In [1]:

```
from sklearn import tree
from pandas import read_csv
from sklearn.tree import DecisionTreeClassifier
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
df=read_csv("Travel.csv")
```

In [2]:

```
df
```

Out[2]:

	Age	EmploymentType	GraduateOrNot	AnnualIncome	FamilyMembers	ChronicDiseases	FrequentFlyer	EverTravelledAbroad	TravelInsura
0	31	Government Sector	Yes	400000	6	1	No	No	
1	31	Private Sector/Self Employed	Yes	1250000	7	0	No	No	
2	34	Private Sector/Self Employed	Yes	500000	4	1	No	No	
3	28	Private Sector/Self Employed	Yes	700000	3	1	No	No	
4	28	Private Sector/Self Employed	Yes	700000	8	1	Yes	No	
...	...	...	...	...	...	...	...	...	
1982	33	Private Sector/Self Employed	Yes	1500000	4	0	Yes	Yes	
1983	28	Private Sector/Self Employed	Yes	1750000	5	1	No	Yes	
1984	28	Private Sector/Self Employed	Yes	1150000	6	1	No	No	
1985	34	Private Sector/Self Employed	Yes	1000000	6	0	Yes	Yes	
1986	34	Private Sector/Self Employed	Yes	500000	4	0	No	No	

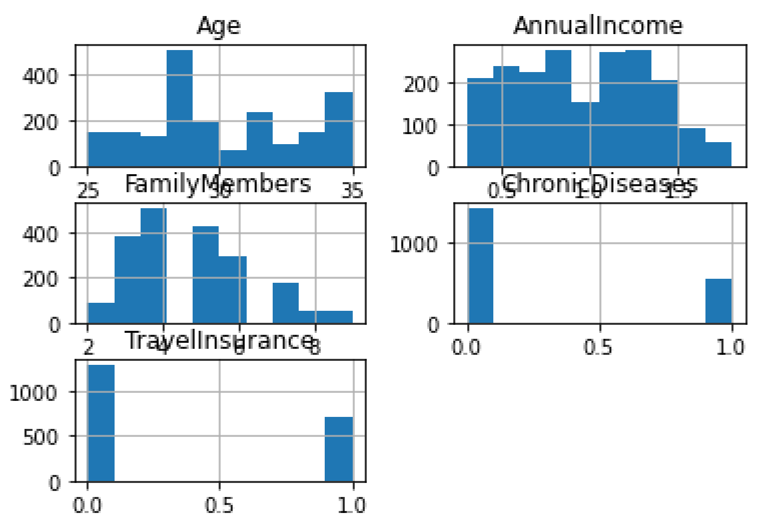
1987 rows × 9 columns

In [3]:

```
df.hist()
plt.show
```

Out[3]:

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



In [4]:

```
features=['Age', 'AnnualIncome', 'FamilyMembers','ChronicDiseases']
X=df[features]
y=df['TravelInsurance']
print(X)
print(y)
```

```
      Age  AnnualIncome  FamilyMembers  ChronicDiseases
0      31        400000              6                1
1      31       1250000              7                0
2      34        500000              4                1
3      28        700000              3                1
4      28        700000              8                1
...   ...           ...            ...              ...
1982   33       1500000              4                0
1983   28       1750000              5                1
1984   28       1150000              6                1
1985   34       1000000              6                0
1986   34        500000              4                0

[1987 rows x 4 columns]
0       0
1       0
2       1
3       0
4       0
       ..
1982    1
1983    0
1984    0
1985    1
1986    0
Name: TravelInsurance, Length: 1987, dtype: int64
```

In [5]:

```
inputs=df.drop('TravelInsurance',axis='columns')
target=df['TravelInsurance']
```

In [6]:

```
from sklearn.preprocessing import LabelEncoder
le_EmploymentType=LabelEncoder()
le_GraduateOrNot=LabelEncoder()
le_FrequentFlyer=LabelEncoder()
le_EverTravelledAbroad=LabelEncoder()
inputs['EmploymentType_n']=le_EmploymentType.fit_transform(inputs['EmploymentType'])
inputs['GraduateOrNot_n']=le_GraduateOrNot.fit_transform(inputs['GraduateOrNot'])
inputs['FrequentFlyer_n']=le_FrequentFlyer.fit_transform(inputs['FrequentFlyer'])
inputs['EverTravelledAbroad_n']=le_EverTravelledAbroad.fit_transform(inputs['EverTravelledAbroad'])
inputs.head()
```

