Animal 4:

- Inspect 5th row of MME

$$1\cdot\hat{\mu} - 2\hat{u}_1 - 2\hat{u}_2 + 1\cdot\hat{u}_3 + 6\hat{u}_4 - 2\hat{u}_5 = 3.5 = y_4$$

Solve for $\hat{u}_4$:

$$6\hat{u}_4 = y_4 - 1\cdot\hat{\mu} + 2\hat{u}_1 + 2\hat{u}_2 - 1\cdot\hat{u}_3 + 2\hat{u}_5$$

$$\hat{u}_4 = \frac{1}{6}\left[y_4 - \hat{\mu} + 2\hat{u}_1 + 2\hat{u}_2 - \hat{u}_3 + 2\hat{u}_5\right]$$

- Predicted breeding value $\hat{u}_4$ of animal 4 depends on:
  - observation for animal 4, corrected for fixed effects $\hat{\mu}$
  - predicted breeding values $\hat{u}_1$ and $\hat{u}_2$ of parents 1 and 2
  - predicted breeding value $\hat{u}_3$ of mate 3
  - predicted breeding value $\hat{u}_5$ of offspring 5