DATA-101 IN-CLASS ASSIGNMENT NOVEMBER 2, 2021

1. (3 points) In predictive modeling, the goal is to select the model that can be easily interpreted.
   (a) True
   (b) False
   (c) It depends
   (d) All of the above
   (e) None of the above
2. (3 points) Does over-fitting generate good predictive models?
   (a) True
   (b) False
   (c) It depends
   (d) All of the above
   (e) None of the above
3. (3 points) Which of the following models is preferred?
   - Model 1 has AIC = 245.8
   - Model 2 has AIC = 230.2
   - Model 3 has AIC = 250.7

   (a) Model 1
   (b) Model 2
   (c) Model 3
   (d) Models 1 and 2
   (e) Models 1 and 3
   (f) Models 2 and 3
   (g) All of the them

Consider the `Customer_Churn.csv` datafile. Each row represents a customer, each column contains customer's attributes described on the column Metadata. The data set includes information about:

- Customers who left within the last month, the column is called Churn.
- Services that each customer has signed up for phone, multiple lines, internet, online security, online backup, device protection, tech support, and streaming TV and movies.
- Customer account information: how long they've been a customer, contract, payment method, paperless billing, monthly charges, and total charges.
- Demographic info about customers: gender, age range, and if they have partners and dependent

4. **In R**, answer the following:
   (a) (3 points) Using the `read.csv` function, read the csv file and create a data-frame called `churn`.

(b) (3 points) Using the `ifelse` function, create a variable called `Churn_numb` that takes the value of 1 when `Churn = Yes` and 0 when `Churn = No`.

(c) (5 points) Define the null logistic regression model (a model with only the intercept as the predictor variable) and the full logistic regression model (a model with `gender`, `SeniorCitizen`, `tenure`, `Contract`, `PaperlessBilling`, `MonthlyCharges`, `DeviceProtection`, and `TechSupport` as the predictor variables).

(d) (4 points) Perform forward selection.

(e) (4 points) Perform backward selection.

The End.