Oefening 3.7

Opgave

Beschouw de volgende datasets uit het data frame “ais” (uit de library DAAG)

1. Ontleed de gegevens voor de roeiers
2. ontleed de gegevens voor de roeiers, netballers en de tennissers
3. ontleed de gegeven svoor de vrouwelijke besketballers en roeiers

```
## Loading required package: lattice
```

Oplossing

1

```
data <- subset(DAAG::ais, sport=="Row")
data
```

```
##      rcc  wcc   hc   hg ferr   bmi   ssf pcBfat   lbm    ht   wt sex sport
## 14  4.26  6.2 41.0 13.9   48 25.44  90.2  17.71 66.24 177.9 80.5   f   Row
## 15  4.63  6.0 43.7 14.7   30 22.63  97.2  18.77 57.92 177.5 71.3   f   Row
## 16  4.36  5.8 40.3 13.3   29 21.86  99.9  19.83 56.52 179.6 70.5   f   Row
## 17  3.91  7.3 37.6 12.9   43 22.27 125.9  25.16 54.78 181.3 73.2   f   Row
## 18  4.51  8.3 43.7 14.7   34 21.27  69.9  18.04 56.31 179.7 68.7   f   Row
## 19  4.37  8.1 41.8 14.3   53 23.47  98.0  21.79 62.96 185.2 80.5   f   Row
## 20  4.90  6.9 44.0 14.5   59 23.19  96.8  22.25 56.68 177.3 72.9   f   Row
## 21  4.46  5.7 39.2 13.0   43 23.17  80.3  16.25 62.39 179.3 74.5   f   Row
## 22  3.95  3.3 36.9 12.5   40 24.54  74.9  16.38 63.05 175.3 75.4   f   Row
## 23  4.46  9.5 41.5 14.5   92 22.96  83.0  19.35 56.05 174.0 69.5   f   Row
## 24  5.02  6.4 44.8 15.2   48 19.76  91.0  19.20 53.65 183.3 66.4   f   Row
## 25  4.26  5.8 41.2 14.1   77 23.36  76.2  17.89 65.45 184.7 79.7   f   Row
## 26  4.46  5.6 41.1 14.3   71 22.67  52.6  12.20 64.62 180.2 73.6   f   Row
## 27  4.16  5.8 39.8 13.3   37 24.24 111.1  23.70 60.05 180.2 78.7   f   Row
## 28  4.49  7.6 41.8 14.4   71 24.21 110.7  24.69 56.48 176.0 75.0   f   Row
## 29  4.21  7.5 38.4 13.2   73 20.46  74.7  16.58 41.54 156.0 49.8   f   Row
## 30  4.57  6.6 42.8 14.5   85 20.81 113.5  21.47 52.78 179.7 67.2   f   Row
## 31  4.87  6.4 44.8 15.0   64 20.17  99.8  20.12 52.72 180.9 66.0   f   Row
## 32  4.44 10.1 42.7 14.0   19 23.06  80.3  17.51 61.29 179.5 74.3   f   Row
## 33  4.45  6.6 42.6 14.1   39 24.40 109.5  23.70 59.59 178.9 78.1   f   Row
## 34  4.41  5.9 41.1 13.5   41 23.97 123.6  22.39 61.70 182.1 79.5   f   Row
## 35  4.87  7.3 44.1 14.8   13 22.62  91.2  20.43 62.46 186.3 78.5   f   Row
## 114 4.87  8.2 43.8 15.0  130 23.57  49.2   9.00 78.00 190.7 85.7   m   Row
## 115 5.04  7.1 44.0 14.8   64 25.84  61.8  12.61 75.00 181.8 85.4   m   Row
## 116 4.40  5.3 42.5 14.5  109 24.06  46.5   9.03 78.00 188.3 85.3   m   Row
## 117 4.95  5.9 45.4 15.5  125 23.85  34.8   6.96 87.00 198.0 93.5   m   Row
## 118 4.78  9.3 43.0 14.7  150 25.09  60.2  10.05 78.00 186.0 86.8   m   Row
## 119 5.21  6.8 44.5 15.4  115 23.84  48.1   9.56 79.00 192.0 87.9   m   Row
## 120 5.22  8.4 47.5 16.2   89 25.31  44.5   9.36 79.00 185.6 87.2   m   Row
## 121 5.18  6.5 45.4 14.9   93 19.69  54.0  10.81 48.00 165.3 53.8   m   Row
## 122 5.40  6.8 49.5 17.3  183 26.07  44.7   8.61 82.00 185.6 89.8   m   Row
## 123 4.92  5.4 46.2 15.8   84 25.50  64.9   9.53 82.00 189.0 91.1   m   Row
## 124 5.24  7.5 46.5 15.5   70 23.69  43.8   7.42 82.00 193.4 88.6   m   Row
```

