INTERACTION PRACTICAL: Logistic regression

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Generate data on gender admission patterns into a school's departments A to F using the following code:

```
data.logistic = data.frame(gender=rep(c("Male","Female"),c(6,6)),
                           dept=rep(LETTERS[1:6],2),
                           yes=c(512,353,120,138,53,22,89,17,202,131,94,24),
                           no=c(313,207,205,279,138,351,19,8,391,244,299,317))
```

a) Model the admission probability using a logistic regression with an interaction. The codes below will help in this:

```
mod.form = "cbind(yes,no) ~ gender * dept"
               glm.out = glm(mod.form, family=binomial(logit),
                             data=data.logistic )
               summary(glm.out)
```

b) Where possible, interpret all the model coefficients. May use the code :

```
exp(coef(glm.out))  #to obtain the odds ratios.
```

c) Fit a model without an interaction term. Use Likelihood Ratio Test to check the need for interaction term.