Exercise 1   Handling missing data and outliers:
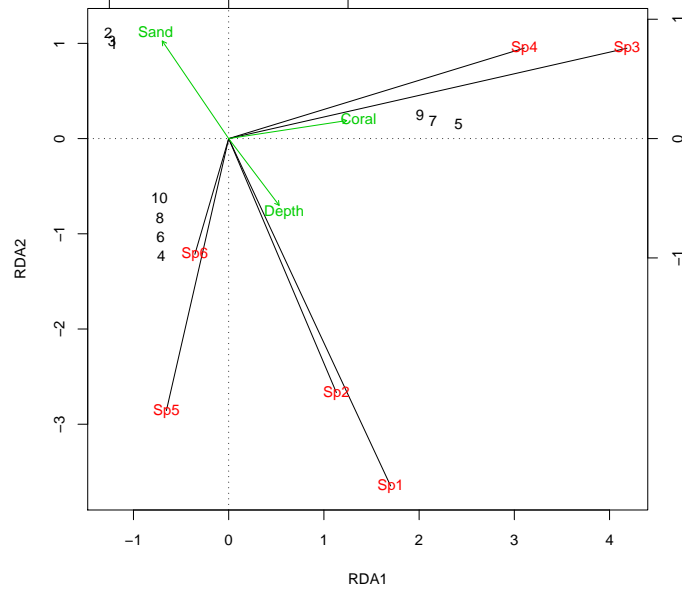Download the data set 'HSWoutlier.txt' from the web page.

- Try to apply PCA to the data and read the error message. This error message is due to a missing value in the data set. Replace the missing values by the mean over the respective variable. Hint: `mean( , na.rm=TRUE )`.

- Apply PCA to the modified data set and plot the resulting first two principal components. You should see an outlier. We guess that the outlier is due to somebody having entered the weight $100kg$ as $100\,000$ (thinking of gram). As we are not sure about this, we better delete that sample (the respective row in the data) from the data.

- Again apply PCA and check that everything is fine now.

Exercise 2   Download the data set 'artificialFishes.txt' from the web page.

- Execute the R commands from the lecture and produce the triplots (do not forget to load the library `vegan` first).

- Play a bit around with `rda()`. For example try `scale=TRUE`, look in the help pages `?rda`, `?plot.rda` or plot the the returned RDA object with plot() and different arguments to the option `display=`.

- Here is a different way to produce a triplot:

```
plot(myrda, type="n",scaling=2)
segments(x0=0,
         y0=0,
         x1=scores(myrda, display="species", scaling=2)[,1],
         y1=scores(myrda, display="species", scaling=2)[,2])
text(myrda, display="sp", scaling=2, col=2)
text(myrda, display="bp", scaling=2,
     row.names(scores(myrda, display="bp")), col=3)
text(myrda, labels=fishes$Site, display="sites",scaling=2)
```

  Note that `text(rda.obj)` calls `text.cca(rda.obj)`. Learn from these commands and try to produce the respective distance biplot which looks as follows

Exercise 3 Download the data set 'RIKZGroups.txt' from the web page. Which of the variables shall be the response variables and which shall be the explanatory variables? Apply redundancy analysis and produce the distance triplot and the correlation triplot. You might also want to try the commands from the last exercise on this data set.