## 118    73     215  8.0   86     8  26
## 119     0     153  5.7   88     8  27
## 120    76     203  9.7   97     8  28
## 121   118     225  2.3   94     8  29
## 122    84     237  6.3   96     8  30
## 123    85     188  6.3   94     8  31
## 124    96     167  6.9   91     9   1
## 125    78     197  5.1   92     9   2
## 126    73     183  2.8   93     9   3
## 127    91     189  4.6   93     9   4
## 128    47      95  7.4   87     9   5
## 129    32      92 15.5   84     9   6
## 130    20     252 10.9   80     9   7
## 131    23     220 10.3   78     9   8
## 132    21     230 10.9   75     9   9
## 133    24     259  9.7   73     9  10
## 134    44     236 14.9   81     9  11
## 135    21     259 15.5   76     9  12
## 136    28     238  6.3   77     9  13
## 137     9      24 10.9   71     9  14
## 138    13     112 11.5   71     9  15
## 139    46     237  6.9   78     9  16
## 140    18     224 13.8   67     9  17
## 141    13      27 10.3   76     9  18
## 142    24     238 10.3   68     9  19
## 143    16     201  8.0   82     9  20
## 144    13     238 12.6   64     9  21
## 145    23      14  9.2   71     9  22
## 146    36     139 10.3   81     9  23
## 147     7      49 10.3   69     9  24
## 148    14      20 16.6   63     9  25
## 149    30     193  6.9   70     9  26
## 150     0     145 13.2   77     9  27
## 151    14     191 14.3   75     9  28
## 152    18     131  8.0   76     9  29
## 153    20     223 11.5   68     9  30
```

```
#create train and test dataset
sample  <- sample(1:nrow(airquality))
head(sample)
```

```
## [1] 142  65 122  23  74  60
```

```r
nr<- nrow(airquality)

split   <- floor(2*nr/3)
split
```

```
## [1] 102
```

```r
trainAirquality <-airquality[sample[1:split],]
testAirquality <-airquality[sample[(split+1):nr],]
trainAirquality
```

```
##     Ozone Solar.R Wind Temp Month Day
## 142    24     238 10.3   68     9  19
## 65      0     101 10.9   84     7   4
## 122    84     237  6.3   96     8  30
## 23      4      25  9.7   61     5  23
## 74     27     175 14.9   81     7  13
## 60      0      31 14.9   77     6  29
## 150     0     145 13.2   77     9  27
## 86    108     223  8.0   85     7  25
## 148    14      20 16.6   63     9  25
## 40     71     291 13.8   90     6   9
## 38     29     127  9.7   82     6   7
## 100    89     229 10.3   90     8   8
## 147     7      49 10.3   69     9  24
## 41     39     323 11.5   87     6  10
## 130    20     252 10.9   80     9   7
## 119     0     153  5.7   88     8  27
## 18      6      78 18.4   57     5  18
## 53      0      59  1.7   76     6  22
## 58      0      47 10.3   73     6  27
## 123    85     188  6.3   94     8  31
## 132    21     230 10.9   75     9   9
## 45      0     332 13.8   80     6  14
## 59      0      98 11.5   80     6  28
## 97     35       0  7.4   85     8   5
## 3      12     149 12.6   74     5   3
## 144    13     238 12.6   64     9  21
## 95     16      77  7.4   82     8   3
## 75      0     291 14.9   91     7  14
## 63     49     248  9.2   85     7   2
## 5       0       0 14.3   56     5   5
## 51     13     137 10.3   76     6  20
## 109    59      51  6.3   79     8  17
## 32      0     286  8.6   78     6   1
## 140    18     224 13.8   67     9  17
## 128    47      95  7.4   87     9   5
## 12     16     256  9.7   69     5  12
## 82     16       7  6.9   74     7  21
## 44     23     148  8.0   82     6  13
```

```
## 31     37     279  7.4   76     5  31
## 103     0     137 11.5   86     8  11
## 76      7      48 14.3   80     7  15
## 126    73     183  2.8   93     9   3
## 42      0     259 10.9   93     6  11
## 134    44     236 14.9   81     9  11
## 39      0     273  6.9   87     6   8
## 54      0      91  4.6   76     6  23
## 70     97     272  5.7   92     7   9
## 57      0     127  8.0   78     6  26
## 93     39      83  6.9   81     8   1
## 16     14     334 11.5   64     5  16
## 80     79     187  5.1   87     7  19
## 107     0      64 11.5   79     8  15
## 43      0     250  9.2   92     6  12
## 99    122     255  4.0   89     8   7
## 77     48     260  6.9   81     7  16
## 90     50     275  7.4   86     7  29
## 8      19      99 13.8   59     5   8
## 110    23     115  7.4   76     8  18
## 49     20      37  9.2   65     6  18
## 29     45     252 14.9   81     5  29
## 71     85     175  7.4   89     7  10
## 102     0     222  8.6   92     8  10
## 56      0     135  8.0   75     6  25
## 92     59     254  9.2   81     7  31
## 15     18      65 13.2   58     5  15
## 25      0      66 16.6   57     5  25
## 35      0     186  9.2   84     6   4
## 87     20      81  8.6   82     7  26
## 104    44     192 11.5   86     8  12
## 105    28     273 11.5   82     8  13
## 62    135     269  4.1   84     7   1
## 66     64     175  4.6   83     7   5
## 79     61     285  6.3   84     7  18
## 88     52      82 12.0   86     7  27
## 68     77     276  5.1   88     7   7
## 64     32     236  9.2   81     7   3
## 120    76     203  9.7   97     8  28
## 9       8      19 20.1   61     5   9
## 28     23      13 12.0   67     5  28
## 111    31     244 10.9   78     8  19
## 124    96     167  6.9   91     9   1
## 30    115     223  5.7   79     5  30
## 125    78     197  5.1   92     9   2
## 101   110     207  8.0   90     8   9
## 11      7       0  6.9   74     5  11
## 96     78       0  6.9   86     8   4
## 138    13     112 11.5   71     9  15
## 48     37     284 20.7   72     6  17
```

```
## 72      0     139  8.6   82     7  11
## 153    20     223 11.5   68     9  30
## 108    22      71 10.3   77     8  16
## 118    73     215  8.0   86     8  26
## 131    23     220 10.3   78     9   8
## 81     63     220 11.5   85     7  20
## 112    44     190 10.3   78     8  20
## 61      0     138  8.0   83     6  30
## 17     34     307 12.0   66     5  17
## 13     11     290  9.2   66     5  13
## 24     32      92 12.0   61     5  24
## 94      9      24 13.8   81     8   2
## 22     11     320 16.6   73     5  22
## 21      1       8  9.7   59     5  21
```

```
testAirquality
```

```
##     Ozone Solar.R Wind Temp Month Day
## 117   168     238  3.4   81     8  25
## 151    14     191 14.3   75     9  28
## 114     9      36 14.3   72     8  22
## 135    21     259 15.5   76     9  12
## 115     0     255 12.6   75     8  23
## 55      0     250  6.3   76     6  24
## 91     64     253  7.4   83     7  30
## 121   118     225  2.3   94     8  29
## 83      0     258  9.7   81     7  22
## 116    45     212  9.7   79     8  24
## 34      0     242 16.1   67     6   3
## 33      0     287  9.7   74     6   2
## 78     35     274 10.3   82     7  17
## 7      23     299  8.6   65     5   7
## 139    46     237  6.9   78     9  16
## 67     40     314 10.9   83     7   6
## 113    21     259 15.5   77     8  21
## 137     9      24 10.9   71     9  14
## 4      18     313 11.5   62     5   4
## 46      0     322 11.5   79     6  15
## 98     66       0  4.6   87     8   6
## 84      0     295 11.5   82     7  23
## 133    24     259  9.7   73     9  10
## 36      0     220  8.6   85     6   5
## 37      0     264 14.3   79     6   6
## 2      36     118  8.0   72     5   2
## 136    28     238  6.3   77     9  13
## 152    18     131  8.0   76     9  29
## 50     12     120 11.5   73     6  19
## 149    30     193  6.9   70     9  26
## 141    13      27 10.3   76     9  18
## 52      0     150  6.3   77     6  21
```

```
## 69     97     267  6.3   92     7   8
## 129    32      92 15.5   84     9   6
## 26      0     266 14.9   58     5  26
## 20     11      44  9.7   62     5  20
## 14     14     274 10.9   68     5  14
## 6      28       0 14.9   66     5   6
## 1      41     190  7.4   67     5   1
## 106    65     157  9.7   80     8  14
## 10      0     194  8.6   69     5  10
## 27      0       0  8.0   57     5  27
## 47     21     191 14.9   77     6  16
## 143    16     201  8.0   82     9  20
## 85     80     294  8.6   86     7  24
## 146    36     139 10.3   81     9  23
## 145    23      14  9.2   71     9  22
## 89     82     213  7.4   88     7  28
## 127    91     189  4.6   93     9   4
## 19     30     322 11.5   68     5  19
## 73     10     264 14.3   73     7  12

#: Build a Model using KSVM and visualize the results

#Building the model
predictOzone <- function(a, airquality){
  predictedOzone <- predict(a, airquality)
  results1 <- table(predictedOzone, airquality$Ozone)
  print(results1)
  percentCorrect1 <-
(results1[1,1]+results1[2,2])/(results1[1,1]+results1[1,2]+results1[2,1]+resu
lts1[2,2])*100
  round(percentCorrect1)
  return(percentCorrect1)
}

KSVM <- ksvm(Ozone ~ ., data = airquality)
predictOzone(KSVM, airquality)

##
## predictedOzone      0 1 4 6 7 8 9 10 11 12 13 14 16 18 19 20 21 22 23 24
27 28
##   0.276075572013916 1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.38565611875687  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.40119441536722  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.40700588697826  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   4.17146567997599  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
```

```
##   4.29427381542468  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   4.53359103225294  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   5.43565090699762  0 0 1 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   5.69373235335076  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   6.52953105578528  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   6.71184241919521  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   6.99292761094139  0 0 0 0 0 0 1  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.15478606308702  0 0 0 1 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.50657640459864  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.66254659843649  0 0 0 0 0 0 0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.6679140404417   0 0 0 0 0 0 0  1  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   8.01770539885172  0 0 0 0 0 0 0  0  0  1  0  0  0  0  0  0  0  0  0  0
0  0
##   8.05814359087545  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   8.17443664737683  0 1 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.231002182456    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.51602159968891  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.60145760266784  0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   9.7259450267565   0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   10.3796658381994  0 0 0 0 1 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.3904139744899  0 0 0 0 1 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.6062148326701  0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   10.6891183525786  0 0 0 0 0 0 0  0  0  1  0  0  0  0  0  0  0  0  0  0
0  0
##   11.1379604698739  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.3791872054377  0 0 0 0 0 1 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.8984062491459  0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
```

