Exercise   Students of a statistics course in Goettingen answered a questionaire. Their answers to 'Height in cm?', 'Weight in kg?', 'What is your sex (0=m, 1=f)?', 'Your age in years?' and 'What is your shoe size' are contained in the data frame `ashsw`. A principal component analysis has been conducted on this data set. Here is the correlation byplot:
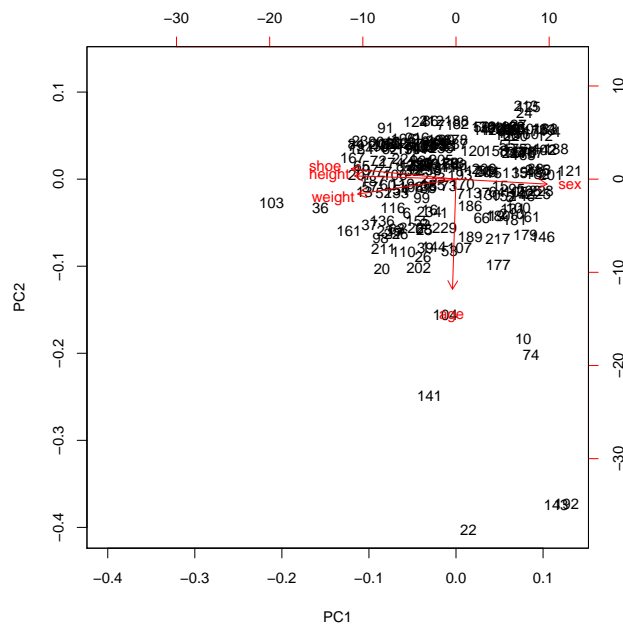
Answer the following questions from this biplot:

- According to the two-dimensional projection of the correlation biplot, which of the variables are likely to be postively correlated, which are likely to be negatively correlated and which are likely to be uncorrelated?

- Which variables dominate the first two principal components?

- If the data points would be colored according to the sex of the studend, which students in the biplot would you expect to be girls? (Your answer should be one of the following: Points on top,top-right,right, bottom-right,bottom,bottom-left,left,top-left)

- What does the biplot suggest about the height, weight, age and sex of student '74'?

Exercise Recall the data from the last exercise. Now we wish to explain 'height', 'shoe' and 'weight' as response variables of the explanatory variables 'sex' and 'age'. This has been done with redundancy analysis. The following figure show the correlation triplot.
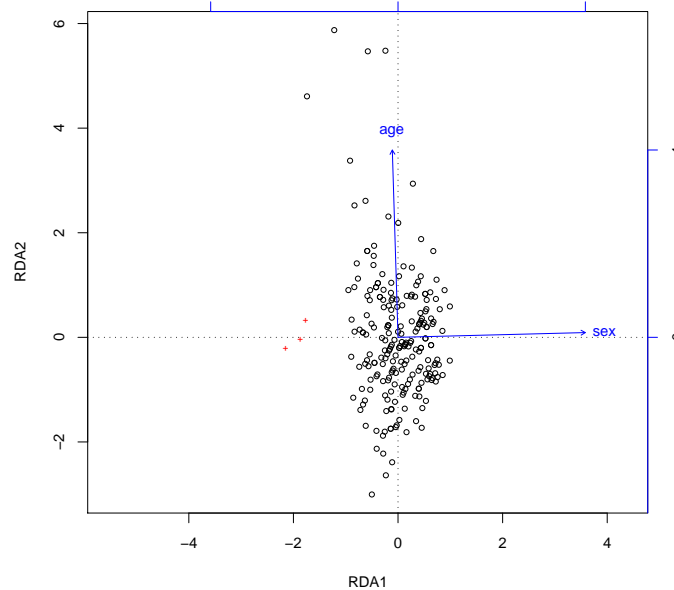
What does this triplot tell us about the dependence of the response variables on the explanatory variables?

Exercise Consider the following 4 by 4 matrix

$$\begin{pmatrix} 1 & 0 & 2 & 1 \\ 0 & 1 & 2 & 0 \\ 0 & 2 & 0 & 2 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

Assume that this is the abundancy matrix of 4 species at 4 sites. Now imagine the species conditional biplot. Describe the approximate positions of the species relatively to the sites. For this you may assume the positions of the sites to be given.