```
## 125 5.09 10.1 44.9 14.8  118 26.79  58.3   9.79 83.00 185.6 92.3   m   Row
## 126 4.83  5.0 43.8 15.1   61 25.61  52.8   8.97 88.00 194.6 97.0   m   Row
## 127 5.22  6.0 46.6 15.7   72 25.06  43.1   7.49 83.00 189.0 89.5   m   Row
## 128 4.71  8.0 45.5 15.6   91 24.93  78.0  11.95 78.00 188.1 88.2   m   Row
```

```
myvars <- c("ht") # we maken gebruik van de lengte van de spelers ter voorbeeld
newdata <- data[myvars]
summary(newdata)
```

```
##        ht
##  Min.   :156.0
##  1st Qu.:179.3
##  Median :181.8
##  Mean   :182.4
##  3rd Qu.:186.3
##  Max.   :198.0
```

2

```
data <- subset(DAAG::ais, sport=="Row" | sport=="Netball" | sport=="Tennis")
data
```

```
##      rcc  wcc   hc   hg ferr   bmi   ssf pcBfat   lbm    ht   wt sex
## 14  4.26  6.2 41.0 13.9   48 25.44  90.2  17.71 66.24 177.9 80.5   f
## 15  4.63  6.0 43.7 14.7   30 22.63  97.2  18.77 57.92 177.5 71.3   f
## 16  4.36  5.8 40.3 13.3   29 21.86  99.9  19.83 56.52 179.6 70.5   f
## 17  3.91  7.3 37.6 12.9   43 22.27 125.9  25.16 54.78 181.3 73.2   f
## 18  4.51  8.3 43.7 14.7   34 21.27  69.9  18.04 56.31 179.7 68.7   f
## 19  4.37  8.1 41.8 14.3   53 23.47  98.0  21.79 62.96 185.2 80.5   f
## 20  4.90  6.9 44.0 14.5   59 23.19  96.8  22.25 56.68 177.3 72.9   f
## 21  4.46  5.7 39.2 13.0   43 23.17  80.3  16.25 62.39 179.3 74.5   f
## 22  3.95  3.3 36.9 12.5   40 24.54  74.9  16.38 63.05 175.3 75.4   f
## 23  4.46  9.5 41.5 14.5   92 22.96  83.0  19.35 56.05 174.0 69.5   f
## 24  5.02  6.4 44.8 15.2   48 19.76  91.0  19.20 53.65 183.3 66.4   f
## 25  4.26  5.8 41.2 14.1   77 23.36  76.2  17.89 65.45 184.7 79.7   f
## 26  4.46  5.6 41.1 14.3   71 22.67  52.6  12.20 64.62 180.2 73.6   f
## 27  4.16  5.8 39.8 13.3   37 24.24 111.1  23.70 60.05 180.2 78.7   f
## 28  4.49  7.6 41.8 14.4   71 24.21 110.7  24.69 56.48 176.0 75.0   f
## 29  4.21  7.5 38.4 13.2   73 20.46  74.7  16.58 41.54 156.0 49.8   f
## 30  4.57  6.6 42.8 14.5   85 20.81 113.5  21.47 52.78 179.7 67.2   f
## 31  4.87  6.4 44.8 15.0   64 20.17  99.8  20.12 52.72 180.9 66.0   f
## 32  4.44 10.1 42.7 14.0   19 23.06  80.3  17.51 61.29 179.5 74.3   f
## 33  4.45  6.6 42.6 14.1   39 24.40 109.5  23.70 59.59 178.9 78.1   f
## 34  4.41  5.9 41.1 13.5   41 23.97 123.6  22.39 61.70 182.1 79.5   f
## 35  4.87  7.3 44.1 14.8   13 22.62  91.2  20.43 62.46 186.3 78.5   