```
##   11.9287068153035  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.057205244766   0 0 0 0 1 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.2135753862018  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.3853171947137  0 0 0 0 0 0 1  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.3872701109632  0 0 0 0 0 0 1  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.5918481155033  0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   12.8024992775679  0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   13.7084802098166  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   13.9338047638628  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.2789297915917  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.5236559119728  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   14.6080711199189  0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   14.61237416799    0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   14.7594554591722  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   15.001206330918   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.1375925761935  0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   15.8081081336482  0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   15.9466473081681  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.0672266095529  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.4017354096889  0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   16.5687816794096  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.6493490304141  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.7177613606592  0 0 0 0 0 0 0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.777917314558   0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   16.9508429891831  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  1  0  0
0  0
```

```
##   17.192004654378   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   17.4031865988124  0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   17.4944014708916  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  1
0  0
##   17.541758578889   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   17.5837884207271  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.5918549518073  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   18.3333785500138  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   18.4749821092589  0 0 0 0 0 0 0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   18.9416567034407  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
1  0
##   19.0329066754152  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   19.3656048827834  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   19.463432318207   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   19.6125064239904  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   20.6064332166214  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  1
0  0
##   20.7156029656607  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   21.6322515172487  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   21.7955168199359  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   21.9181762898784  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   22.2331416625543  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   22.3986818292772  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   22.4291784685397  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   23.3993557391812  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   23.4474977812808  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   24.3813123276749  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   24.7798889679599  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
```

```
##   25.2782229879576  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   25.3026698120672  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   26.4026402326956  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   26.5800389856763  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   26.6024428785687  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   26.6218742100532  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   27.2750382281734  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   27.3064704788167  0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   27.5258815919388  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   28.5971078743399  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.5867343975087  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.714254983874   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   29.7394856024911  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.8448923519865  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   30.1686523342564  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   30.2519840733777  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   30.3650565458003  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.2437356643915  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.3635745348896  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   32.1669550532228  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   32.1681442355371  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   32.6014607671018  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   33.6172471493576  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   34.0601098503218  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   35.2085839132411  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
```

```
##   35.314864460689   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   35.5717879889121  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   37.3498394465077  0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   37.962740487668   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   38.1187393145217  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   38.3869599369188  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   38.4553647738991  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   38.7553702887441  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   39.9115029340235  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   40.5974734497606  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   42.1648768723462  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   44.5422517648119  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   45.1803517893482  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   46.7736703955918  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   47.8037994835881  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   49.1890657224653  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   49.9259044696247  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   50.3927572630491  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   52.51269317675    0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   53.7767933021351  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   57.1023863806272  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   58.4874043340218  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   60.6060223571433  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   60.61428991045    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   61.0820851623031  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
```

```
##   62.0319801461861  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   65.2527936620394  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   67.5636982700602  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   67.8588764115918  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   67.9085339249933  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   69.4915031592076  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   70.6273506209466  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.2109601524665  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.2580011341184  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.4535548929104  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   72.6401943658799  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   73.6153238334116  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   75.7660313381565  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   79.964835511009   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   81.3861549802436  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   81.6240419112824  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   82.4624962502718  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   85.3512660183529  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   85.9512668374547  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   86.8676878182363  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   89.058193410743   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   93.1397897872157  0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   94.977114260272   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##
## predictedOzone      29 30 31 32 34 35 36 37 39 40 41 44 45 46 47 48 49 50
52 59
##   0.276075572013916  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   3.38565611875687   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.40119441536722   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.40700588697826   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   4.17146567997599   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   4.29427381542468   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   4.53359103225294   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   5.43565090699762   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   5.69373235335076   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   6.52953105578528   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   6.71184241919521   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   6.99292761094139   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.15478606308702   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.50657640459864   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.66254659843649   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.6679140404417    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   8.01770539885172   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   8.05814359087545   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   8.17443664737683   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.231002182456     0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.51602159968891   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.60145760266784   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.7259450267565    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.3796658381994   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.3904139744899   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.6062148326701   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   10.6891183525786   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.1379604698739   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.3791872054377   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.8984062491459   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.9287068153035   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.057205244766    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.2135753862018   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.3853171947137   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.3872701109632   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.5918481155033   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.8024992775679   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   13.7084802098166   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   13.9338047638628   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.2789297915917   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.5236559119728   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.6080711199189   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.61237416799     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.7594554591722   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.001206330918    0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.1375925761935   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.8081081336482   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.9466473081681   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.0672266095529   0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.4017354096889   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.5687816794096   1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   16.6493490304141   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.7177613606592   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.777917314558    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.9508429891831   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.192004654378    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.4031865988124   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.4944014708916   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.541758578889    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.5837884207271   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.5918549518073   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   18.3333785500138   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   18.4749821092589   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   18.9416567034407   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   19.0329066754152   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   19.3656048827834   0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   19.463432318207    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   19.6125064239904   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   20.6064332166214   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   20.7156029656607   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   21.6322515172487   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   21.7955168199359   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   21.9181762898784   0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   22.2331416625543   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   22.3986818292772   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   22.4291784685397   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   23.3993557391812   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   23.4474977812808   0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   24.3813123276749   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
1  0
##   24.7798889679599   0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   25.2782229879576   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   25.3026698120672   0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
0  0
##   26.4026402326956   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   26.5800389856763   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   26.6024428785687   0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   26.6218742100532   0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   27.2750382281734   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   27.3064704788167   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   27.5258815919388   0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   28.5971078743399   0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.5867343975087   0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   29.714254983874    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.7394856024911   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.8448923519865   0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   30.1686523342564   0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0  0
##   30.2519840733777   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   30.3650565458003   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.2437356643915   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.3635745348896   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   32.1669550532228   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   32.1681442355371   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   32.6014607671018   0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   33.6172471493576   0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
0  0
##   34.0601098503218   0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   35.2085839132411   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   35.314864460689    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   35.5717879889121   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   37.3498394465077   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   37.962740487668    0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   38.1187393145217   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   38.3869599369188   0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   38.4553647738991   0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0  0
##   38.7553702887441   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   39.9115029340235   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   40.5974734497606   0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   42.1648768723462   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   44.5422517648119   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   45.1803517893482   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   46.7736703955918   0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   47.8037994835881   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   49.1890657224653   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   49.9259044696247   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
0  0
##   50.3927572630491   0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   52.51269317675     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   53.7767933021351   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   57.1023863806272   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   58.4874043340218   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   60.6060223571433   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   60.61428991045     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   61.0820851623031   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   62.0319801461861   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   65.2527936620394   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   67.5636982700602   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   67.8588764115918   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   67.9085339249933   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   69.4915031592076   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
0  0
##   70.6273506209466   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.2109601524665   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.2580011341184   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.4535548929104   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   72.6401943658799   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   73.6153238334116   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   75.7660313381565   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   79.964835511009    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   81.3861549802436   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   81.6240419112824   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   82.4624962502718   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   85.3512660183529   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   85.9512668374547   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   86.8676878182363   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   89.058193410743    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   93.1397897872157   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   94.977114260272    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##
## predictedOzone      61 63 64 65 66 71 73 76 77 78 79 80 82 84 85 89 91 96
97
##   0.276075572013916  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.38565611875687   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.40119441536722   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.40700588697826   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   4.17146567997599   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   4.29427381542468   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   4.53359103225294   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   5.43565090699762   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   5.69373235335076   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   6.52953105578528   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   6.71184241919521   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   6.99292761094139   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.15478606308702   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.50657640459864   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.66254659843649   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.6679140404417    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   8.01770539885172   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   8.05814359087545   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   8.17443664737683   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.231002182456     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.51602159968891   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   9.60145760266784   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.7259450267565    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3796658381994   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3904139744899   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.6062148326701   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.6891183525786   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.1379604698739   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.3791872054377   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.8984062491459   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.9287068153035   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.057205244766    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.2135753862018   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.3853171947137   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.3872701109632   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.5918481155033   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.8024992775679   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.7084802098166   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.9338047638628   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.2789297915917   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.5236559119728   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.6080711199189   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.61237416799     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.7594554591722   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.001206330918    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.1375925761935   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   15.8081081336482   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.9466473081681   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.0672266095529   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.4017354096889   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.5687816794096   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.6493490304141   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.7177613606592   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.777917314558    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.9508429891831   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.192004654378    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.4031865988124   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.4944014708916   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.541758578889    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.5837884207271   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.5918549518073   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   18.3333785500138   0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
0
##   18.4749821092589   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   18.9416567034407   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.0329066754152   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.3656048827834   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.463432318207    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.6125064239904   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.6064332166214   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.7156029656607   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   21.6322515172487   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   21.7955168199359   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   21.9181762898784   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   22.2331416625543   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   22.3986818292772   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   22.4291784685397   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   23.3993557391812   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   23.4474977812808   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   24.3813123276749   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   24.7798889679599   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   25.2782229879576   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   25.3026698120672   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.4026402326956   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.5800389856763   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.6024428785687   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.6218742100532   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   27.2750382281734   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   27.3064704788167   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   27.5258815919388   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   28.5971078743399   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   29.5867343975087   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   29.714254983874    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   29.7394856024911   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   29.8448923519865   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.1686523342564   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.2519840733777   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   30.3650565458003   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.2437356643915   0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.3635745348896   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   32.1669550532228   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   32.1681442355371   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   32.6014607671018   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   33.6172471493576   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   34.0601098503218   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   35.2085839132411   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   35.314864460689    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   35.5717879889121   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   37.3498394465077   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   37.962740487668    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   38.1187393145217   0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   38.3869599369188   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   38.4553647738991   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   38.7553702887441   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   39.9115029340235   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   40.5974734497606   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   42.1648768723462   0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0
0
##   44.5422517648119   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   45.1803517893482   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   46.7736703955918   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   47.8037994835881   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   49.1890657224653   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

