In [1]:
```
import pandas as pd
from sklearn import preprocessing
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
sns.set(style="ticks", color_codes=True)
from sklearn.model_selection import train_test_split
from sklearn.feature_selection import RFE
from sklearn.svm import SVR
df = pd.read_excel('Data Analytics Works (1).xlsx')
df
```

Out[1]:

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How m household
0	sweta singh	15-25	Single	Female	Private	hr	Flat(On Rent)	4+	
1	Ajay Babu	15-25	Single	Male	Private	Logistics	Independent house or Villa	Ground Floor	
2	Ajumal Khan A	15-25	Single	Male	Business	Self Employed	Independent house or Villa	2 Floors	
3	Navya Venugopal	15-25	Single	Female	NGO	social worker	Flat(On Rent)	3 Floors	

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How m household
4	Harshal Maske	25-35	Single	Female	Student	MBA	Apartment or Flat	1 Floor	
...	...	...	...	...	...	...	...	...	
4793	S N J Aparna	25-35	Single	Female	Private	Engineer	Government Quarter	G+1 Floor	
4794	Shubham Paul	25-35	Single	Male	Government	Defence	Independent house or Villa	G+1 Floor	
4795	S N J Aparna	25-35	Single	Female	Private	Engineer	Government Quarter	G+1 Floor	
4796	Adithi	25-35	Married	Female	Private	Engineer	Flat(On Rent)	G+ 4+ floors	

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How m household
4797	Sonal Ambokar	25-35	Married	Female	Private	Accountant	Apartment or Flat	G+ 4+ floors	

4798 rows × 64 columns

In [2]:
```
df.head()
```

Out[2]:

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How many live household(inc chi
0	sweta singh	15-25	Single	Female	Private	hr	Flat(On Rent)	4+	
1	Ajay Babu	15-25	Single	Male	Private	Logistics	Independent house or Villa	Ground Floor	
2	Ajumal Khan A	15-25	Single	Male	Business	Self Employed	Independent house or Villa	2 Floors	
3	Navya Venugopal	15-25	Single	Female	NGO	social worker	Flat(On Rent)	3 Floors	

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How many live household(inc chi
4	Harshal Maske	25-35	Single	Female	Student	MBA	Apartment or Flat	1 Floor	

5 rows × 64 columns

In [3]:
```
df = df.drop(['State Name','Unnamed: 63'], axis = 1)
df
```

Out[3]:

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How m household
0	sweta singh	15-25	Single	Female	Private	hr	Flat(On Rent)	4+	
1	Ajay Babu	15-25	Single	Male	Private	Logistics	Independent house or Villa	Ground Floor	

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How m household
2	Ajumal Khan A	15-25	Single	Male	Business	Self Employed	Independent house or Villa	2 Floors	
3	Navya Venugopal	15-25	Single	Female	NGO	social worker	Flat(On Rent)	3 Floors	
4	Harshal Maske	25-35	Single	Female	Student	MBA	Apartment or Flat	1 Floor	
...	...	...	...	...	...	...	...	...	
4793	S N J Aparna	25-35	Single	Female	Private	Engineer	Government Quarter	G+1 Floor	
4794	Shubham Paul	25-35	Single	Male	Government	Defence	Independent house or Villa	G+1 Floor	

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How m household
4795	S N J Aparna	25-35	Single	Female	Private	Engineer	Government Quarter	G+1 Floor	
4796	Adithi	25-35	Married	Female	Private	Engineer	Flat(On Rent)	G+ 4+ floors	
4797	Sonal Ambokar	25-35	Married	Female	Private	Accountant	Apartment or Flat	G+ 4+ floors	