f
## 36  4.56 13.3 42.2 13.6   20 19.16  49.0  11.29 53.14 176.8 59.9   f
## 37  4.15  6.0 38.0 12.7   59 21.15 110.2  25.26 47.09 172.6 63.0   f
## 38  4.16  7.6 37.5 12.3   22 21.40  89.0  19.39 53.44 176.0 66.3   f
## 39  4.32  6.4 37.7 12.3   30 21.03  98.3  19.63 48.78 169.9 60.7   f
## 40  4.06  5.8 38.7 12.8   78 21.77 122.1  23.11 56.05 183.0 72.9   f
## 41  4.12  6.1 36.6 11.8   21 21.38  90.4  16.86 56.45 178.2 67.9   f
## 42  4.17  5.0 37.4 12.7  109 21.47 106.9  21.32 53.11 177.3 67.5   f
## 43  3.80  6.6 36.5 12.4  102 24.45 156.6  26.57 54.41 174.1 74.1   f
## 44  3.96  5.5 36.3 12.4   71 22.63 101.1  17.93 55.97 173.6 68.2   f
## 45  4.44  9.7 41.4 14.1   64 22.80 126.4  24.97 51.62 173.7 68.8   f
```

```
## 46  4.27 10.6 37.7 12.5   68 23.58 114.0  22.62 58.27 178.7 75.3   f
## 47  3.90  6.3 35.9 12.1   78 20.06  70.0  15.01 57.28 183.3 67.4   f
## 48  4.02  9.1 37.7 12.7  107 23.01  77.0  18.14 57.30 174.4 70.0   f
## 49  4.39  9.6 38.3 12.5   39 24.64 148.9  26.78 54.18 173.3 74.0   f
## 50  4.52  5.1 38.8 13.1   58 18.26  80.1  17.22 42.96 168.6 51.9   f
## 51  4.25 10.7 39.5 13.2  127 24.47 156.6  26.50 54.46 174.0 74.1   f
## 52  4.46 10.9 39.7 13.7  102 23.99 115.9  23.01 57.20 176.0 74.3   f
## 53  4.40  9.3 40.4 13.6   86 26.24 181.7  30.10 54.38 172.2 77.8   f
## 54  4.83  8.4 41.8 13.4   40 20.04  71.6  13.93 57.58 182.7 66.9   f
## 55  4.23  6.9 38.3 12.6   50 25.72 143.5  26.65 61.46 180.5 83.8   f
## 56  4.24  8.4 37.6 12.5   58 25.64 200.8  35.52 53.46 179.8 82.9   f
## 57  3.95  6.6 38.4 12.8   33 19.87  68.9  15.59 54.11 179.6 64.1   f
## 58  4.03  8.5 37.7 13.0   51 23.35 103.6  19.61 55.35 171.7 68.8   f
## 90  4.00  4.2 36.6 12.0   57 25.36 109.0  20.86 56.58 167.9 71.5   f
## 91  4.40  4.0 40.8 13.9   73 22.12  98.1  19.64 56.01 177.5 69.7   f
## 92  4.38  7.9 39.8 13.5   88 21.25  80.6  17.07 46.52 162.5 56.1   f
## 93  4.08  6.6 37.8 12.1  182 20.53  68.3  15.31 51.75 172.5 61.1   f
## 94  4.98  6.4 44.8 14.8   80 17.06  47.6  11.07 42.15 166.7 47.4   f
## 95  5.16  7.2 44.3 14.5   88 18.29  61.9  12.92 48.76 175.0 56.0   f
## 96  4.66  6.4 40.9 13.9  109 18.37  38.2   8.45 41.93 157.9 45.8   f
## 114 4.87  8.2 43.8 15.0  130 23.57  49.2   9.00 78.00 190.7 85.7   m
## 115 5.04  7.1 44.0 14.8   64 25.84  61.8  12.61 75.00 181.8 85.4   m
## 116 4.40  5.3 42.5 14.5  109 24.06  46.5   9.03 78.00 188.3 85.3   m
## 117 4.95  5.9 45.4 15.5  125 23.85  34.8   6.96 87.00 198.0 93.5   m
## 118 4.78  9.3 43.0 14.7  150 25.09  60.2  10.05 78.00 186.0 86.8   m
## 119 5.21  6.8 44.5 15.4  115 23.84  48.1   9.56 79.00 192.0 87.9   m
## 120 5.22  8.4 47.5 16.2   89 25.31  44.5   9.36 79.00 185.6 87.2   m
## 121 5.18  6.5 