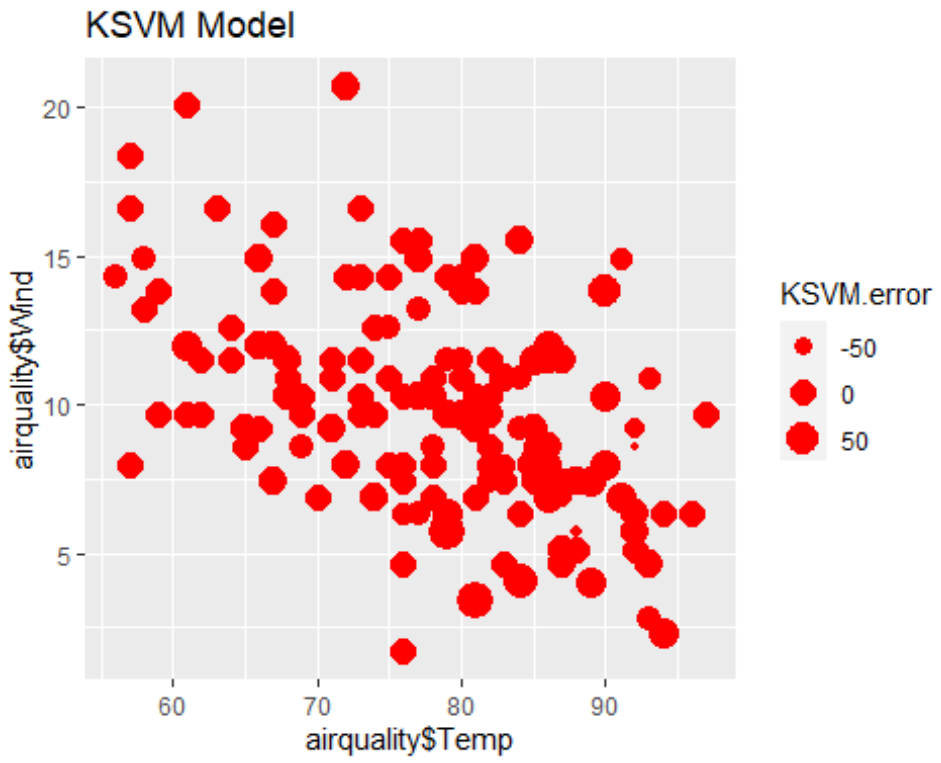
```
##   49.9259044696247   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   50.3927572630491   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   52.51269317675     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   53.7767933021351   0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   57.1023863806272   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
0
##   58.4874043340218   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   60.6060223571433   0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   60.61428991045     0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   61.0820851623031   0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
0
##   62.0319801461861   0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0
0
##   65.2527936620394   1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   67.5636982700602   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
0
##   67.8588764115918   0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0
##   67.9085339249933   0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
0
##   69.4915031592076   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   70.6273506209466   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   71.2109601524665   0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
0
##   71.2580011341184   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   71.4535548929104   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   72.6401943658799   0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
0
##   73.6153238334116   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   75.7660313381565   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   79.964835511009    0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
0
##   81.3861549802436   0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0
0
##   81.6240419112824   0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0
0
```

```
##   82.4624962502718   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
1
##   85.3512660183529   0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
0
##   85.9512668374547   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
0
##   86.8676878182363   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
1
##   89.058193410743    0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0
0
##   93.1397897872157   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   94.977114260272    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##
## predictedOzone      108 110 115 118 122 135 168
##   0.276075572013916   0   0   0   0   0   0   0
##   3.38565611875687    0   0   0   0   0   0   0
##   3.40119441536722    0   0   0   0   0   0   0
##   3.40700588697826    0   0   0   0   0   0   0
##   4.17146567997599    0   0   0   0   0   0   0
##   4.29427381542468    0   0   0   0   0   0   0
##   4.53359103225294    0   0   0   0   0   0   0
##   5.43565090699762    0   0   0   0   0   0   0
##   5.69373235335076    0   0   0   0   0   0   0
##   6.52953105578528    0   0   0   0   0   0   0
##   6.71184241919521    0   0   0   0   0   0   0
##   6.99292761094139    0   0   0   0   0   0   0
##   7.15478606308702    0   0   0   0   0   0   0
##   7.50657640459864    0   0   0   0   0   0   0
##   7.66254659843649    0   0   0   0   0   0   0
##   7.6679140404417     0   0   0   0   0   0   0
##   8.01770539885172    0   0   0   0   0   0   0
##   8.05814359087545    0   0   0   0   0   0   0
##   8.17443664737683    0   0   0   0   0   0   0
##   9.231002182456      0   0   0   0   0   0   0
##   9.51602159968891    0   0   0   0   0   0   0
##   9.60145760266784    0   0   0   0   0   0   0
##   9.7259450267565     0   0   0   0   0   0   0
##   10.3796658381994    0   0   0   0   0   0   0
##   10.3904139744899    0   0   0   0   0   0   0
##   10.6062148326701    0   0   0   0   0   0   0
##   10.6891183525786    0   0   0   0   0   0   0
##   11.1379604698739    0   0   0   0   0   0   0
##   11.3791872054377    0   0   0   0   0   0   0
##   11.8984062491459    0   0   0   0   0   0   0
##   11.9287068153035    0   0   0   0   0   0   0
##   12.057205244766     0   0   0   0   0   0   0
##   12.2135753862018    0   0   0   0   0   0   0
##   12.3853171947137    0   0   0   0   0   0   0
```

```
##   12.3872701109632    0   0   0   0   0   0   0
##   12.5918481155033    0   0   0   0   0   0   0
##   12.8024992775679    0   0   0   0   0   0   0
##   13.7084802098166    0   0   0   0   0   0   0
##   13.9338047638628    0   0   0   0   0   0   0
##   14.2789297915917    0   0   0   0   0   0   0
##   14.5236559119728    0   0   0   0   0   0   0
##   14.6080711199189    0   0   0   0   0   0   0
##   14.61237416799      0   0   0   0   0   0   0
##   14.7594554591722    0   0   0   0   0   0   0
##   15.001206330918     0   0   0   0   0   0   0
##   15.1375925761935    0   0   0   0   0   0   0
##   15.8081081336482    0   0   0   0   0   0   0
##   15.9466473081681    0   0   0   0   0   0   0
##   16.0672266095529    0   0   0   0   0   0   0
##   16.4017354096889    0   0   0   0   0   0   0
##   16.5687816794096    0   0   0   0   0   0   0
##   16.6493490304141    0   0   0   0   0   0   0
##   16.7177613606592    0   0   0   0   0   0   0
##   16.777917314558     0   0   0   0   0   0   0
##   16.9508429891831    0   0   0   0   0   0   0
##   17.192004654378     0   0   0   0   0   0   0
##   17.4031865988124    0   0   0   0   0   0   0
##   17.4944014708916    0   0   0   0   0   0   0
##   17.541758578889     0   0   0   0   0   0   0
##   17.5837884207271    0   0   0   0   0   0   0
##   17.5918549518073    0   0   0   0   0   0   0
##   18.3333785500138    0   0   0   0   0   0   0
##   18.4749821092589    0   0   0   0   0   0   0
##   18.9416567034407    0   0   0   0   0   0   0
##   19.0329066754152    0   0   0   0   0   0   0
##   19.3656048827834    0   0   0   0   0   0   0
##   19.463432318207     0   0   0   0   0   0   0
##   19.6125064239904    0   0   0   0   0   0   0
##   20.6064332166214    0   0   0   0   0   0   0
##   20.7156029656607    0   0   0   0   0   0   0
##   21.6322515172487    0   0   0   0   0   0   0
##   21.7955168199359    0   0   0   0   0   0   0
##   21.9181762898784    0   0   0   0   0   0   0
##   22.2331416625543    0   0   0   0   0   0   0
##   22.3986818292772    0   0   0   0   0   0   0
##   22.4291784685397    0   0   0   0   0   0   0
##   23.3993557391812    0   0   0   0   0   0   0
##   23.4474977812808    0   0   0   0   0   0   0
##   24.3813123276749    0   0   0   0   0   0   0
##   24.7798889679599    0   0   0   0   0   0   0
##   25.2782229879576    0   0   0   0   0   0   0
##   25.3026698120672    0   0   0   0   0   0   0
##   26.4026402326956    0   0   0   0   0   0   0
##   26.5800389856763    0   0   0   0   0   0   0
```

```
##   26.6024428785687    0   0   0   0   0   0   0
##   26.6218742100532    0   0   0   0   0   0   0
##   27.2750382281734    0   0   1   0   0   0   0
##   27.3064704788167    0   0   0   0   0   0   0
##   27.5258815919388    0   0   0   0   0   0   0
##   28.5971078743399    0   0   0   0   0   0   0
##   29.5867343975087    0   0   0   0   0   0   0
##   29.714254983874     0   0   0   0   0   0   0
##   29.7394856024911    0   0   0   0   0   0   0
##   29.8448923519865    0   0   0   0   0   0   0
##   30.1686523342564    0   0   0   0   0   0   0
##   30.2519840733777    0   0   0   0   0   0   0
##   30.3650565458003    0   0   0   0   0   0   0
##   31.2437356643915    0   0   0   0   0   0   0
##   31.3635745348896    0   0   0   0   0   0   0
##   32.1669550532228    0   0   0   0   0   0   0
##   32.1681442355371    0   0   0   0   0   0   0
##   32.6014607671018    0   0   0   0   0   0   0
##   33.6172471493576    0   0   0   0   0   0   0
##   34.0601098503218    0   0   0   0   0   0   0
##   35.2085839132411    0   0   0   0   0   0   0
##   35.314864460689     0   0   0   0   0   0   0
##   35.5717879889121    0   0   0   0   0   0   0
##   37.3498394465077    0   0   0   0   0   0   0
##   37.962740487668     0   0   0   0   0   0   0
##   38.1187393145217    0   0   0   0   0   0   0
##   38.3869599369188    0   0   0   0   0   0   0
##   38.4553647738991    0   0   0   0   0   0   0
##   38.7553702887441    0   0   0   0   0   0   0
##   39.9115029340235    0   0   0   0   0   0   0
##   40.5974734497606    0   0   0   0   0   0   0
##   42.1648768723462    0   0   0   0   0   0   0
##   44.5422517648119    0   0   0   0   0   0   0
##   45.1803517893482    0   0   0   0   0   0   0
##   46.7736703955918    0   0   0   0   0   0   0
##   47.8037994835881    0   0   0   0   0   0   0
##   49.1890657224653    0   0   0   0   0   0   0
##   49.9259044696247    0   0   0   0   0   0   0
##   50.3927572630491    0   0   0   0   0   0   0
##   52.51269317675      0   0   0   0   0   0   0
##   53.7767933021351    0   0   0   0   0   0   0
##   57.1023863806272    0   0   0   0   0   0   0
##   58.4874043340218    1   0   0   0   0   0   0
##   60.6060223571433    0   0   0   0   0   0   0
##   60.61428991045      0   0   0   0   0   0   0
##   61.0820851623031    0   0   0   0   0   0   0
##   62.0319801461861    0   0   0   0   0   0   0
##   65.2527936620394    0   0   0   0   0   0   0
##   67.5636982700602    0   0   0   0   0   0   0
##   67.8588764115918    0   0   0   0   0   0   0
```

```
##   67.9085339249933    0   0   0   0   0   0   0
##   69.4915031592076    0   0   0   0   0   0   0
##   70.6273506209466    0   0   0   0   0   1   0
##   71.2109601524665    0   0   0   0   0   0   0
##   71.2580011341184    0   0   0   0   0   0   0
##   71.4535548929104    0   0   0   0   0   0   1
##   72.6401943658799    0   0   0   0   0   0   0
##   73.6153238334116    0   1   0   0   0   0   0
##   75.7660313381565    0   0   0   0   0   0   0
##   79.964835511009     0   0   0   0   0   0   0
##   81.3861549802436    0   0   0   0   0   0   0
##   81.6240419112824    0   0   0   0   0   0   0
##   82.4624962502718    0   0   0   0   0   0   0
##   85.3512660183529    0   0   0   0   0   0   0
##   85.9512668374547    0   0   0   0   0   0   0
##   86.8676878182363    0   0   0   0   0   0   0
##   89.058193410743     0   0   0   0   0   0   0
##   93.1397897872157    0   0   0   1   0   0   0
##   94.977114260272     0   0   0   0   1   0   0

## [1] 50

root_square <- function(error)
{
  sqrt(mean(error^2))
}

KSVM.first <- predict(KSVM, airquality)
KSVM.error <- (airquality$Ozone - KSVM.first)
root_square(KSVM.error)

## [1] 21.94433

#new Air quality dataset
NewAirquality <- data.frame(airquality$Wind,airquality$Temp,KSVM.error)

#stating columns
colnames(NewAirquality) <- c("Wind","Temp","Error")

#plotting KSVM.error
plotAq <- ggplot(data =
NewAirquality,aes(x=airquality$Temp,y=airquality$Wind)) +
geom_point(aes(size=KSVM.error), color = "red") + ggtitle("KSVM Model")
plotAq
```




```
#compute models and plot using e1071 package

SVM <- svm(Ozone ~ ., data = airquality)
predictOzone(SVM, airquality)

##
## predictedOzone       0 1 4 6 7 8 9 10 11 12 13 14 16 18 19 20 21 22 23 24
27 28
##   -1.10713487689046  1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   -0.844671999557622 1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.38030699675823   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.38730113062483   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.38936012642215   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.39189324746862   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.39449584775809   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.39512810006518   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.39804743798003   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   3.40937513882674   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   3.6395231058033    0 0 0 1 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   4.81596766978281   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   5.35565050539791   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   5.61820698294963   0 0 0 0 0 0 1  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   6.4327300529229    1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   6.98371910403377   0 0 1 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.06576028312599   0 0 0 0 0 0 0  1  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   7.65148180479746   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   8.27524129299105   0 1 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   8.94173571429229   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.01662334000719   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.30174001188674   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   9.44508878115982   0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   9.80778795140303   0 0 0 0 0 0 0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.3372909110354   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   10.3797133726745   0 0 0 0 0 0 0  0  0  1  0  0  0  0  0  0  0  0  0  0
0  0
##   10.3889230298216   0 0 0 0 1 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.3912318618154   0 0 0 0 1 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   10.6042400422981   0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   11.1346571140173   0 0 0 0 1 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.3990952813172   0 0 0 0 0 1 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   11.9081068121775   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.1229352616874   0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   12.3905474199795   0 0 0 0 0 0 1  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   12.3997743362741   0 0 0 0 0 0 1  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   12.5911478534533   0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   12.6165270828124   0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   13.1269927373751   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   13.3067308951122   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   13.3665252424984   0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   13.7875761629225   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   14.6086398226624   0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   14.6375188841186   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.3347819696823   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.3632896961319   0 0 0 0 0 0 0  0  0  1  0  0  0  0  0  0  0  0  0  0
0  0
##   15.5674406409716   0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   15.8172167227436   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   15.8729371313267   0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   15.985461468305    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.1974788222543   0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   16.2392997057547   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   16.2746910805229   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.3909906596934   0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   16.4025035430262   0 0 0 0 0 0 0  0  0  0  1  0  0  0  0  0  0  0  0  0
0  0
##   16.4206670156657   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.6083303204683   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   16.7990254865332   0 0 0 0 0 0 0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   16.8979974569192   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.0319176307108   0 0 0 0 0 0 0  0  1  0  0  0  0  0  0  0  0  0  0  0
0  0
##   17.3909257105916   0 0 0 0 0 0 0  0  0  0  0  1  0  0  0  0  0  0  0  0
```

```
0  0
##   17.5995606678081   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   17.6889733270927   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
0  0
##   18.0668116812101   0 0 0 0 0 0 0  0  0  0  0  0  0  0  1  0  0  0  0  0
0  0
##   18.7859113652867   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   19.2812351813352   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  1
0  0
##   19.5763497767184   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   19.5921183444631   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   19.6224343253194   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   19.9689420462704   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   20.6134414312537   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  1
0  0
##   20.6444824236205   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   20.717225045011    1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   20.9085080741321   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0
0  0
##   21.1495044129554   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   21.416221014433    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   22.3631422809331   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   22.3957718900727   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
1  0
##   23.7186933444806   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   24.4017510109349   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  1  0  0  0
0  0
##   24.4479396607939   0 0 0 0 0 0 0  0  0  0  0  0  0  1  0  0  0  0  0  0
0  0
##   24.6519056947287   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   25.7011530325548   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   26.1051345621379   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   26.5959404549194   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   26.6151615056321   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   27.5396490965829   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   27.8090261621634   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   28.5219687924106   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
0  0
##   28.596224608862    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   28.6076377335821   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.3168152948998   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   29.8044103270409   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   30.1456218859438   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   30.6325268842881   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0  0
##   30.6720524823457   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.2967365204445   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.5312331545136   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.5931732456109   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   31.9331626412833   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   31.9596730818383   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   32.0816607752208   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   32.0840136484975   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   32.4662734633521   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   33.3966339171267   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   33.6043608521302   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   35.7879763136048   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   36.6789904226174   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   36.9939676991961   0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0  0
0  0
##   37.5061007923243   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   38.3935384826408   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   38.9414984742155   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   39.0414068442906   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   39.5188190752665   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   39.536691011973    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   40.1651037177348   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   40.7708677678511   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   42.4038195436832   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   43.5138725410017   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   43.5576826577829   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  1
##   45.3803227332147   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   48.4228328339118   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   48.890197444277    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   50.4030059536352   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   52.211675259699    0 0 0 0 0 0 0  0  0  0  0  0  1  0  0  0  0  0  0  0
0  0
##   56.1205770746734   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   59.6225596248082   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   60.6068516345124   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   60.9498265725504   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   61.2300622649065   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   62.2573413553826   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   64.3992724427114   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   65.6748802259233   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   68.8084329891147   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   69.3519398888135   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   69.4758549865722   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0  0
##   70.5918784110713   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.0070750156562   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   71.9283969986457   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   72.6060278648093   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   73.515126995849    1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   75.5941630525582   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   79.741952098108    0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   79.7620927495067   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   80.3988853340776   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   80.9338703801041   1 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   81.3842813987695   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   81.6045648823663   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   83.9025233497069   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   84.8993499452146   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   87.3863606952038   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   87.7920235433577   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   90.7418499584533   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##   97.3518538680644   0 0 0 0 0 0 0  0  0  0  0  0  0  0  0  0  0  0  0  0
0  0
##
## predictedOzone       29 30 31 32 34 35 36 37 39 40 41 44 45 46 47 48 49 50
52
##   -1.10713487689046   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   -0.844671999557622  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.38030699675823    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.38730113062483    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.38936012642215    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   3.39189324746862    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.39449584775809    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.39512810006518    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.39804743798003    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.40937513882674    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.6395231058033     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   4.81596766978281    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   5.35565050539791    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   5.61820698294963    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   6.4327300529229     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   6.98371910403377    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.06576028312599    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.65148180479746    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   8.27524129299105    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   8.94173571429229    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.01662334000719    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.30174001188674    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.44508878115982    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.80778795140303    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3372909110354    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3797133726745    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3889230298216    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3912318618154    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.6042400422981    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.1346571140173    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   11.3990952813172    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.9081068121775    0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.1229352616874    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.3905474199795    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.3997743362741    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.5911478534533    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.6165270828124    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.1269927373751    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.3067308951122    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.3665252424984    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.7875761629225    0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
0
##   14.6086398226624    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.6375188841186    1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.3347819696823    0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.3632896961319    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.5674406409716    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.8172167227436    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.8729371313267    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.985461468305     0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.1974788222543    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.2392997057547    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.2746910805229    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.3909906596934    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.4025035430262    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.4206670156657    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   16.6083303204683    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.7990254865332    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.8979974569192    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.0319176307108    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.3909257105916    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.5995606678081    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.6889733270927    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   18.0668116812101    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   18.7859113652867    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.2812351813352    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.5763497767184    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.5921183444631    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.6224343253194    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.9689420462704    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.6134414312537    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.6444824236205    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.717225045011     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.9085080741321    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   21.1495044129554    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   21.416221014433     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   22.3631422809331    0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0
0
##   22.3957718900727    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   23.7186933444806    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
1
##   24.4017510109349    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   24.4479396607939    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   24.6519056947287    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   25.7011530325548    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.1051345621379    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.5959404549194    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.6151615056321    0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   27.5396490965829    0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
0
##   27.8090261621634    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   28.5219687924106    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   28.596224608862     0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   28.6076377335821    0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   29.3168152948998    0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
0
##   29.8044103270409    0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.1456218859438    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.6325268842881    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.6720524823457    0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0
##   31.2967365204445    0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0
##   31.5312331545136    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.5931732456109    0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.9331626412833    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.9596730818383    0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
0
##   32.0816607752208    0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0
##   32.0840136484975    0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
0
##   32.4662734633521    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   33.3966339171267    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   33.6043608521302    0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
0
```

```
##   35.7879763136048    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   36.6789904226174    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   36.9939676991961    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   37.5061007923243    0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
0
##   38.3935384826408    0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
0
##   38.9414984742155    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   39.0414068442906    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   39.5188190752665    0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0
##   39.536691011973     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   40.1651037177348    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
0
##   40.7708677678511    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   42.4038195436832    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   43.5138725410017    0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
0
##   43.5576826577829    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   45.3803227332147    0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0
0
##   48.4228328339118    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   48.890197444277     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
0
##   50.4030059536352    0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0
0
##   52.211675259699     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   56.1205770746734    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   59.6225596248082    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   60.6068516345124    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   60.9498265725504    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   61.2300622649065    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   62.2573413553826    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
```

```
##   64.3992724427114    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   65.6748802259233    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   68.8084329891147    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   69.3519398888135    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   69.4758549865722    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
0
##   70.5918784110713    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   71.0070750156562    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   71.9283969986457    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   72.6060278648093    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   73.515126995849     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   75.5941630525582    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   79.741952098108     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   79.7620927495067    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   80.3988853340776    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   80.9338703801041    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   81.3842813987695    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   81.6045648823663    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   83.9025233497069    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   84.8993499452146    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   87.3863606952038    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   87.7920235433577    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   90.7418499584533    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   97.3518538680644    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##
## predictedOzone       59 61 63 64 65 66 71 73 76 77 78 79 80 82 84 85 89 91
96
##   -1.10713487689046   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0
##   -0.844671999557622  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.38030699675823    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.38730113062483    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.38936012642215    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.39189324746862    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.39449584775809    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.39512810006518    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.39804743798003    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.40937513882674    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   3.6395231058033     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   4.81596766978281    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   5.35565050539791    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   5.61820698294963    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   6.4327300529229     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   6.98371910403377    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.06576028312599    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   7.65148180479746    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   8.27524129299105    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   8.94173571429229    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.01662334000719    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.30174001188674    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.44508878115982    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   9.80778795140303    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3372909110354    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3797133726745    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0
##   10.3889230298216    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.3912318618154    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   10.6042400422981    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.1346571140173    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.3990952813172    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   11.9081068121775    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.1229352616874    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.3905474199795    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.3997743362741    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.5911478534533    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   12.6165270828124    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.1269927373751    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.3067308951122    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.3665252424984    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   13.7875761629225    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.6086398226624    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   14.6375188841186    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.3347819696823    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.3632896961319    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.5674406409716    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.8172167227436    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.8729371313267    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   15.985461468305     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.1974788222543    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.2392997057547    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0
##   16.2746910805229    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.3909906596934    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.4025035430262    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.4206670156657    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.6083303204683    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.7990254865332    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   16.8979974569192    0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
0
##   17.0319176307108    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.3909257105916    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.5995606678081    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   17.6889733270927    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   18.0668116812101    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   18.7859113652867    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.2812351813352    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.5763497767184    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.5921183444631    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.6224343253194    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   19.9689420462704    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.6134414312537    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.6444824236205    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.717225045011     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   20.9085080741321    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   21.1495044129554    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   21.416221014433     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   22.3631422809331    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0
##   22.3957718900727    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   23.7186933444806    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   24.4017510109349    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   24.4479396607939    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   24.6519056947287    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   25.7011530325548    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.1051345621379    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.5959404549194    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   26.6151615056321    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   27.5396490965829    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   27.8090261621634    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   28.5219687924106    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   28.596224608862     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   28.6076377335821    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   29.3168152948998    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   29.8044103270409    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.1456218859438    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.6325268842881    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   30.6720524823457    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.2967365204445    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.5312331545136    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.5931732456109    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.9331626412833    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   31.9596730818383    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   32.0816607752208    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0
##   32.0840136484975    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   32.4662734633521    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   33.3966339171267    0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   33.6043608521302    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   35.7879763136048    1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   36.6789904226174    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   36.9939676991961    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   37.5061007923243    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   38.3935384826408    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   38.9414984742155    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   39.0414068442906    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   39.5188190752665    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   39.536691011973     0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   40.1651037177348    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   40.7708677678511    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   42.4038195436832    0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
0
##   43.5138725410017    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   43.5576826577829    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   45.3803227332147    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   48.4228328339118    1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   48.890197444277     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   50.4030059536352    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   52.211675259699     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   56.1205770746734    0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
0
##   59.6225596248082    0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
```

