Ⅰ. Short Review

1. Cross Tabulation
   - Row and Column marginal : the frequency for one of the two variables, irrespective of the other variable
   - Row and Column percentage : $\frac{f}{N_{row}} \times 100$, $\frac{f}{N_{column}} \times 100$; To compare performance on the dependent variable across categories of the independent variable. Use IV's %

2. Non-parametric test : X^2 (Chi Square)
   - One-way X^2 : H_0 : $X^2=0$, $X^2 = \sum\frac{(F_a-F_e)^2}{F_e}$, DoF = k-1 (k: # of cell). $X^2_{obs} > X^2_{crit}$: Reject the null
   - Two-way X^2 : $F_e = \frac{N_{row} \times N_{column}}{N_{total}}$, DoF = (R-1)(C-1)
   - Residual Analysis (Adjusted Residual) : X^2 is like Anova,
     So, Adjusted Residual = $\frac{F_a-F_e}{\sqrt{F_e(1-P_{row})(1-P_{column})}}$
   - When the expected value in any category is less than 5, use corrections to Chi-Square (Fisher's Exact Test, or Yule's Q).

3. Measure of Magnitude (φ, C, V)
   - Φ(Phi coefficient) : $\sqrt{\frac{X^2}{N}}$; For 2×2
   - Contingency Coefficient(C) : C = $\sqrt{\frac{X^2}{N+X^2}}$; For n x n (n≥2)
   - Cramer's V(V) : V = $\sqrt{\frac{X^2}{N(K-1)}}$; K = either the number of columns or the number of rows, whichever is smaller.
   - It is not test, So when $X^2_{obs} > X^2_{crit}$, Reject the null that φ or C or V is 0 in the population
   - Scale : 0 : no relationship, ≤ 0.25 : weak relationship, 0.25< < 0.5 : weak to moderate relationship, = 0.5 : moderate, 0.5< <0.75 : moderate to strong, ≥ 0.75 : strong, = 1 : Perfect. Ex) In my sample, weak to moderate relationship.

4. Proportionate Reduction in Error (PRE)
   - Measure of Association (λ) : λ = $\frac{F_{iv}-M_{dv}}{N-M_{dv}}$; F_{iv} = the sum of the largest cell frequencies of IV , M_{dv} = the largest marginal total of DV ; asymmetrical
     knowing IV reduced our errors in prediction by λ%

Ⅱ Problems

1. Test the table

		OFFICER TYPE	
		Conflict Minimizer	Control
USED FORCE?	No	90	65
	Yes	10	35

2. Calculate measure of magnitude of above table