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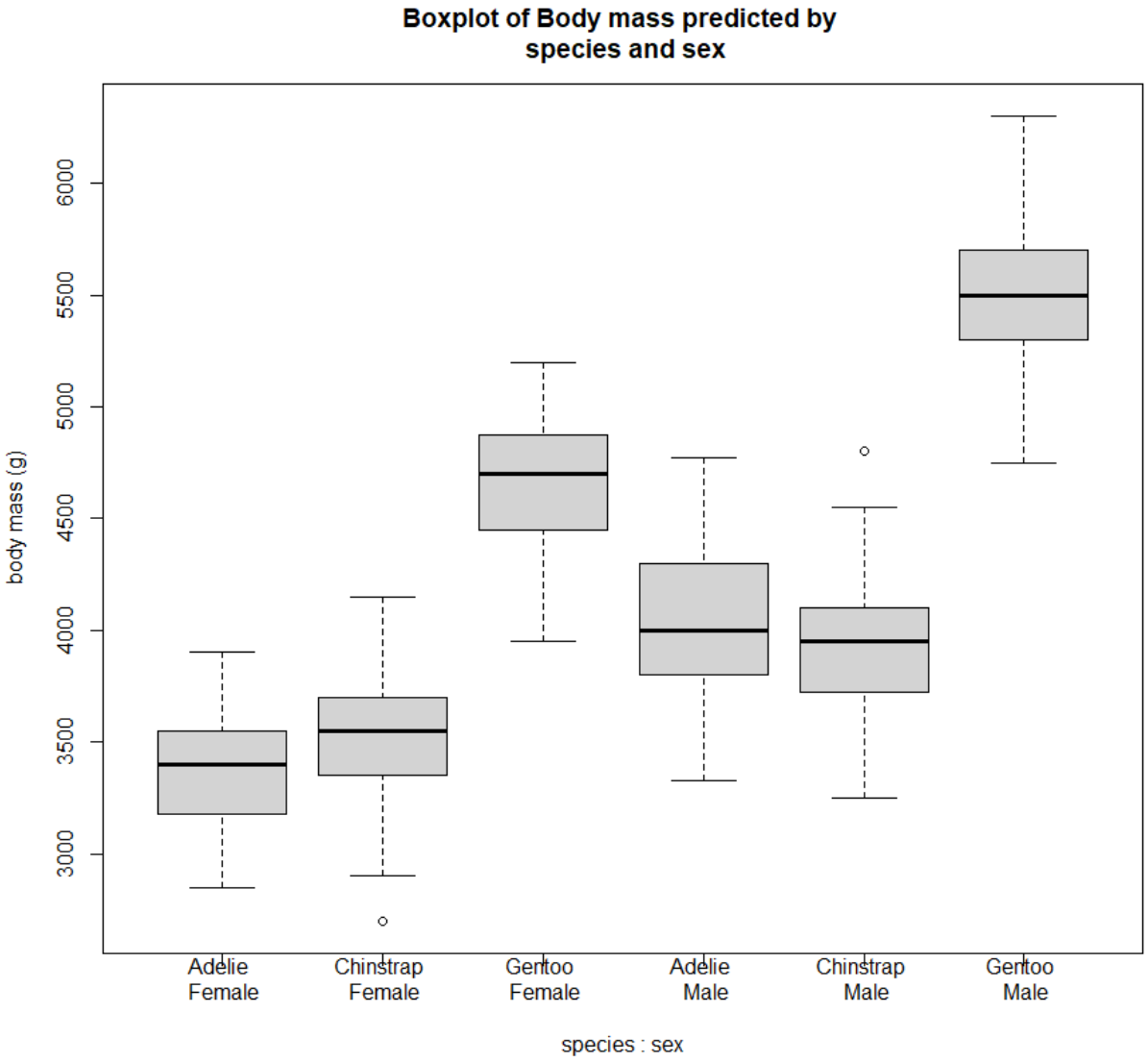
Using Models 2

Q1



Q2

Based on the boxplots, I think male penguins are significantly heavier than female penguins. By looking at the graph above, The mean male body weights for each species are all between 500g-1000g greater than the corresponding female body mass

Q3

Yes, I do think adding sex to the model will improve the model fit. Only measuring the average body mass of the species will not provide an accurate spread of observations present amongst male and females. This is evident by the different mean values between the males and females for each corresponding species.

Q4

```
fit_both = lm(body_mass_g ~ species * sex, data = penguins)
```

Q5

The base case for the two-way model is Adelie female penguins

Q6

(Intercept) and speciesChinstrap

Q7

3527.21 g

Q8

```
aggregate(body_mass_g ~ species * sex,
        data = penguins,
        FUN = mean)
```

The observed average mass of female chinstrap penguins is **3527.206**