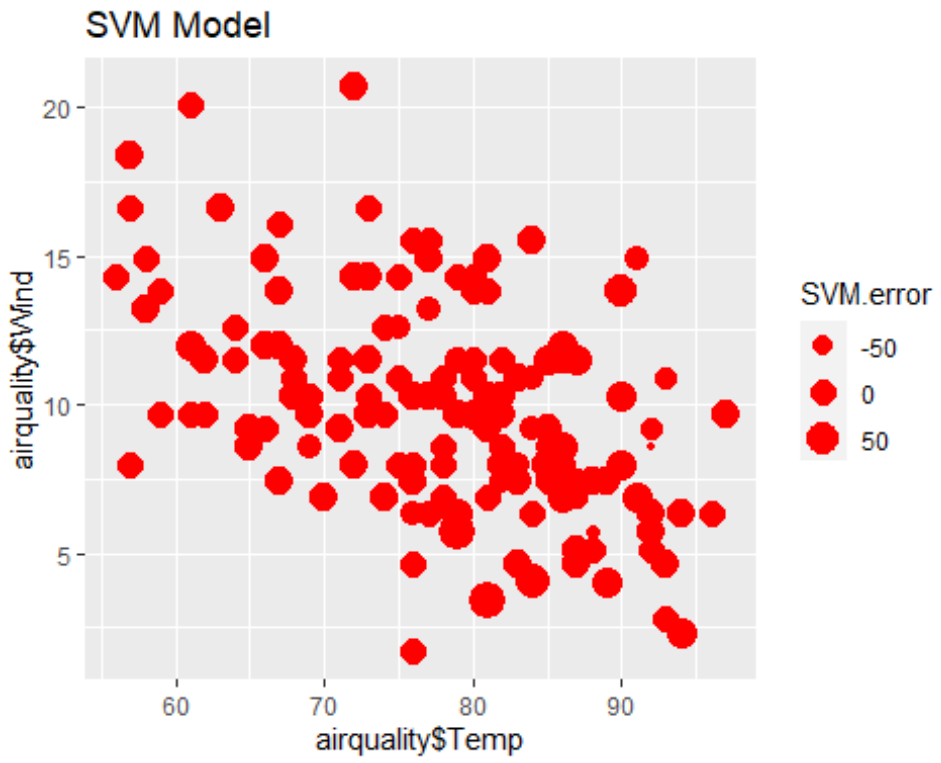
```
0
##   60.6068516345124    0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   60.9498265725504    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   61.2300622649065    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
0
##   62.2573413553826    0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   64.3992724427114    0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   65.6748802259233    0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
0
##   68.8084329891147    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   69.3519398888135    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
1
##   69.4758549865722    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   70.5918784110713    0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0
0
##   71.0070750156562    0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
0
##   71.9283969986457    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   72.6060278648093    0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0
0
##   73.515126995849     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   75.5941630525582    0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
0
##   79.741952098108     0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   79.7620927495067    0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0
0
##   80.3988853340776    0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
0
##   80.9338703801041    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   81.3842813987695    0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
0
##   81.6045648823663    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
0
##   83.9025233497069    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   84.8993499452146    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
0
##   87.3863606952038    0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
0
##   87.7920235433577    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
0
##   90.7418499584533    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##   97.3518538680644    0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
0
##
## predictedOzone       97 108 110 115 118 122 135 168
##   -1.10713487689046   0   0   0   0   0   0   0   0
##   -0.844671999557622  0   0   0   0   0   0   0   0
##   3.38030699675823    0   0   0   0   0   0   0   0
##   3.38730113062483    0   0   0   0   0   0   0   0
##   3.38936012642215    0   0   0   0   0   0   0   0
##   3.39189324746862    0   0   0   0   0   0   0   0
##   3.39449584775809    0   0   0   0   0   0   0   0
##   3.39512810006518    0   0   0   0   0   0   0   0
##   3.39804743798003    0   0   0   0   0   0   0   0
##   3.40937513882674    0   0   0   0   0   0   0   0
##   3.6395231058033     0   0   0   0   0   0   0   0
##   4.81596766978281    0   0   0   0   0   0   0   0
##   5.35565050539791    0   0   0   0   0   0   0   0
##   5.61820698294963    0   0   0   0   0   0   0   0
##   6.4327300529229     0   0   0   0   0   0   0   0
##   6.98371910403377    0   0   0   0   0   0   0   0
##   7.06576028312599    0   0   0   0   0   0   0   0
##   7.65148180479746    0   0   0   0   0   0   0   0
##   8.27524129299105    0   0   0   0   0   0   0   0
##   8.94173571429229    0   0   0   0   0   0   0   0
##   9.01662334000719    0   0   0   0   0   0   0   0
##   9.30174001188674    0   0   0   0   0   0   0   0
##   9.44508878115982    0   0   0   0   0   0   0   0
##   9.80778795140303    0   0   0   0   0   0   0   0
##   10.3372909110354    0   0   0   0   0   0   0   0
##   10.3797133726745    0   0   0   0   0   0   0   0
##   10.3889230298216    0   0   0   0   0   0   0   0
##   10.3912318618154    0   0   0   0   0   0   0   0
##   10.6042400422981    0   0   0   0   0   0   0   0
##   11.1346571140173    0   0   0   0   0   0   0   0
##   11.3990952813172    0   0   0   0   0   0   0   0
##   11.9081068121775    0   0   0   0   0   0   0   0
##   12.1229352616874    0   0   0   0   0   0   0   0
##   12.3905474199795    0   0   0   0   0   0   0   0
##   12.3997743362741    0   0   0   0   0   0   0   0
##   12.5911478534533    0   0   0   0   0   0   0   0
##   12.6165270828124    0   0   0   0   0   0   0   0
##   13.1269927373751    0   0   0   0   0   0   0   0
##   13.3067308951122    0   0   0   0   0   0   0   0
##   13.3665252424984    0   0   0   0   0   0   0   0
##   13.7875761629225    0   0   0   0   0   0   0   0
##   14.6086398226624    0   0   0   0   0   0   0   0
##   14.6375188841186    0   0   0   0   0   0   0   0
```

