Assignment 5

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Exercise 1 Figure 1 and listing 1 show results for the multiple linear regression model with target variable 'Wage'.

Listing 1: Summary of multiple regression fit for exercise 1

```
Residuals:
     Min        1Q    Median        3Q       Max
-243.334   -75.119     2.669    70.007   276.238

Coefficients:
              Estimate  Std. Error  t value  Pr(>|t|)
(Intercept) -576.22317    24.08079  -23.929    <2e-16 ***
ID             0.02952     0.03114    0.948     0.344
Education    397.90661     1.54440  257.645    <2e-16 ***
Gendermale   597.94707     9.17422   65.177    <2e-16 ***
---

Residual standard error: 100.1 on 493 degrees of freedom
Multiple R-squared:  0.9931,    Adjusted R-squared:  0.9931
F-statistic: 2.362e+04 on 3 and 493 DF,  p-value: < 2.2e-16
```
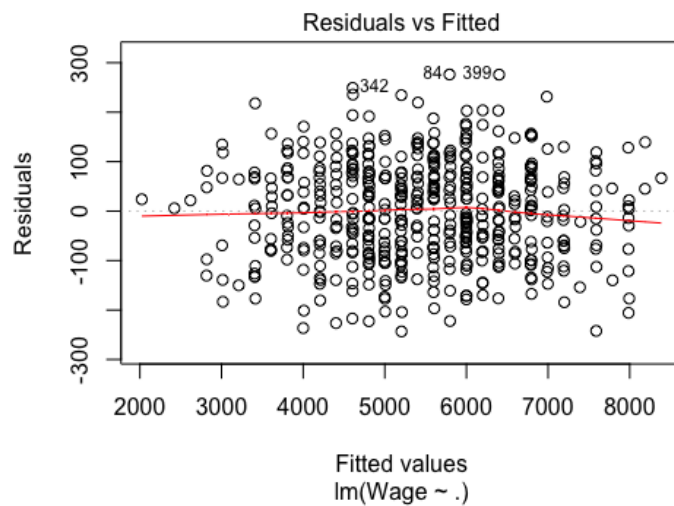
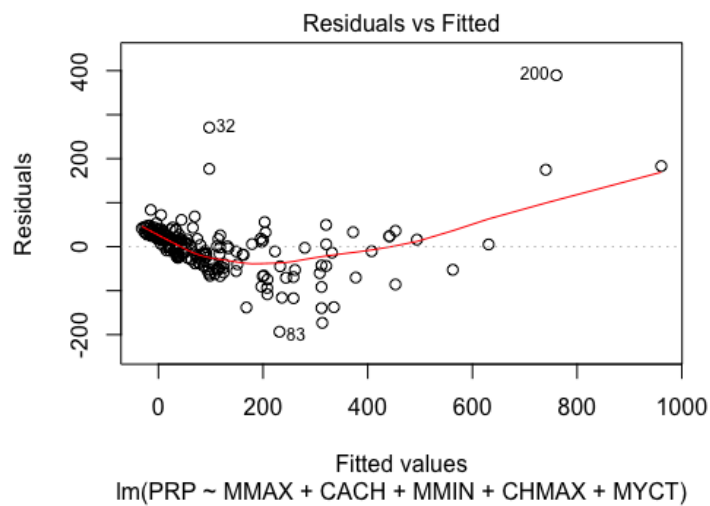Fig. 1: Plot showing the residuals against the fit of the multiple regression model of exercise 1.

