

Practical 5, solutions

```
data(Cars1)
x<-Cars1[,-1]
y<-Cars1[,1]
library(mctest)
mctest(x, y, type=c("b"), na.rm = TRUE,
       Inter=TRUE, method=NULL, corr=TRUE, detr=0.01, red=0.5,
       theil=0.5, cn=30, vif=5, tol=0.1, conf=0.95, cvif=10,
       leamer=0.1, all=FALSE)
eigprop(x)
```

Overall Multicollinearity Diagnostics

	MC Results	detection
Determinant $ X'X $:	0.0000	1
Farrar Chi-Square:	927.6313	1
Red Indicator:	0.7750	1
Sum of Lambda Inverse:	255.2278	1
Theil's Method:	1.6544	1
Condition Number:	135.4525	1

1 --> COLLINEARITY is detected by the test
0 --> COLLINEARITY is not detected by the test

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All Individual Multicollinearity Diagnostics Result

	VIF	TOL	Wi	Fi	Leamer	CVIF	Klein
Citympg	88.6628	0.0113	1314.9415	1665.5926	0.1062	-6.6515	1
Citympg2	66.8970	0.0149	988.4555	1252.0437	0.1223	-5.0186	1
EngineSize	7.2288	0.1383	93.4322	118.3474	0.3719	-0.5423	1
Horsepower	46.8035	0.0214	687.0531	870.2672	0.1462	-3.5112	1
Horsepower2	31.2419	0.0320	453.6280	574.5954	0.1789	-2.3438	1
weight	14.3938	0.0695	200.9067	254.4819	0.2636	-1.0798	1

1 --> COLLINEARITY is detected by the test
0 --> COLLINEARITY is not detected by the test

Horsepower2 , coefficient(s) are non-significant may be due to multicollinearity

R-square of y on all x: 0.8116

* use method argument to check which regressors may be the reason of collinearity

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	Eigenvalues	CI	Intercept	Citympg	Citympg2	EngineSize	Horsepower	Ho
1	6.2039	1.0000	0.0000	0.0000	0.0001	0.0004	0.0001	
2	0.6604	3.0650	0.0000	0.0001	0.0021	0.0016	0.0003	
3	0.1048	7.6930	0.0005	0.0000	0.0060	0.0359	0.0002	
4	0.0265	15.3117	0.0063	0.0010	0.0208	0.3538	0.0051	
5	0.0025	49.4257	0.0608	0.0300	0.0892	0.3191	0.2538	
6	0.0015	63.4522	0.0014	0.0032	0.0051	0.2434	0.7342	
7	0.0003	135.4525	0.9309	0.9657	0.8767	0.0456	0.0064	
weight								
1	0.0001							
2	0.0000							
3	0.0025							
4	0.0029							
5	0.2306							
6	0.6749							
7	0.0889							

```

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Row 7==> Citympg, proportion 0.965656 >= 0.50
Row 7==> Citympg2, proportion 0.876735 >= 0.50
Row 6==> Horsepower, proportion 0.734159 >= 0.50
Row 6==> Horsepower2, proportion 0.575298 >= 0.50
Row 6==> weight, proportion 0.674942 >= 0.50

```