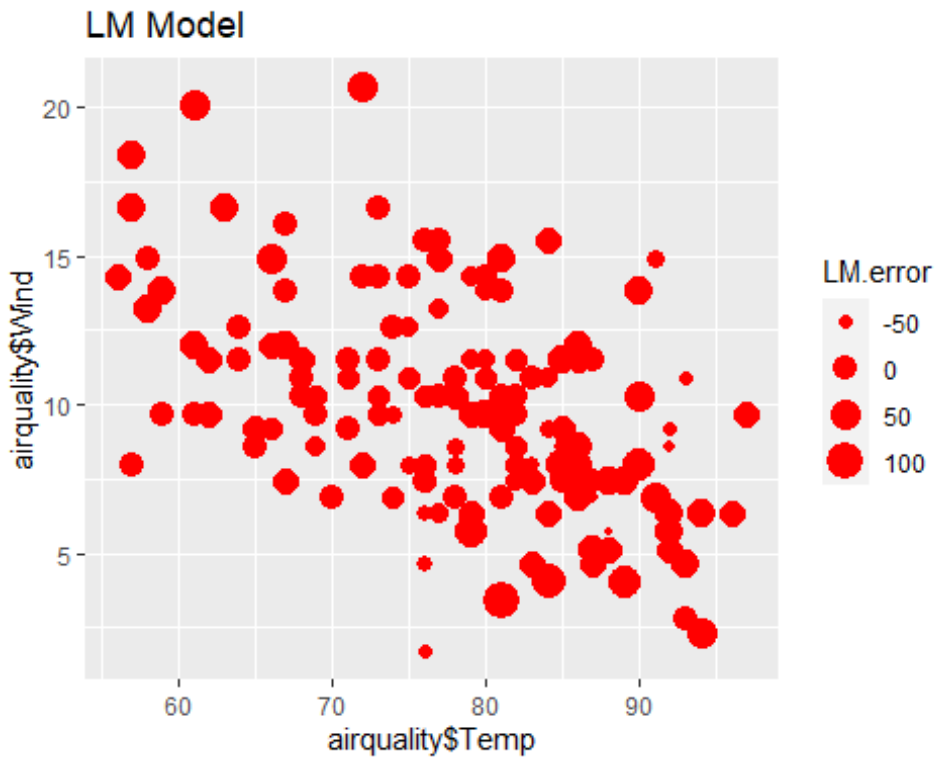
```
##   15.3347819696823    0   0   0   0   0   0   0   0
##   15.3632896961319    0   0   0   0   0   0   0   0
##   15.5674406409716    0   0   0   0   0   0   0   0
##   15.8172167227436    0   0   0   0   0   0   0   0
##   15.8729371313267    0   0   0   0   0   0   0   0
##   15.985461468305     0   0   0   0   0   0   0   0
##   16.1974788222543    0   0   0   0   0   0   0   0
##   16.2392997057547    0   0   0   0   0   0   0   0
##   16.2746910805229    0   0   0   0   0   0   0   0
##   16.3909906596934    0   0   0   0   0   0   0   0
##   16.4025035430262    0   0   0   0   0   0   0   0
##   16.4206670156657    0   0   0   0   0   0   0   0
##   16.6083303204683    0   0   0   0   0   0   0   0
##   16.7990254865332    0   0   0   0   0   0   0   0
##   16.8979974569192    0   0   0   0   0   0   0   0
##   17.0319176307108    0   0   0   0   0   0   0   0
##   17.3909257105916    0   0   0   0   0   0   0   0
##   17.5995606678081    0   0   0   0   0   0   0   0
##   17.6889733270927    0   0   0   0   0   0   0   0
##   18.0668116812101    0   0   0   0   0   0   0   0
##   18.7859113652867    0   0   0   0   0   0   0   0
##   19.2812351813352    0   0   0   0   0   0   0   0
##   19.5763497767184    0   0   0   0   0   0   0   0
##   19.5921183444631    0   0   0   0   0   0   0   0
##   19.6224343253194    0   0   0   0   0   0   0   0
##   19.9689420462704    0   0   0   0   0   0   0   0
##   20.6134414312537    0   0   0   0   0   0   0   0
##   20.6444824236205    0   0   0   0   0   0   0   0
##   20.717225045011     0   0   0   0   0   0   0   0
##   20.9085080741321    0   0   0   0   0   0   0   0
##   21.1495044129554    0   0   0   0   0   0   0   0
##   21.416221014433     0   0   0   0   0   0   0   0
##   22.3631422809331    0   0   0   0   0   0   0   0
##   22.3957718900727    0   0   0   0   0   0   0   0
##   23.7186933444806    0   0   0   0   0   0   0   0
##   24.4017510109349    0   0   0   0   0   0   0   0
##   24.4479396607939    0   0   0   0   0   0   0   0
##   24.6519056947287    0   0   0   0   0   0   0   0
##   25.7011530325548    0   0   0   1   0   0   0   0
##   26.1051345621379    0   0   0   0   0   0   0   0
##   26.5959404549194    0   0   0   0   0   0   0   0
##   26.6151615056321    0   0   0   0   0   0   0   0
##   27.5396490965829    0   0   0   0   0   0   0   0
##   27.8090261621634    0   0   0   0   0   0   0   0
##   28.5219687924106    0   0   0   0   0   0   0   0
##   28.596224608862     0   0   0   0   0   0   0   0
##   28.6076377335821    0   0   0   0   0   0   0   0
##   29.3168152948998    0   0   0   0   0   0   0   0
##   29.8044103270409    0   0   0   0   0   0   0   0
##   30.1456218859438    0   0   0   0   0   0   0   0
```

```
##   30.6325268842881    0   0   0   0   0   0   0   0
##   30.6720524823457    0   0   0   0   0   0   0   0
##   31.2967365204445    0   0   0   0   0   0   0   0
##   31.5312331545136    0   0   0   0   0   0   0   0
##   31.5931732456109    0   0   0   0   0   0   0   0
##   31.9331626412833    0   0   0   0   0   0   0   0
##   31.9596730818383    0   0   0   0   0   0   0   0
##   32.0816607752208    0   0   0   0   0   0   0   0
##   32.0840136484975    0   0   0   0   0   0   0   0
##   32.4662734633521    0   0   0   0   0   0   0   0
##   33.3966339171267    0   0   0   0   0   0   0   0
##   33.6043608521302    0   0   0   0   0   0   0   0
##   35.7879763136048    0   0   0   0   0   0   0   0
##   36.6789904226174    0   0   0   0   0   0   0   0
##   36.9939676991961    0   0   0   0   0   0   0   0
##   37.5061007923243    0   0   0   0   0   0   0   0
##   38.3935384826408    0   0   0   0   0   0   0   0
##   38.9414984742155    0   0   0   0   0   0   0   0
##   39.0414068442906    0   0   0   0   0   0   0   0
##   39.5188190752665    0   0   0   0   0   0   0   0
##   39.536691011973     0   0   0   0   0   0   0   0
##   40.1651037177348    0   0   0   0   0   0   0   0
##   40.7708677678511    0   0   0   0   0   0   0   0
##   42.4038195436832    0   0   0   0   0   0   0   0
##   43.5138725410017    0   0   0   0   0   0   0   0
##   43.5576826577829    0   0   0   0   0   0   0   0
##   45.3803227332147    0   0   0   0   0   0   0   0
##   48.4228328339118    0   0   0   0   0   0   0   0
##   48.890197444277     0   0   0   0   0   0   0   0
##   50.4030059536352    0   0   0   0   0   0   0   0
##   52.211675259699     0   0   0   0   0   0   0   0
##   56.1205770746734    0   0   0   0   0   0   0   0
##   59.6225596248082    0   0   0   0   0   0   0   0
##   60.6068516345124    0   0   0   0   0   0   0   0
##   60.9498265725504    0   1   0   0   0   0   0   0
##   61.2300622649065    0   0   0   0   0   0   0   0
##   62.2573413553826    0   0   0   0   0   0   0   0
##   64.3992724427114    0   0   0   0   0   0   0   0
##   65.6748802259233    0   0   0   0   0   0   0   0
##   68.8084329891147    0   0   0   0   0   0   1   0
##   69.3519398888135    0   0   0   0   0   0   0   0
##   69.4758549865722    0   0   0   0   0   0   0   0
##   70.5918784110713    0   0   0   0   0   0   0   0
##   71.0070750156562    0   0   0   0   0   0   0   0
##   71.9283969986457    0   0   0   0   0   0   0   1
##   72.6060278648093    0   0   0   0   0   0   0   0
##   73.515126995849     0   0   0   0   0   0   0   0
##   75.5941630525582    0   0   0   0   0   0   0   0
##   79.741952098108     0   0   1   0   0   0   0   0
##   79.7620927495067    0   0   0   0   0   0   0   0
```