Fig. 2: Plot showing the residuals against the fit of the multiple regression model of exercise 2.
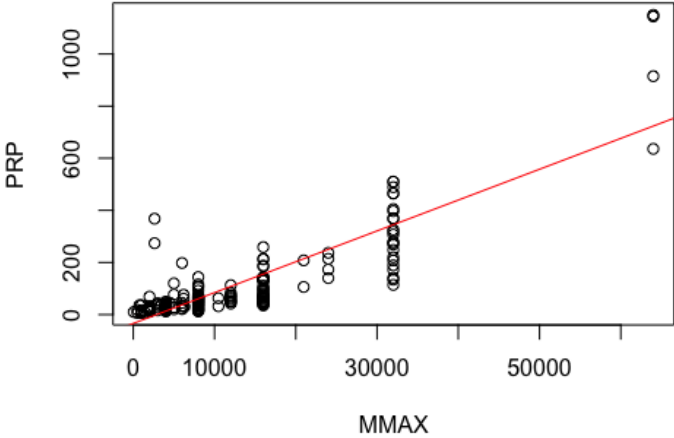
Fig. 3: Plot showing the linear regression model of exercise 3.
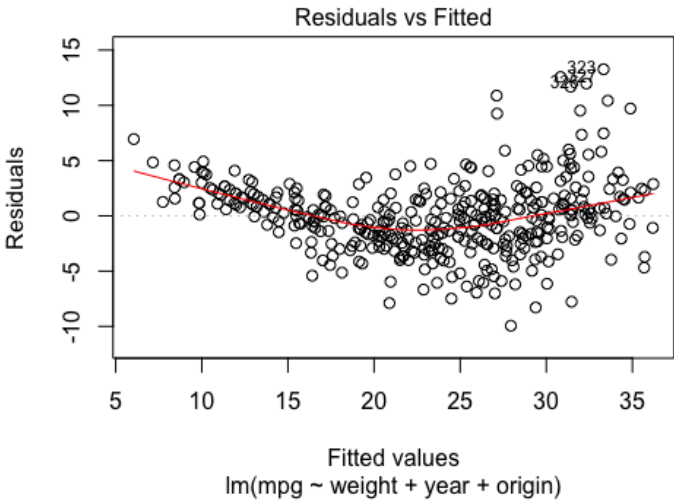

Fig. 4: Plot showing the residuals against the fit of the multiple regression model of exercise 4.
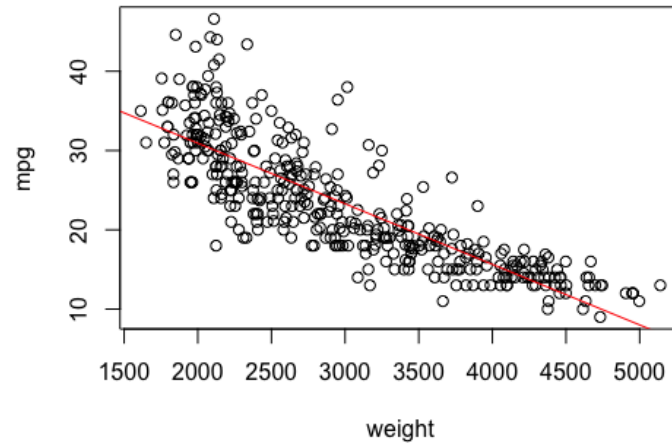
Fig. 5: Plot showing the linear regression model of exercise 4.

Listing 2: Summary of multiple regression fit for exercise 2

```
Residuals:
    Min      1Q   Median      3Q      Max
-193.37  -24.95    5.76   26.64   389.66


Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept) -5.608e+01  8.007e+00   -7.003 3.59e-11 ***
MMAX         5.562e-03  6.396e-04    8.695 1.18e-15 ***
CACH         6.298e-01  1.344e-01    4.687 5.07e-06 ***
MMIN         1.518e-02  1.788e-03    8.490 4.34e-15 ***
CHMAX        1.460e+00  2.076e-01    7.031 3.06e-11 ***
MYCT         4.911e-02  1.746e-02    2.813   0.0054 **
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Residual standard error: 59.86 on 203 degrees of freedom
Multiple R-squared:  0.8648,     Adjusted R-squared:  0.8615
F-statistic: 259.7 on 5 and 203 DF,  p-value: < 2.2e-16
```

Listing 3: Summary of multiple regression fit for exercise 4

```
Residuals:
    Min      1Q  Median      3Q     Max
-9.9440 -2.0948 -0.0389  1.7255 13.2722

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept) -1.805e+01  4.001e+00   -4.510 8.60e-06 ***
weight      -5.994e-03  2.541e-04  -23.588  < 2e-16 ***
year         7.571e-01  4.832e-02   15.668  < 2e-16 ***
origin       1.150e+00  2.591e-01    4.439 1.18e-05 ***
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Residual standard error: 3.348 on 388 degrees of freedom
Multiple R-squared:  0.8175,    Adjusted R-squared:  0.816
F-statistic: 579.2 on 3 and 388 DF,  p-value: < 2.2e-16
```