45.4 14.9   93 19.69  54.0  10.81 48.00 165.3 53.8   m
## 122 5.40  6.8 49.5 17.3  183 26.07  44.7   8.61 82.00 185.6 89.8   m
## 123 4.92  5.4 46.2 15.8   84 25.50  64.9   9.53 82.00 189.0 91.1   m
## 124 5.24  7.5 46.5 15.5   70 23.69  43.8   7.42 82.00 193.4 88.6   m
## 125 5.09 10.1 44.9 14.8  118 26.79  58.3   9.79 83.00 185.6 92.3   m
## 126 4.83  5.0 43.8 15.1   61 25.61  52.8   8.97 88.00 194.6 97.0   m
## 127 5.22  6.0 46.6 15.7   72 25.06  43.1   7.49 83.00 189.0 89.5   m
## 128 4.71  8.0 45.5 15.6   91 24.93  78.0  11.95 78.00 188.1 88.2   m
## 199 5.66  8.3 50.2 17.7   38 23.76  56.5  10.05 72.00 183.5 80.0   m
## 200 5.03  6.4 42.7 14.3  122 22.01  47.6   8.51 68.00 183.1 73.8   m
## 201 4.97  8.8 43.0 14.9  233 22.34  60.4  11.50 63.00 178.4 71.1   m
## 202 5.38  6.3 46.0 15.7   32 21.07  34.9   6.26 72.00 190.8 76.7   m
##       sport
## 14      Row
## 15      Row
## 16      Row
## 17      Row
## 18      Row
## 19      Row
## 20      Row
## 21      Row
## 22      Row
## 23      Row
## 24      Row
## 25      Row
## 26      Row
## 27      Row
```

```
## 28      Row
## 29      Row
## 30      Row
## 31      Row
## 32      Row
## 33      Row
## 34      Row
## 35      Row
## 36  Netball
## 37  Netball
## 38  Netball
## 39  Netball
## 40  Netball
## 41  Netball
## 42  Netball
## 43  Netball
## 44  Netball
## 45  Netball
## 46  Netball
## 47  Netball
## 48  Netball
## 49  Netball
## 50  Netball
## 51  Netball
## 52  Netball
## 53  Netball
## 54  Netball
## 55  Netball
## 56  Netball
## 57  Netball
## 58  Netball
## 90   Tennis
## 91   Tennis
## 92   Tennis
## 93   Tennis
## 94   Tennis
## 95   Tennis
## 96   Tennis
## 114     Row
## 115     Row
## 116     Row
## 117     Row
## 118     Row
## 119     Row
## 120     Row
## 121     Row
## 122     Row
## 123     Row
## 124     Row
## 125     Row
## 126     Row
## 127     Row
## 128     Row
## 199  Tennis
```

```
## 200  Tennis
## 201  Tennis
## 202  Tennis
```

```
myvars <- c("ht") # we maken gebruik van de lengte van de spelers ter voorbeeld
newdata <- data[myvars]
summary(newdata)
```

```
##        ht
##  Min.   :156.0
##  1st Qu.:174.2
##  Median :179.5
##  Mean   :179.1
##  3rd Qu.:183.4
##  Max.   :198.0
```

3

```
data <- subset(DAAG::ais, (sport=="Row" | sport=="B_Ball") & sex =="f")
data
```

```