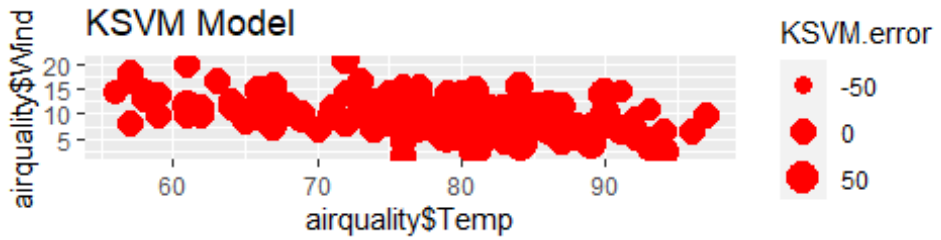
```
##   80.3988853340776    0   0   0   0   0   0   0   0
##   80.9338703801041    0   0   0   0   0   0   0   0
##   81.3842813987695    0   0   0   0   0   0   0   0
##   81.6045648823663    0   0   0   0   0   0   0   0
##   83.9025233497069    1   0   0   0   0   0   0   0
##   84.8993499452146    0   0   0   0   0   0   0   0
##   87.3863606952038    0   0   0   0   0   0   0   0
##   87.7920235433577    1   0   0   0   0   0   0   0
##   90.7418499584533    0   0   0   0   1   0   0   0
##   97.3518538680644    0   0   0   0   0   1   0   0

## [1] 50

SVM.first <- predict(SVM, airquality)
SVM.error <- (airquality$Ozone - SVM.first)
root_square(SVM.error)

## [1] 21.22397

#new data fram for SVm.error

NewAirquality1 <- data.frame(airquality$Wind,airquality$Temp,SVM.error)
colnames(NewAirquality1) <- c("Wind","Temp","Error")
plotAq1 <- ggplot(data =
NewAirquality1,aes(x=airquality$Temp,y=airquality$Wind)) +
geom_point(aes(size=SVM.error), color = "red") + ggtitle("SVM Model")
plotAq1
```

