Ex 9: Pr 1:

$$\Delta F = \frac{1}{(2N)} = 1/(2N)$$

$$\text{var}(m) = D \cdot \sigma_u^2 = ?$$

D: diagonal

$$u_i = 1/2\, u_s + 1/2\, u_{sl} + m_i$$

$$\underbrace{\text{var}(u_i)}_{(1+F_i)\sigma_{u2}} = \text{var}(1/2\, u_s + 1/2\, u_{sl} + m_i)$$

$$= 1/4\, \text{var}(u_s) + 1/4\, \text{var}(u_{sl}) + \text{var}(m_i) + 2 \cdot \text{cov}(1/2\, u_s, 1/2\, u_{sl})$$

$$= 1/4\, \text{var}(u_s) + 1/4\, \text{var}(u_{sl}) + \text{var}(m_i) + 1/2\, \text{cov}(u_s, u_d)$$

$$(1+F_i)\cdot\sigma_u^2 = 1/4\,(1+F_s)\sigma_u^2 + 1/4\,(1+F_{sl})\cdot\sigma_u^2 + \text{var}(m_i) + 1/2\, A_{sd}\cdot\sigma_u^2$$

$$= 1/4\,\sigma_u^2(1+F_s) + 1/4\,\sigma_u^2(1+F_{sl}) + \underbrace{\text{var}(m_i)}_{(D)_{ii}\cdot\sigma_u^2} + 1/2 \cdot 2F_i\cdot\sigma_u^2$$

$$\text{var}(m_i) = (1+F_i)\sigma_u^2 - F_i\sigma_u^2 - 1/4\,\sigma_u^2(1+F_s$$