PROJECT INSTRUCTIONS

- Identify the single feature of the data that is the best predictor of whether a customer will put in a claim (the `"outcome"` column), excluding the `"id"` column.
- Store as a DataFrame called `best_feature_df`, containing columns named `"best_feature"` and `"best_accuracy"` with the name of the feature with the highest accuracy, and the respective accuracy score.

DATASET

The dataset

Column	Description
`id`	Unique client identifier
`age`	Client's age: • `0` : 16-25 • `1` : 26-39 • `2` : 40-64 • `3` : 65+
`gender`	Client's gender: • `0` : Female • `1` : Male
`driving_experience`	Years the client has been driving: • `0` : 0-9 • `1` : 10-19 • `2` : 20-29 • `3` : 30+
`education`	Client's level of education: • `0` : No education • `1` : High school • `2` : University

`income`	Client's income level: • `0` : Poverty • `1` : Working class • `2` : Middle class • `3` : Upper class
`credit_score`	Client's credit score (between zero and one)
`vehicle_ownership`	Client's vehicle ownership status: • `0` : Does not own their vehilce (paying off finance) • `1` : Owns their vehicle
`vehcile_year`	Year of vehicle registration: • `0` : Before 2015 • `1` : 2015 or later
`married`	Client's marital status: • `0` : Not married • `1` : Married
`children`	Client's number of children
`postal_code`	Client's postal code
`annual_mileage`	Number of miles driven by the client each year
`vehicle_type`	Type of car: • `0` : Sedan • `1` : Sports car
`speeding_violations`	Total number of speeding violations received by the client
`duis`	Number of times the client has been caught driving under the influence of alcohol
`past_accidents`	Total number of previous accidents the client has been involved in
`outcome`	Whether the client made a claim on their car insurance (response variable): • `0` : No claim • `1` : Made a claim

SOLUTION

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10000 entries, 0 to 9999
Data columns (total 18 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   id                   10000 non-null  int64
 1   age                  10000 non-null  int64
 2   gender               10000 non-null  int64
 3   driving_experience   10000 non-null  object
 4   education            10000 non-null  object
 5   income               10000 non-null  object
 6   credit_score         9018 non-null   float64
 7   vehicle_ownership    10000 non-null  float64
 8   vehicle_year         10000 non-null  object
 9   married              10000 non-null  float64
 10  children             10000 non-null  float64
 11  postal_code          10000 non-null  int64
 12  annual_mileage       9043 non-null   float64
 13  vehicle_type         10000 non-null  object
 14  speeding_violations  10000 non-null  int64
```

```
 15   duis                   10000 non-null   int64
 16   past_accidents         10000 non-null   int64
 17   outcome                10000 non-null   float64
dtypes: float64(6), int64(7), object(5)
memory usage: 1.4+ MB
Optimization terminated successfully.
        Current function value: 0.511794
        Iterations 6
Optimization terminated successfully.
        Current function value: 0.615951
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.467092
        Iterations 8
Optimization terminated successfully.
        Current function value: 0.603742
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.531499
        Iterations 6
```

```
Optimization terminated successfully.
        Current function value: 0.572557
        Iterations 6
Optimization terminated successfully.
        Current function value: 0.552412
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.572668
        Iterations 6
Optimization terminated successfully.
        Current function value: 0.586659
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.595431
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.617345
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.605716
```

```
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.621700
        Iterations 5
Optimization terminated successfully.
        Current function value: 0.558922
        Iterations 7
Optimization terminated successfully.
        Current function value: 0.598699
        Iterations 6
Optimization terminated successfully.
        Current function value: 0.549220
        Iterations 7
```

	best_feature ⌄	best_accuracy ⌄
0	driving_experience	0.7771

Table   Chart