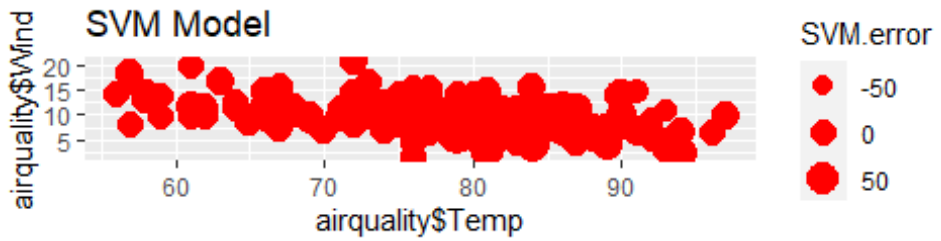


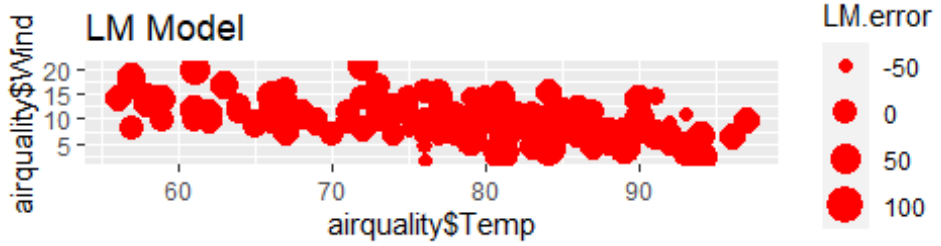
```r
#lm Model
LM <- lm(Ozone ~., data=airquality)

LM.first <- predict(LM, airquality)
LM.error <- (airquality$Ozone - LM.first)
root_square(LM.error)

## [1] 27.12126

NewAirqualit2 <- data.frame(airquality$Wind,airquality$Temp,LM.error)
colnames(NewAirqualit2) <- c("Wind","Temp","Error")
plotAq2 <- ggplot(data =
NewAirqualit2,aes(x=airquality$Temp,y=airquality$Wind)) +
geom_point(aes(size=LM.error), color = "red") + ggtitle("LM Model")
plotAq2
```




```r
#using the grid.arrange function to show all plots in one window
grid.arrange(plotAq,plotAq1, plotAq2, ncol = 1)
```








```
#Create a goodOzone variable

goodOzone <-c()
for (i in 1:153) {
  if (airquality$Ozone[i] < mean(airquality$Ozone)){
    goodOzone<-append(goodOzone,0)
  }
  else goodOzone<-append(goodOzone,1)
}

#adding the column in the dataframe
airquality<-data.frame(airquality,goodOzone)

#See if we can do a better job predicting good and bad days


predictGoodozone <- function(m, airquality){
  predictedGoodozone <- predict(m, airquality)
  results1 <- table(predictedGoodozone, airquality$goodOzone)
  print(results1)
  percentCorrect1 <-
(results1[1,1]+results1[2,2])/(results1[1,1]+results1[1,2]+results1[2,1]+resu
lts1[2,2])*100
  round(percentCorrect1)
  return(percentCorrect1)
}
```

```r
#KSVM model for goodOzone
KSVM1 <- ksvm(goodOzone ~ ., data = airquality)
predictGoodozone(KSVM1, airquality)
```

```
##
## predictedGoodozone     0 1
##   -0.120013114044024   1 0
##   -0.0841122748533753  1 0
##   -0.071215940850306   1 0
##   -0.0681639838013162  1 0
##   -0.0612612929792454  1 0
##   -0.0555413912731967  1 0
##   -0.0488361596435136  1 0
##   -0.0487747369427871  1 0
##   -0.0487212110428297  1 0
##   -0.0486937964444806  1 0
##   -0.0486856151627285  1 0
##   -0.0485777063054083  1 0
##   -0.0485252576738283  1 0
##   -0.0484283332009315  1 0
##   -0.0426490431647736  1 0
##   -0.0402251781730638  1 0
##   -0.0370974378771382  1 0
##   -0.0336981967958168  1 0
##   -0.0308646167063694  1 0
##   -0.0279139220604735  1 0
##   -0.0265239680066451  1 0
##   -0.0233062710518285  1 0
##   -0.0223236870272835  1 0
##   -0.0201901872590408  1 0
##   -0.0135734492957817  1 0
##   -0.0130437876868406  1 0
##   -0.00837424139964704 1 0
##   -0.00793616943132097 1 0
##   -0.00682726699094488 1 0
##   0.00161744029328531  1 0
##   0.00818803077273039  1 0
##   0.00996781597017021  1 0
##   0.0133423649108981   1 0
##   0.0141849964396925   1 0
##   0.0145201492725845   1 0
##   0.0159499529005008   1 0
##   0.016898245924152    1 0
##   0.0217841441084046   1 0
##   0.0231357802416494   1 0
##   0.0246107265391626   1 0
##   0.0265227481411744   1 0
##   0.0276450041737755   1 0
##   0.03351383229738     1 0
```

```
##   0.0340168566804517   1 0
##   0.0341736028687128   1 0
##   0.0356134282549191   1 0
##   0.048479486805871    1 0
##   0.048537197121077    1 0
##   0.0485390665748819   1 0
##   0.0485628260052844   1 0
##   0.0485747364928096   1 0
##   0.0486037804366293   1 0
##   0.0486082300091025   1 0
##   0.0486260882702622   1 0
##   0.0486333207517215   1 0
##   0.0486350926905754   1 0
##   0.0486509602855621   1 0
##   0.0486631805994194   1 0
##   0.0486816653572861   1 0
##   0.0486830294543986   1 0
##   0.0487045804639874   1 0
##   0.0487053044575315   1 0
##   0.0487067144519853   1 0
##   0.0487078478345501   1 0
##   0.0487078512301797   1 0
##   0.0487282467146175   1 0
##   0.0487935533849278   1 0
##   0.0488836727946469   1 0
##   0.0488990779383161   1 0
##   0.048908483867473    1 0
##   0.0489149410591478   1 0
##   0.0533534989593473   1 0
##   0.0665963310845954   1 0
##   0.0668000235752105   1 0
##   0.0707234668362905   1 0
##   0.0711302247920737   1 0
##   0.072303451996647    1 0
##   0.0731463575800751   1 0
##   0.0963074976998198   1 0
##   0.101355936739155    1 0
##   0.119667208373972    1 0
##   0.127597992925678    1 0
##   0.132451745890903    1 0
##   0.137775577641706    1 0
##   0.154761792735589    1 0
##   0.159025472019453    1 0
##   0.171781582345036    1 0
##   0.197968787151535    1 0
##   0.201075703080471    0 1
##   0.217615589119513    1 0
##   0.23278131305655     0 1
##   0.236901019938453    1 0
##   0.246451338801089    1 0
```

```
##   0.319143076398844    1 0
##   0.325694676209397    1 0
##   0.367869287672704    1 0
##   0.413194706082124    0 1
##   0.436587268334135    0 1
##   0.440297941870272    0 1
##   0.460801859707317    0 1
##   0.486344383974927    1 0
##   0.492358462056054    0 1
##   0.563717517939683    0 1
##   0.584337805102352    0 1
##   0.589077252880295    0 1
##   0.617581495434204    0 1
##   0.624624405680004    0 1
##   0.652343855036578    0 1
##   0.701639779291134    0 1
##   0.712632532463752    0 1
##   0.715979810494063    0 1
##   0.741049923494284    0 1
##   0.743689339663442    0 1
##   0.74717505850847     0 1
##   0.753504732251634    0 1
##   0.76429463252072     0 1
##   0.801338244781554    0 1
##   0.866354527365775    0 1
##   0.89560337836457     0 1
##   0.951097475521901    0 1
##   0.951194157669358    0 1
##   0.951236651429503    0 1
##   0.951257286932324    0 1
##   0.951257723149052    0 1
##   0.95128159260865     0 1
##   0.951328474647342    0 1
##   0.951344764085383    0 1
##   0.951434430720288    0 1
##   0.951499831426189    0 1
##   0.953464452943045    0 1
##   0.962897329697534    0 1
##   0.964409956125437    0 1
##   0.972752944071569    0 1
##   0.983835277632224    0 1
##   0.984960737777378    0 1
##   0.988897150038795    0 1
##   0.992506016759255    0 1
##   0.99407501796819     0 1
##   0.998504217146029    0 1
##   1.00092714167312     0 1
##   1.00313172872403     0 1
##   1.00768953619475     0 1
##   1.01006759186205     0 1
```

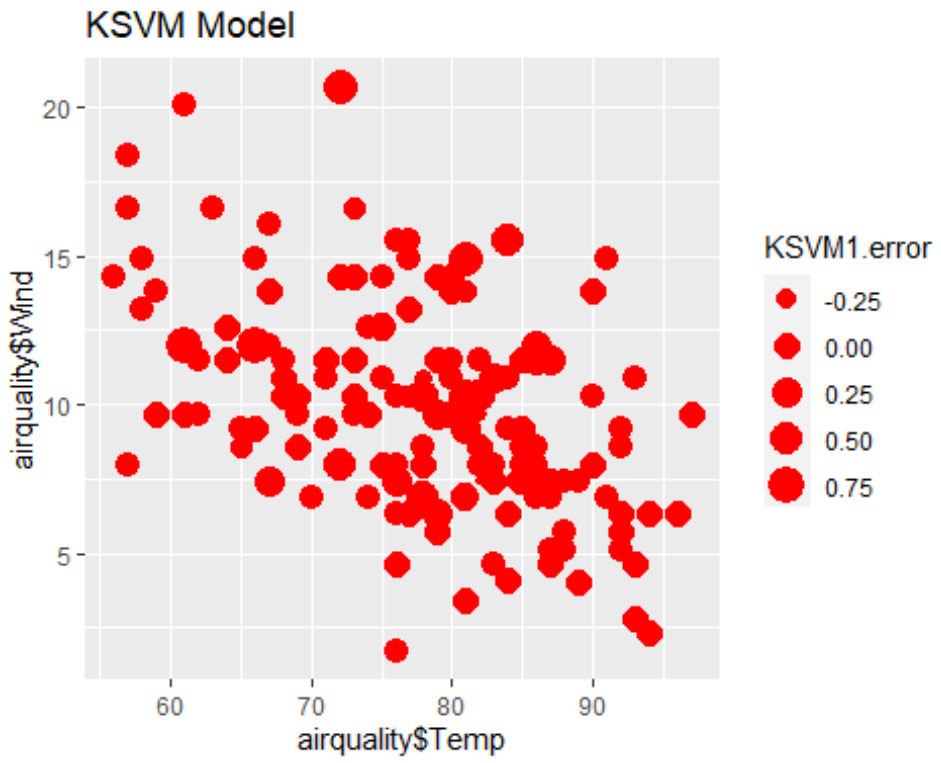
```
##   1.0216831225963      0 1
##   1.02652603743151     0 1
##   1.04554107379427     0 1
##   1.04853630114162     0 1
##   1.04863444129877     0 1
##   1.04868755171253     0 1
##   1.04874154044374     0 1
##   1.05007161007396     0 1
##   1.06735140687255     0 1
##   1.08099119368244     0 1
```

```
## [1] 50
```

```
root_square1 <- function(error)
{
  sqrt(mean(error^2))
}

KSVM1.first <- predict(KSVM1, airquality)
KSVM1.error <- (airquality$goodOzone - KSVM1.first)
root_square1(KSVM1.error)
```

```
## [1] 0.1895474
```

```
NewAirquality1 <- data.frame(airquality$Wind,airquality$Temp,KSVM1.error)
colnames(NewAirquality1) <- c("Wind","Temp","Error")
plotAq11 <- ggplot(data =
NewAirquality1,aes(x=airquality$Temp,y=airquality$Wind)) +
geom_point(aes(size=KSVM1.error), color = "red") + ggtitle("KSVM Model")
plotAq11
```

