Livestock Breeding and Genomics - Solution 1

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This questionnaire helps me to assess your experience with programming and data analysis. It is not a test and it will not be graded. Please, answer the following question. Thank you very much for your collaboration.

Question 1

What programming languages do you know? For each programming language you know, please indicate the level of your knowledge with the labels *professional* (p), *intermediate* (m) and *beginner* (b).

Your Answer

Question 2

Have you made any experiences with programming languages such as R in previous courses or projects?

Your Answer

Question 3

What tools do you use when you have to work with data during your internships/practicals or during your Bachelor or Master thesis?

Your Answer

Question 4

Are you interested in learning how to program? Please rate the level of your interest with the labels *very high*, *rather high*, *low* and *very low*.

Your Answer

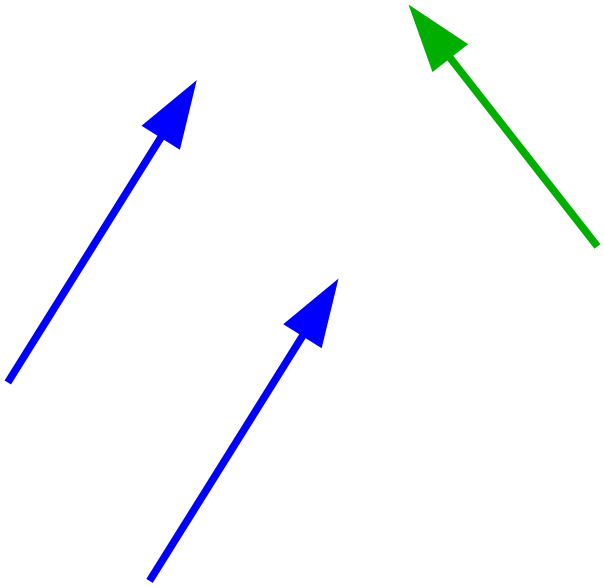
Question 5

What is the meaning of the following terms:

- Genotypefrequency:
- Allelefrequency:
- Breeding value:
- Additive genetic variance:

Question 6

How many different vectors do you see in the following picture?



Question 7

What is a matrix?

Your Answer

Question 8

Please convert the following system of linear equations into matrix-vector notation

$$\begin{aligned} x_1 + x_2 &= 2 \\ x_1 - x_2 &= 1 \\ x_1 &= 4 \end{aligned}$$

Question 9

How do you assign the vector $v = \begin{bmatrix} 10 \\ 15 \\ 21 \end{bmatrix}$ to the variable named `vec` in R?

Your Answer

Question 10

How do you assign the matrix $M = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ to the variable named `mat` in R?

Your Answer

Question 11

Let us assume, we have some data in a file called `data.csv`. The format of the data is in `comma separated values` (csv). How do you read the data from the file and assign it to the variable named `datadf` in R?

Your Answer

Question 12

We have measurements of body weight and height of dairy cows. What is the statistical approach that you can use to see whether the `height` of the cow is related to its `body weight`? What is the technique that you can use to estimate the strength of the relationship between the two variables `height` and `body weight`?

Your Answer

Question 13

Do you have any experience in writing RMarkdown documents? If yes, for what type of document (reports, Bachelor thesis, others, ...) did you use RMarkdown?

Your Answer