

Answers:

Q1: Which car has the best hp (hp stands for “horse power”)

1. Is higher or lower hp best?

A1: Higher hp is generally considered better for performance.

2. Which car has the best hp?

A:

```
> best_hp_car <- myCars[which.max(myCars$hp), "hp"]
> print(paste("Car with the best hp:", rownames(best_hp_car)))
[1] "Car with the best hp: "
>
> max_mpg <- max(myCars$mpg)
> print(max_mpg)
[1] 33.9
> print(best_hp_car)
[1] 335
```

Q2: Explore mpg (mpg stands for “miles per gallon”)

1. What is the highest mpg?

A1:

```
> best_mpg_car <- myCars[which.max(myCars$mpg), "mpg"]
> print(best_mpg_car)
[1] 33.9
> best_mpg_car <- myCars[which.max(myCars$mpg), ]
> print(best_mpg_car)
      mpg cyl disp hp drat   wt  qsec vs am gear carb
Toyota Corolla 33.9   4  71.1 65 4.22 1.835 19.9  1  1    4    1
> best_mpg_car <- rownames(myCars)[which.max(myCars$mpg)]
> print("best_mpg_car")
[1] "best_mpg_car"
> print(best_mpg_car)
[1] "Toyota Corolla"
```

2. Which car has the highest mpg?

A2:

```
> best_mpg_car <- myCars[which.max(myCars$mpg), "mpg"]
> print(best_mpg_car)
[1] 33.9
> best_mpg_car <- myCars[which.max(myCars$mpg), ]
> print(best_mpg_car)
      mpg cyl disp hp drat   wt  qsec vs am gear carb
Toyota Corolla 33.9   4  71.1 65 4.22 1.835 19.9  1  1    4    1
> best_mpg_car <- rownames(myCars)[which.max(myCars$mpg)]
> print("best_mpg_car")
[1] "best_mpg_car"
> print(best_mpg_car)
[1] "Toyota Corolla"
```

3. Create a sorted dataframe, based on mpg.

A3:

```
> sorted_mpg_df <- mtcars[order(mtcars$mpg), ]
> print("Sorted dataframe based on mpg:")
[1] "Sorted dataframe based on mpg:"
> print(sorted_mpg_df)
```

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	8
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2
Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	4
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
Pontiac Firebird	19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	2
Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2
Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
Porsche 914-2	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
Fiat X1-9	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
Lotus Europa	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1

Q3: Which car has the “best” combination of mpg and hp?

1.What logic did you use?

A1:

```
> best_combination_car <- myCars[which.max(myCars$hp + myCars$mpg), ]
> print(best_combination_car)
```

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Maserati Bora	15	8	301	335	3.54	3.57	14.6	0	1	5	8

```
> print(paste("Car with the best combination of mpg and hp:", rownames(best_combination_car)))
[1] "Car with the best combination of mpg and hp: Maserati Bora"
> |
```

2.Which car?

A2: “Maserati Boar”

Q4: Which car has “best” combination of mpg and hp, where mpg and hp must be given equal weight?

A:

```
> norml_mpg <- scale(myCars$mpg)
> norml_hp <- scale(mtcars$hp)
> weighted_score_1 <- norml_mpg + norml_hp
> best_combination_car <- myCars[which.max(weighted_score_1), ]
>
> print(paste("best car with combination of mpg and hp (equal weight):", rownames(best_combination_car)))
[1] "best car with combination of mpg and hp (equal weight): Maserati Bora"
```