4798 rows × 62 columns

In [4]:
```
list(df.columns)
```

Out[4]:
```
['Full name',
 'Age ',
 'Marital Status',
 'Gender',
 'Which type of organization do you work for?',
 'Name of Profession',
 'What is the type of home that you own?',
 'Number of Floors in House',
 'How many people live in your household(including children)?',
```

```
 'No of Rooms in your house ',
 'Do you plan to build an additional floor? (If other, what does it dep
end on?)',
 'What percentage of your roof are you ready to give for solar?',
 'Plot size of the house (In Square yards)',
 'Do you have a home loan? ',
 'How many of the below vehicles do you own? [2-Wheelers]',
 'How many of the below vehicles do you own? [4-Wheelers]',
 'Which payment method do you use the most?',
 'Do you currently have an EMI for any home appliance?',
 "What is the range of your family's average monthly earnings?",
 'Rate the following websites in terms of your usage time [Google]',
 'Rate the following websites in terms of your usage time [Facebook]',
 'Rate the following websites in terms of your usage time [Whatsapp]',
 'Rate the following websites in terms of your usage time [Youtube]',
 'Rate the following websites in terms of your usage time [Other site
s]',
 'What Power Backup do you use? ',
 'How much aware are you about solar?',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [Power backup]',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [ Increase in electricity price
s.]',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [Fairly good saving on the power
bill today]',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [Long life span of a solar power
system (25 years or more)  with a low maintainance]',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [Interest in new technology]',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [Environment friendly]',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [Status symbol]',
 'Rate the importance of these factors in your solar purchase decision
(1=least important, 5=most important) [Earn from empty roof]',
 'What electrical appliances do you own?',
```

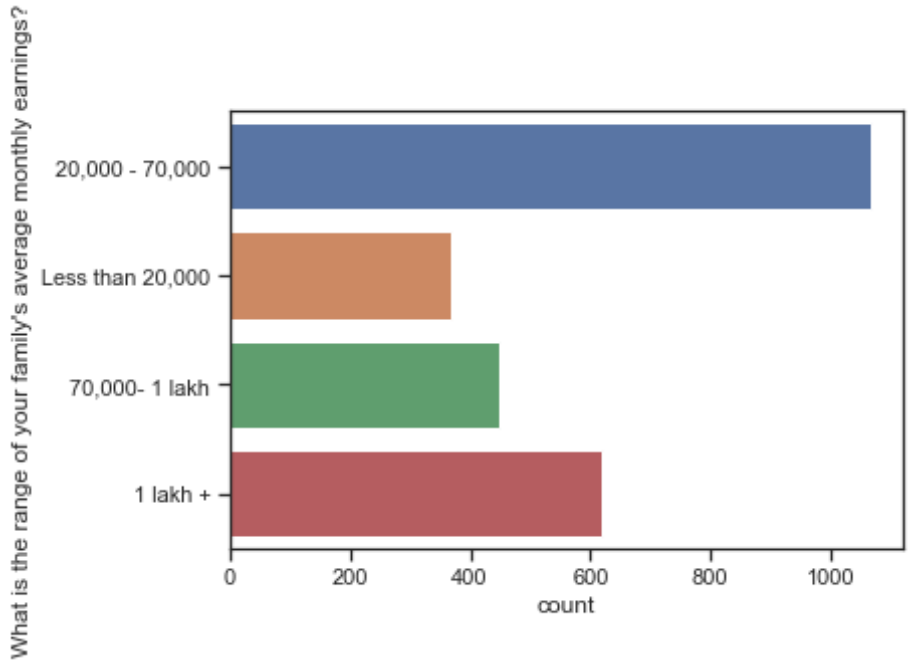
```
 'What are your appliances brands?  [AC]',
 'What are your appliances brands?  [Refrigerator]',
 'What are your appliances brands?  [Computer]',
 'What are your appliances brands?  [TV]',
 'What are your appliances brands?  [Water Heater]',
 'What are your appliances brands?  [Washing Machine]',
 'What is the next appliance you want to buy?',
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [Number of years it t
akes for the investment to pay back (usually > 10 years)]',
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [Not getting sufficie
nt money for extra power generated ]',
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [Lack of government i
ncentives]',
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [Lack of appropriate
loan options]',
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [High cost of solar p
ower systems]',
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [Solar Panels lead to
concerns on outlook of the house]',
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [I dont understand so
lar]',
 "To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [I don't know a good
solar installer]",
 'To what extent would the following factors discourage you from instal
ling solar? (1=least important, 5=most important) [My rooftop is not su
itable for solar]',
 'How much do you expect to at least save on your average electricity b
ill by installing a solar panel system?',
 'What maximum investment would you be willing to make in solar?',
 'Which one would you prefer?',
 'Which one would you prefer ?',
```

```
 'Do you have any relative/friend that bought a solar system?',
 'Do you know any Solar Panel installation companies ?',
 'Name the Solar company you know',
 'Who owns the house you live in?',
 'Which city is your house at?',
 'Are you filling this form on behalf of your parents/others?',
 'What are your computer brands? ']
```

In [7]:
```
indexNames = df[ df['What is the type of home that you own?'] != "Indep
endent house or Villa" ].index
df.drop(indexNames , inplace=True)
```

In [8]:
```
sns.countplot(y="What is the range of your family's average monthly ear
nings?",data=df)
```