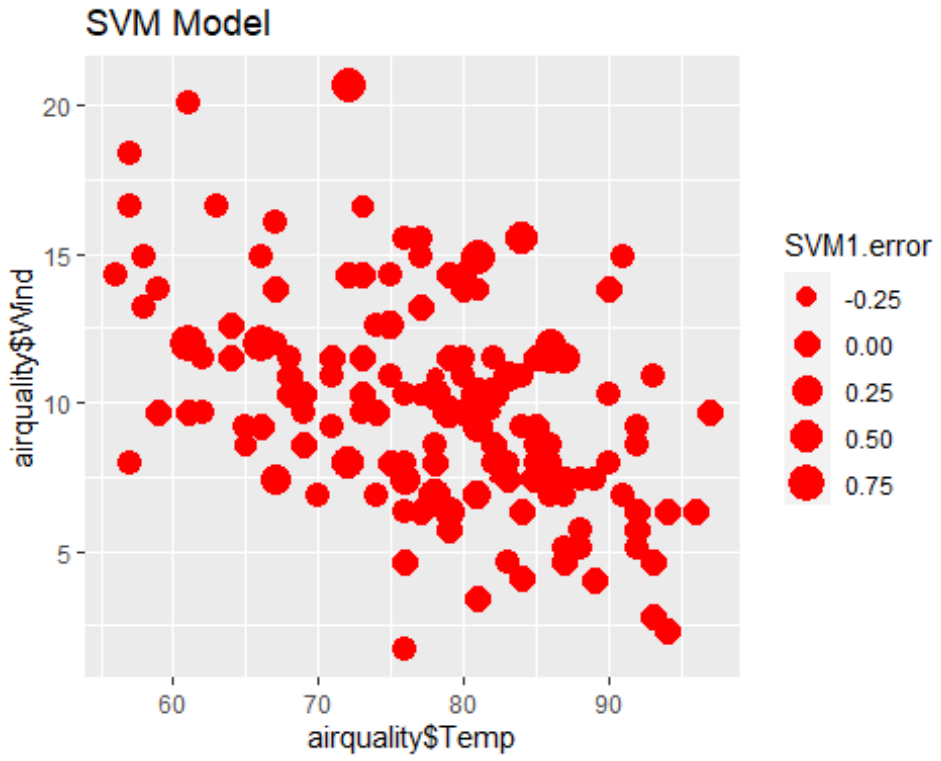



```
#SVM model for goodOzone
SVM1 <- svm(goodOzone ~ ., data = airquality)
predictGoodozone(SVM1, airquality)

##
## predictedGoodozone     0 1
##   -0.121268359985144   1 0
##   -0.0836710008167923  1 0
##   -0.0717700869947201  1 0
##   -0.0702828971742564  1 0
##   -0.063198960794745   1 0
##   -0.0571810387212316  1 0
##   -0.0488526176931127  1 0
##   -0.0488218982580528  1 0
##   -0.0487868771675589  1 0
##   -0.0487733888326767  1 0
##   -0.0487520864342754  1 0
##   -0.0487014668897456  1 0
##   -0.0484292824704979  1 0
##   -0.0484250219493635  1 0
##   -0.0439788585938299  1 0
##   -0.0397465600640648  1 0
##   -0.0393277242376525  1 0
##   -0.0342761210615636  1 0
##   -0.0295716788929703  1 0
##   -0.0288702942526484  1 0
##   -0.026332228061976   1 0
```

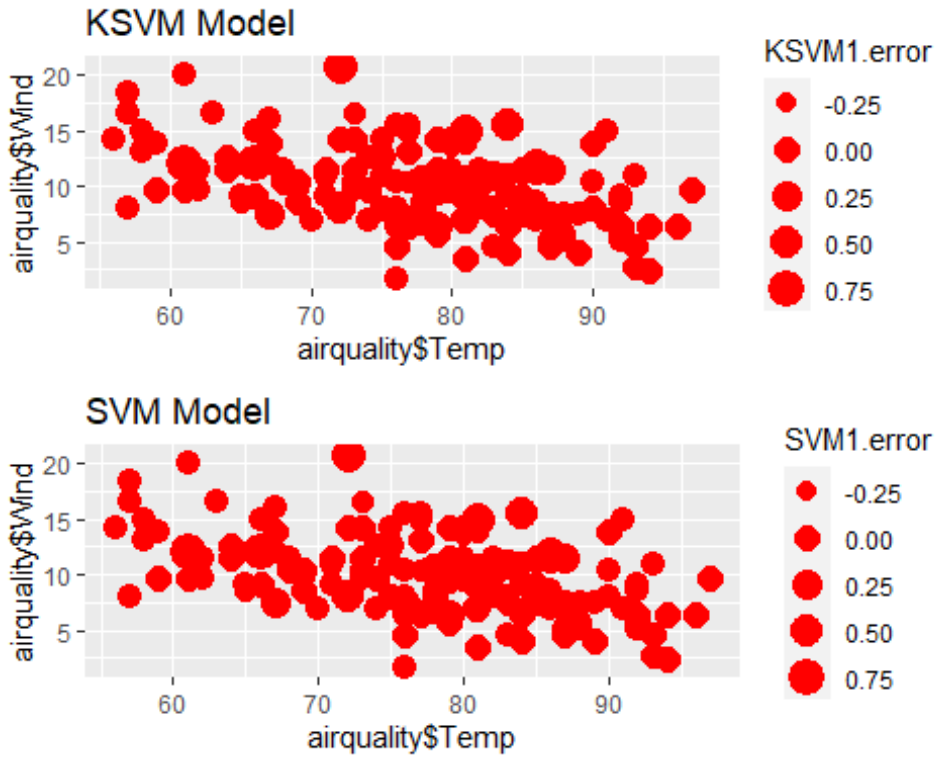
```
##   -0.0247196845098659  1 0
##   -0.0237465612661157  1 0
##   -0.0229291751466603  1 0
##   -0.0140534573817193  1 0
##   -0.0135555351697522  1 0
##   -0.00858399208350513 1 0
##   -0.00835965778634268 1 0
##   -0.00832334548820823 1 0
##   0.00311314440704596  1 0
##   0.00601140153587776  1 0
##   0.0101831649314321   1 0
##   0.0131447481058962   1 0
##   0.013651300030489    1 0
##   0.014034293984697    1 0
##   0.0175187459619986   1 0
##   0.0183854204378392   1 0
##   0.0241733890830244   1 0
##   0.0255467951703135   1 0
##   0.0262083957705015   1 0
##   0.026644834117347    1 0
##   0.0275481254396555   1 0
##   0.033790404612737    1 0
##   0.0338509137969008   1 0
##   0.0345857811684244   1 0
##   0.035263826360597    1 0
##   0.04584576575514     1 0
##   0.0485159268757687   1 0
##   0.0485244599074749   1 0
##   0.0485802856691392   1 0
##   0.0485836441636208   1 0
##   0.0485897139491718   1 0
##   0.0485932416126917   1 0
##   0.0485932771011168   1 0
##   0.0486443424518985   1 0
##   0.0486640878562317   1 0
##   0.0486647738470299   1 0
##   0.0486776513191894   1 0
##   0.0486835408007946   1 0
##   0.0486901738820905   1 0
##   0.0486905834339608   1 0
##   0.0487245018752752   1 0
##   0.0487604708487021   1 0
##   0.0487609273625768   1 0
##   0.0487683536082597   1 0
##   0.0487900452522266   1 0
##   0.048809910408645    1 0
##   0.0488423561387941   1 0
##   0.0488719725482891   1 0
##   0.0488945012683095   1 0
##   0.0489042293167196   1 0
```

```
##   0.0544883539706439   1 0
##   0.0663082492745804   1 0
##   0.0671930143764795   1 0
##   0.0684562059787094   1 0
##   0.072595986787245    1 0
##   0.073951372121242    1 0
##   0.0748930659145859   1 0
##   0.0995967980715908   1 0
##   0.102744164072931    1 0
##   0.120861290319509    1 0
##   0.131208813444058    1 0
##   0.133312807461449    1 0
##   0.138659629248737    1 0
##   0.154664279136488    1 0
##   0.161496429969066    1 0
##   0.172447454952219    1 0
##   0.197987820060393    1 0
##   0.199868419487865    0 1
##   0.219280003302085    1 0
##   0.232001949213725    0 1
##   0.238039887421644    1 0
##   0.245258103377749    1 0
##   0.316798192356327    1 0
##   0.324008082082971    1 0
##   0.369869289545218    1 0
##   0.410185328733258    0 1
##   0.434742490055857    0 1
##   0.438328372714668    0 1
##   0.460117239382035    0 1
##   0.486972485898415    1 0
##   0.489522207118278    0 1
##   0.559985094650605    0 1
##   0.582172420661076    0 1
##   0.584050343087023    0 1
##   0.613372411911278    0 1
##   0.6251553351125      0 1
##   0.650113222021429    0 1
##   0.700493354668504    0 1
##   0.712473945114277    0 1
##   0.712921251829304    0 1
##   0.737152834717089    0 1
##   0.742384707753541    0 1
##   0.743892482889828    0 1
##   0.749569668482693    0 1
##   0.763594565332064    0 1
##   0.79607557559296     0 1
##   0.867049054853761    0 1
##   0.892439463575135    0 1
##   0.951088937404631    0 1
##   0.951159090408698    0 1
```

```
##   0.951194810598008    0 1
##   0.951214555684088    0 1
##   0.951253706838983    0 1
##   0.951328921449014    0 1
##   0.951360091687101    0 1
##   0.95136833587186     0 1
##   0.951378331324788    0 1
##   0.951409382684554    0 1
##   0.951447371177474    0 1
##   0.960253378041543    0 1
##   0.962818620863407    0 1
##   0.967714725677347    0 1
##   0.984652230520321    0 1
##   0.984682300277165    0 1
##   0.985251639409942    0 1
##   0.990056047188489    0 1
##   0.995792964891939    0 1
##   0.998992588153696    0 1
##   1.00179047948152     0 1
##   1.00457518025512     0 1
##   1.00632784383209     0 1
##   1.01119557846481     0 1
##   1.02249436445137     0 1
##   1.02456736792294     0 1
##   1.0473620621923      0 1
##   1.04859117414224     0 1
##   1.04860780364415     0 1
##   1.04866561666704     0 1
##   1.04872887220469     0 1
##   1.04913676645504     0 1
##   1.0687266781047      0 1
##   1.07894447181684     0 1

## [1] 50

SVM1.first <- predict(SVM1, airquality)
SVM1.error <- (airquality$goodOzone - SVM1.first)
root_square1(SVM1.error)

## [1] 0.1903545

NewAirquality12 <- data.frame(airquality$Wind,airquality$Temp,SVM1.error)
colnames(NewAirquality12) <- c("Wind","Temp","Error")
plotAq12 <- ggplot(data =
NewAirquality12,aes(x=airquality$Temp,y=airquality$Wind)) +
geom_point(aes(size=SVM1.error), color = "red") + ggtitle("SVM Model")
plotAq12
```




```
grid.arrange(plotAq11,plotAq12, ncol = 1)
```



```
#Step 6: best Models for this data?

#the KSVM is the better fit compared to other models.
```