例 9.10　A107270094 吳宜莉
企管二甲.

$H_0: \mu_1 = \mu_2 = \mu_3$, $n = 5+6+6 = 17$

$SST = \sum_{i=1}^{3} \sum_{j=1}^{n_i} y_{ij}^2 - \frac{T^2}{n}$

$= 39.159 - 33.264 = 5.895$

$SSTR = \sum_{i=1}^{k} \left(\frac{T_i^2}{n_i}\right) - \frac{T^2}{n}$

$= 37.873 - 33.264 = 4.609$

$SSE = SST - SSTR = 1.286$

聯合信賴區間計算

$m = \binom{3}{2} = 3$, $\frac{\alpha}{2m} = \frac{0.05}{2\times3} = 0.0083$

$t_{\frac{\alpha}{2m}}(14) = t_{0.0083}(14) = 2.718$

$S = \sqrt{MSE} = \sqrt{0.092} = 0.303$

95% 信賴區間

$\mu_2 - \mu_1 = (1.53 - 0.63) \pm 2.718 \times 0.303 \times \sqrt{\frac{1}{6}+\frac{1}{5}}$
$= (0.401, 1.399)$，不包含 0.

$\mu_3 - \mu_2 = (1.91 - 1.53) \pm 2.718 \times 0.303 \times \sqrt{\frac{1}{6}+\frac{1}{6}}$
$= (-0.095, 0.855)$，包含 0

$\mu_3 - \mu_1 = (1.91 - 0.63) \pm 2.718 \times 0.303 \times \sqrt{\frac{1}{6}+\frac{1}{5}}$
$= (0.781, 1.779)$，不包含 0

變異來源	平方和	自由度	均方	F 檢定值
減肥藥	SSTR=4.609	3-1=2	MSTR=2.305	$\frac{2.305}{0.092} = 25.05$
隨機誤差	SSE=1.286	17-3=14	MSE=0.092	
總和	SST=5.895	17-1=16		

結論：減肥藥2與3無顯著差異，但方法 1.2 與 1.3 有..

$F = 25.05 > F_{0.05}(2,14) = 3.74$

棄卻 H_0，認為3種減肥藥有明顯差異

例 9.12（承例 9.10）

$m = \binom{3}{2} = 3$, $F_{0.05}(3-1, 17-3) = 3.74$

$s = \sqrt{MSE} = \sqrt{0.092} = 0.303$,

$\sqrt{(k-1)F} = \sqrt{(3-1)3.74} = 2.73$

95% 信賴區間：

$\mu_2 - \mu_1 : (1.53 - 0.63) \pm 2.73 \times 0.303 \times \sqrt{\frac{1}{6}+\frac{1}{5}} = (0.399, 1.401)$，不包含 0

$\mu_3 - \mu_2 : (1.91 - 1.53) \pm 2.73 \times 0.303 \times \sqrt{\frac{1}{6}+\frac{1}{6}} = (-0.098, 0.858)$，包含 0

$\mu_3 - \mu_1 : (1.91 - 0.63) \pm 2.73 \times 0.303 \times \sqrt{\frac{1}{6}+\frac{1}{6}} = (0.779, 1.781)$，不包含 0

只有減肥藥 2與3 間無明顯差異，此算法信賴區間較寬