Out[8]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x291eac2f588>
```



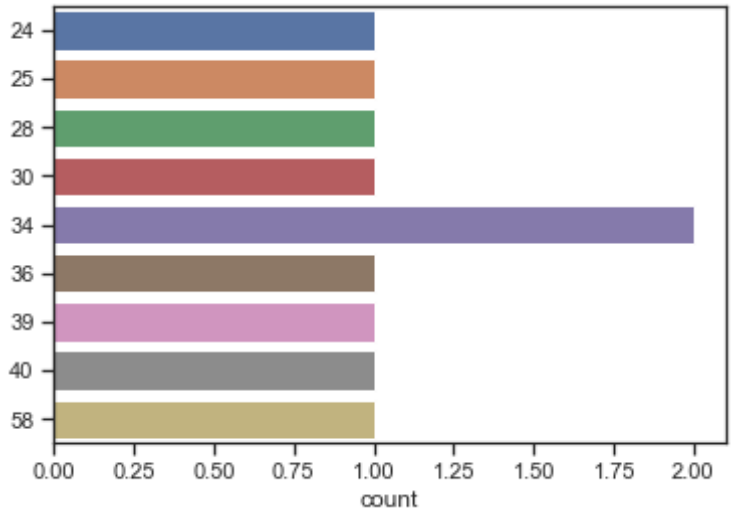
In [9]:
```
groups = df.groupby(["Which city is your house at?", "What maximum inve
```

```
stment would you be willing to make in solar?"]).size()
groups.nlargest(10)
```

Out[9]:
```
Which city is your house at?  What maximum investment would you be will
ing to make in solar?
Delhi                         Less than 50,000
                         58
Lucknow                       Less than 50,000
                         40
New Delhi                     Less than 50,000
                         39
Faridabad                     Less than 50,000
                         36
Bangalore                     Less than 50,000
                         34
Guwahati                      Less than 50,000
                         34
Kolkata                       Less than 50,000
                         30
Hyderabad                     Less than 50,000
                         28
Delhi                         50,000- 1 Lac
                         25
Bhubaneswar                   50,000- 1 Lac
                         24
dtype: int64
```

In [10]:
```
sns.countplot(y=groups.nlargest(10),data=df)
```

Out[10]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x291ecf0ba08>
```



In [11]:
```
def encode_column(column_name,df):
  le = preprocessing.LabelEncoder()
  le.fit(np.array(list(df[column_name]),dtype=str))
  le.transform(np.array(list(df[column_name]),dtype=str))
  df[column_name] = le.transform(np.array(list(df[column_name]),dtype=s
tr))
```

In [12]:
```
for i in df.columns:
  print(i)
  encode_column(i,df)
```

```
Full name
Age
Marital Status
Gender
Which type of organization do you work for?
Name of Profession
What is the type of home that you own?
Number of Floors in House
How many people live in your household(including children)?
No of Rooms in your house
Do you plan to build an additional floor? (If other, what does it depen
```

```
d on?)
What percentage of your roof are you ready to give for solar?
Plot size of the house (In Square yards)
Do you have a home loan?
How many of the below vehicles do you own? [2-Wheelers]
How many of the below vehicles do you own? [4-Wheelers]
Which payment method do you use the most?
Do you currently have an EMI for any home appliance?
What is the range of your family's average monthly earnings?
Rate the following websites in terms of your usage time [Google]
Rate the following websites in terms of your usage time [Facebook]
Rate the following websites in terms of your usage time [Whatsapp]
Rate the following websites in terms of your usage time [Youtube]
Rate the following websites in terms of your usage time [Other sites]
What Power Backup do you use?
How much aware are you about solar?
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [Power backup]
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [ Increase in electricity prices.]
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [Fairly good saving on the power bi
ll today]
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [Long life span of a solar power sy
stem (25 years or more)  with a low maintainance]
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [Interest in new technology]
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [Environment friendly]
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [Status symbol]
Rate the importance of these factors in your solar purchase decision (1
=least important, 5=most important) [Earn from empty roof]
What electrical appliances do you own?
What are your appliances brands?  [AC]
What are your appliances brands?  [Refrigerator]
What are your appliances brands?  [Computer]
What are your appliances brands?  [TV]
```

```
What are your appliances brands?  [Water Heater]
What are your appliances brands?  [Washing Machine]
What is the next appliance you want to buy?
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [Number of years it tak
es for the investment to pay back (usually > 10 years)]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [Not getting sufficient
money for extra power generated ]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [Lack of government inc
entives]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [Lack of appropriate lo
an options]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [High cost of solar pow
er systems]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [Solar Panels lead to c
oncerns on outlook of the house]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [I dont understand sola
r]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [I don't know a good so
lar installer]
To what extent would the following factors discourage you from installi
ng solar? (1=least important, 5=most important) [My rooftop is not suit
able for solar]
How much do you expect to at least save on your average electricity bil
l by installing a solar panel system?
What maximum investment would you be willing to make in solar?
Which one would you prefer?
Which one would you prefer ?
Do you have any relative/friend that bought a solar system?
Do you know any Solar Panel installation companies ?
Name the Solar company you know
Who owns the house you live in?
```

```
Which city is your house at?
Are you filling this form on behalf of your parents/others?
What are your computer brands?
```

