Applied Statistical Methods - Exercise 8

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Problem 1: Repeated Measurements Data

Simulate a dataset with repeated measurements of `Body Weight` and `Breed`. The following dataset can be used as a basis:

```
## /Users/pvr/Data/Projects/Github/charlotte-ngs/asmss2022_gh-root/main/asmss2022/docs/data/asm_bw_flem
```

The generated dataset should have the following properties

- For every observation, the ID of the animal, its `Body Weight` and its `Breed` should be contained in the dataset.
- Each animal of the given basis dataset should have 5 repeated observations of `Body Weight` and `Breed`.
- The phenotypic variance of `Body Weight` within the repeated observations of one animal should be 50% of the total phenotypic variance of `Body Weight` determined from the given basis dataset.

Your Tasks

- Analyse the generated dataset with an ANOVA
- Try to see whether you can re-cover the used input data in the results of the analysis

Problem 2: Random Effects Model

Analyse the dataset generated in Problem 1 with a random effects model using the package `lme4`. If you had difficulties to solve Problem 1, then you can also use the following dataset.

```
## /Users/pvr/Data/Projects/Github/charlotte-ngs/asmss2022_gh-root/main/asmss2022/docs/data/asm_ex08_p0
```