

Assignment 6

1. Examine differences between `lsq.f90` and `lsqmt.f90`. Run the latter. Change R_0 to these matrices:

$$R_0 = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}, \quad \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \end{bmatrix}$$

and compare solutions. Should they be different?

2. Write a program that creates the inverse of the animal relationship matrix. Use the following pedigree:

<u>animal</u>	<u>sire</u>	<u>dam</u>
1	3	4
2	3	4
3	5	-
4	-	-

3. Incorporate the program above in `lsq.f90`. Run it with data of the yesterday's assignment and pedigrees as above assuming $\text{var}(e)=\mathbf{I}10$ and $\text{var}(\text{animal})=$

- a) $\mathbf{I}2$.
- b) $\mathbf{A}2$

Compare solutions.

4. Modify parameters in `blup.f90` to support the same models as above. Compare solutions. Estimable functions should be identical.

Optional

5. In 3, make management autocorrelated with $\text{var}(\text{management})=5$ and $\rho=.8$. Then, vary the autocorrelation to 0.98 and 0.9 and compare solutions for the management effects.