In [13]:
```
df.head()
```

Out[13]:

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How many people live in your household(including children)?
1	131	1	5	1	101	208	0	8	5
2	141	1	5	1	6	319	0	1	5
7	1773	1	5	1	101	33	0	0	7
9	29	1	5	1	101	351	0	1	4
10	1254	2	5	0	101	133	0	0	4

5 rows × 62 columns

In [14]:
```
x = df.drop(['Which city is your house at?'], axis = 1)
x
```

Out[14]:

	Full name	Age	Marital Status	Gender	Which type of organization do you work for?	Name of Profession	What is the type of home that you own?	Number of Floors in House	How many people live in your household(including children)?
1	131	1	5	1	101	208	0	8	5
2	141	1	5	1	6	319	0	1	5
7	1773	1	5	1	101	33	0	0	7
9	29	1	5	1	101	351	0	1	4
10	1254	2	5	0	101	133	0	0	4
...	...	...	...	...	...	...	...	...	...
4784	435	3	2	1	101	133	0	5	4
4786	1166	2	5	1	101	133	0	8	4
4788	1495	1	5	1	6	350	0	5	5
4792	319	2	5	0	112	350	0	5	4
4794	1958	2	5	1	30	110	0	5	4

2503 rows × 61 columns

In [15]:
```
y = df['Which city is your house at?']
y
```

Out[15]:
```
1       830
2       830
7       830
```

```
9       830
10      830
       ...
4784     59
4786    535
4788    350
4792    736
4794    431
Name: Which city is your house at?, Length: 2503, dtype: int64
```

In [16]:
```
x = x.to_numpy()
x
```

Out[16]:
```
array([[ 131,    1,    5, ...,   23,    2,   58],
       [ 141,    1,    5, ...,   23,    2,   58],
       [1773,    1,    5, ...,   23,    2,   58],
       ...,
       [1495,    1,    5, ...,   16,    0,    3],
       [ 319,    2,    5, ...,   16,    0,    3],
       [1958,    2,    5, ...,    9,    1,   18]], dtype=int64)
```

In [17]:
```
y = y.to_numpy()
y
```

Out[17]:
```
array([830, 830, 830, ..., 350, 736, 431], dtype=int64)
```

In [18]:
```
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.33, random_state=42)
```

