Question 2

e)  i) There might be strong correlation between these three variables, including age (yrs), tenure (yrs), and experience (yrs). This may cause multicollinearity.

   ii) Yes, it does. Based on part a, we observe that there is strong correlation between these three variables and so there appear to be a problem. To be specific, we observe that there seems exist positive correlation between age and tenure, age and experience, and tenure and experience.

   iii) 1.69262 is smaller than 10, so multicollinearity is not a problem with the age variable.

```
# e)
# iii)
ate <- lm(AGE~EDUCATN+bg+TENURE+EXPER+SALES+VAL+PCNTOWN+PROF)
summary(ate)
vif<-1/(1-0.4092)
vif
```

```
Call:
lm(formula = AGE ~ EDUCATN + bg + TENURE + EXPER + SALES + VAL +
    PCNTOWN + PROF)

Residuals:
    Min      1Q   Median      3Q     Max
-14.9566  -3.1287   0.3468   3.2341  17.2648

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  5.971e+01  4.253e+00  14.041   <2e-16 ***
EDUCATN     -3.908e+00  1.634e+00  -2.391   0.0208 *
bg2         -2.842e+00  2.460e+00  -1.155   0.2537
bg3         -7.663e-01  2.388e+00  -0.321   0.7497
bg4          3.452e+00  2.631e+00   1.312   0.1958
bg5         -1.090e-01  2.348e+00  -0.046   0.9632
TENURE       7.905e-02  8.518e-02   0.928   0.3581
EXPER        2.421e-01  1.057e-01   2.292   0.0265 *
SALES       -5.427e-05  1.901e-04  -0.285   0.7765
VAL          6.591e-04  6.017e-03   0.110   0.9132
PCNTOWN     -2.660e-01  2.632e-01  -1.011   0.3174
PROF         2.220e-03  3.581e-03   0.620   0.5382
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 5.509 on 47 degrees of freedom
Multiple R-squared:  0.4092,    Adjusted R-squared:  0.2709
F-statistic: 2.959 on 11 and 47 DF,  p-value: 0.004682
```