Out[6]:

	Age	EmploymentType	GraduateOrNot	AnnualIncome	FamilyMembers	ChronicDiseases	FrequentFlyer	EverTravelledAbroad	EmploymentTy
0	31	Government Sector	Yes	400000	6	1	No	No	
1	31	Private Sector/Self Employed	Yes	1250000	7	0	No	No	
2	34	Private Sector/Self Employed	Yes	500000	4	1	No	No	
3	28	Private Sector/Self Employed	Yes	700000	3	1	No	No	
4	28	Private Sector/Self Employed	Yes	700000	8	1	Yes	No	

In [7]:

```
inputs_n=inputs.drop(['EmploymentType','GraduateOrNot','FrequentFlyer','EverTravelledAbroad'],axis='columns')
inputs_n
```

Out[7]:

	Age	AnnualIncome	FamilyMembers	ChronicDiseases	EmploymentType_n	GraduateOrNot_n	FrequentFlyer_n	EverTravelledAbroad_n
0	31	400000	6	1	0	1	0	0
1	31	1250000	7	0	1	1	0	0
2	34	500000	4	1	1	1	0	0
3	28	700000	3	1	1	1	0	0
4	28	700000	8	1	1	1	1	0
...	...	...	...	...	...	...	...	...
1982	33	1500000	4	0	1	1	1	1
1983	28	1750000	5	1	1	1	0	1
1984	28	1150000	6	1	1	1	0	0
1985	34	1000000	6	0	1	1	1	1
1986	34	500000	4	0	1	1	0	0

1987 rows × 8 columns

In [8]:

```
### SVM CLASSIFICATION
```

In [9]:

```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=0)
```

In [10]:

```
from sklearn.svm import SVC
model=SVC()
model.fit(X_train,y_train)
```

Out[10]:

```
SVC()
```

In [11]:

```
y_pred=model.predict(X_test)
print(y_pred)
```

```
[1 0 0 0 0 1 1 0 0 0 1 0 0 0 0 1 1 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 1 0 0 1 0 0 0
 1 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 1 0 1 0 1 0 0 1 1 0 0 0 0 1 0 1 0 0 0 0 0 1 0 1 0 0 1 0 0
 0 1 0 0 0 1 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 0 0 1 1 0 0
 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0 0 1 0 1 0 0 1 0 0 0 0
 0 1 1 0 0 1 0 0 0 0 0 0 0 1 0 0 1 1 0 1 1 0 0 0 0 0 0 0 1 0 0 1 0 0 1 0
 0 0 0 1 0 1 0 1 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 1 0 1 1 0 0 0 1 0 0
 1 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0
 1 1 1 0 0 0 0 0 1 0 1 1 0 0 0 0 0 1 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0
 0 1 1 0 1 0 0 0 1 0 0 0 0 0 0 0 0 1 0 1 0 1 0 0 1 1 0 0 0 0 0 0 1 0 0 1 1
 0 0 0 0 1 0 1 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 1 1 1 0 0 0
 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 0 1 0 1 0 1 0 0 0 0
 0 0 0 0 0 0 0 1 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0
 0 0 0 1 0 0 0 0 1 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 1 0 0 1 0 0 1 1 1 0 0 0
 0 0 0 1 0 1 1 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0 0 1
 0 0 0 0 1]
```

In [12]:

```
model.fit(X_train,y_train)
```

Out[12]:

```
SVC()
```

In [13]:

```
model.score(X_test,y_test)
```

Out[13]:

```
0.8023450586264657
```

In [14]:

```
#importing r2_score module
from sklearn.metrics import r2_score
from sklearn.metrics import mean_squared_error
# predicting the accuracy score
score=r2_score(y_test,y_pred)
print('r2 socre is ',score)
print('mean_sqrd_error is==',mean_squared_error(y_test,y_pred))
print('root_mean_squared error of is==',np.sqrt(mean_squared_error(y_test,y_pred)))
```

```
r2 socre is  0.10830105566947679
mean_sqrd_error is== 0.19765494137353434
root_mean_squared error of is== 0.44458400935428877
```