##     rcc  wcc   hc   hg ferr   bmi   ssf pcBfat   lbm    ht   wt sex  sport
## 1  3.96  7.5 37.5 12.3   60 20.56 109.1  19.75 63.32 195.9 78.9   f B_Ball
## 2  4.41  8.3 38.2 12.7   68 20.67 102.8  21.30 58.55 189.7 74.4   f B_Ball
## 3  4.14  5.0 36.4 11.6   21 21.86 104.6  19.88 55.36 177.8 69.1   f B_Ball
## 4  4.11  5.3 37.3 12.6   69 21.88 126.4  23.66 57.18 185.0 74.9   f B_Ball
## 5  4.45  6.8 41.5 14.0   29 18.96  80.3  17.64 53.20 184.6 64.6   f B_Ball
## 6  4.10  4.4 37.4 12.5   42 21.04  75.2  15.58 53.77 174.0 63.7   f B_Ball
## 7  4.31  5.3 39.6 12.8   73 21.69  87.2  19.99 60.17 186.2 75.2   f B_Ball
## 8  4.42  5.7 39.9 13.2   44 20.62  97.9  22.43 48.33 173.8 62.3   f B_Ball
## 9  4.30  8.9 41.1 13.5   41 22.64  75.1  17.95 54.57 171.4 66.5   f B_Ball
## 10 4.51  4.4 41.6 12.7   44 19.44  65.1  15.07 53.42 179.9 62.9   f B_Ball
## 11 4.71  5.3 41.4 14.0   38 25.75 171.1  28.83 68.53 193.4 96.3   f B_Ball
## 12 4.62  7.3 43.8 14.7   26 21.20  76.8  18.08 61.85 188.7 75.5   f B_Ball
## 13 4.35  7.8 41.4 14.1   30 22.03 117.8  23.30 48.32 169.1 63.0   f B_Ball
## 14 4.26  6.2 41.0 13.9   48 25.44  90.2  17.71 66.24 177.9 80.5   f    Row
## 15 4.63  6.0 43.7 14.7   30 22.63  97.2  18.77 57.92 177.5 71.3   f    Row
## 16 4.36  5.8 40.3 13.3   29 21.86  99.9  19.83 56.52 179.6 70.5   f    Row
## 17 3.91  7.3 37.6 12.9   43 22.27 125.9  25.16 54.78 181.3 73.2   f    Row
## 18 4.51  8.3 43.7 14.7   34 21.27  69.9  18.04 56.31 179.7 68.7   f    Row
## 19 4.37  8.1 41.8 14.3   53 23.47  98.0  21.79 62.96 185.2 80.5   f    Row
## 20 4.90  6.9 44.0 14.5   59 23.19  96.8  22.25 56.68 177.3 72.9   f    Row
## 21 4.46  5.7 39.2 13.0   43 23.17  80.3  16.25 62.39 179.3 74.5   f    Row
## 22 3.95  3.3 36.9 12.5   40 24.54  74.9  16.38 63.05 175.3 75.4   f    Row
## 23 4.46  9.5 41.5 14.5   92 22.96  83.0  19.35 56.05 174.0 69.5   f    Row
## 24 5.02  6.4 44.8 15.2   48 19.76  91.0  19.20 53.65 183.3 66.4   f    Row
## 25 4.26  5.8 41.2 14.1   77 23.36  76.2  17.89 65.45 184.7 79.7   f    Row
## 26 4.46  5.6 41.1 14.3   71 22.67  52.6  12.20 64.62 180.2 73.6   f    Row
## 27 4.16  5.8 39.8 13.3   37 24.24 111.1  23.70 60.05 180.2 78.7   f    Row
## 28 4.49  7.6 41.8 14.4   71 24.21 110.7  24.69 56.48 176.0 75.0   f    Row
## 29 4.21  7.5 38.4 13.2   73 20.46  74.7  16.58 41.54 156.0 49.8   f    Row
## 30 4.57  6.6 42.8 14.5   85 20.81 113.5  21.47 52.78 179.7 67.2   f    Row
## 31 4.87  6.4 44.8 15.0   64 20.17  99.8  20.12 52.72 180.9 66.0   f    Row
## 32 4.44 10.1 42.7 14.0   19 23.06  80.3  17.51 61.29 179.5 74.3   f    Row
## 33 4.45  6.6 42.6 14.1   39 24.40 109.5  23.70 59.59 178.9 78.1   f    Row
```

```
## 34 4.41  5.9 41.1 13.5   41 23.97 123.6  22.39 61.70 182.1 79.5   f    Row
## 35 4.87  7.3 44.1 14.8   13 22.62  91.2  20.43 62.46 186.3 78.5   f    Row
```

```
myvars <- c("ht") # we maken gebruik van de lengte van de spelers ter voorbeeld
newdata <- data[myvars]
summary(newdata)
```

```
##        ht
##  Min.   :156.0
##  1st Qu.:177.4
##  Median :179.7
##  Mean   :180.1
##  3rd Qu.:184.7
##  Max.   :195.9
```