In [19]:
```
from sklearn.linear_model import LinearRegression
# from sklearn.preprocessing import RobustScaler
# scaler = RobustScaler().fit(x_train)
# x_train = scaler.transform(x_train)
# x_test = scaler.transform(x_test)

#estimator = LinearRegression()
#from sklearn.svm import SVC
```

```
estimator = SVR(kernel="linear",verbose=True)
#estimator = SVC(kernel="linear",verbose=True)
selector = RFE(estimator, n_features_to_select=10,step=1,verbose=1)
print('################')
selector = selector.fit(x_train, y_train)
```

```
################
Fitting estimator with 61 features.
[LibSVM]Fitting estimator with 60 features.
[LibSVM]Fitting estimator with 59 features.
[LibSVM]Fitting estimator with 58 features.
[LibSVM]Fitting estimator with 57 features.
[LibSVM]Fitting estimator with 56 features.
[LibSVM]Fitting estimator with 55 features.
[LibSVM]Fitting estimator with 54 features.
[LibSVM]Fitting estimator with 53 features.
[LibSVM]Fitting estimator with 52 features.
[LibSVM]Fitting estimator with 51 features.
[LibSVM]Fitting estimator with 50 features.
[LibSVM]Fitting estimator with 49 features.
[LibSVM]Fitting estimator with 48 features.
[LibSVM]Fitting estimator with 47 features.
[LibSVM]Fitting estimator with 46 features.
[LibSVM]Fitting estimator with 45 features.
[LibSVM]Fitting estimator with 44 features.
[LibSVM]Fitting estimator with 43 features.
[LibSVM]Fitting estimator with 42 features.
[LibSVM]Fitting estimator with 41 features.
[LibSVM]Fitting estimator with 40 features.
[LibSVM]Fitting estimator with 39 features.
[LibSVM]Fitting estimator with 38 features.
[LibSVM]Fitting estimator with 37 features.
[LibSVM]Fitting estimator with 36 features.
[LibSVM]Fitting estimator with 35 features.
[LibSVM]Fitting estimator with 34 features.
[LibSVM]Fitting estimator with 33 features.
[LibSVM]Fitting estimator with 32 features.
[LibSVM]Fitting estimator with 31 features.
[LibSVM]Fitting estimator with 30 features.
[LibSVM]Fitting estimator with 29 features.
```

```
[LibSVM]Fitting estimator with 28 features.
[LibSVM]Fitting estimator with 27 features.
[LibSVM]Fitting estimator with 26 features.
[LibSVM]Fitting estimator with 25 features.
[LibSVM]Fitting estimator with 24 features.
[LibSVM]Fitting estimator with 23 features.
[LibSVM]Fitting estimator with 22 features.
[LibSVM]Fitting estimator with 21 features.
[LibSVM]Fitting estimator with 20 features.
[LibSVM]Fitting estimator with 19 features.
[LibSVM]Fitting estimator with 18 features.
[LibSVM]Fitting estimator with 17 features.
[LibSVM]Fitting estimator with 16 features.
[LibSVM]Fitting estimator with 15 features.
[LibSVM]Fitting estimator with 14 features.
[LibSVM]Fitting estimator with 13 features.
[LibSVM]Fitting estimator with 12 features.
[LibSVM]Fitting estimator with 11 features.
[LibSVM][LibSVM]
```

In [20]:
```
selector.support_
```

Out[20]:
```
array([False, False, False,  True, False, False, False, False, False,
        True, False, False, False, False, False, False, False, False,
       False, False, False, False, False, False, False, False, False,
        True, False, False, False, False, False, False, False, False,
       False,  True, False, False, False, False,  True,  True, False,
        True, False,  True, False,  True, False, False, False, False,
       False, False, False, False, False,  True, False])
```

In [21]:
```
selector.ranking_
```

Out[21]:
```
array([51, 23,  3,  1, 47, 49, 52, 33, 17,  1, 29, 10, 50, 39, 21, 22,
32,
       28,  9, 18, 34, 14, 11,  2, 20,  4, 35,  1,  5, 46, 40, 31, 41,
6,
       42, 27, 36,  1, 25, 38, 30, 44,  1,  1, 16,  1, 45,  1, 43,  1,
13,
       26,  7, 15, 24, 19,  8, 48, 12,  1, 37])
```

In [22]:
```
selector.score(x_train, y_train)
```

Out[22]:
```
0.024070447574951692
```

In [23]:
```
selector.score(x_test, y_test)
```

Out[23]:
```
-0.05925859293090441
```

In [24]:
```
from sklearn.linear_model import LinearRegression
# from sklearn.preprocessing import RobustScaler
# scaler = RobustScaler().fit(x_train)
# x_train = scaler.transform(x_train)
# x_test = scaler.transform(x_test)

estimator = LinearRegression()
from sklearn.svm import SVC

#estimator = SVR(kernel="linear",verbose=True)
#estimator = SVC(kernel="linear",verbose=True)
selector = RFE(estimator, n_features_to_select=10, step=1,verbose=1)
print('################')
selector = selector.fit(x_train, y_train)
```

```
################
Fitting estimator with 61 features.
Fitting estimator with 60 features.
Fitting estimator with 59 features.
Fitting estimator with 58 features.
Fitting estimator with 57 features.
Fitting estimator with 56 features.
Fitting estimator with 55 features.
Fitting estimator with 54 features.
Fitting estimator with 53 features.
Fitting estimator with 52 features.
Fitting estimator with 51 features.
Fitting estimator with 50 features.
Fitting estimator with 49 features.
Fitting estimator with 48 features.
```

```
Fitting estimator with 47 features.
Fitting estimator with 46 features.
Fitting estimator with 45 features.
Fitting estimator with 44 features.
Fitting estimator with 43 features.
Fitting estimator with 42 features.
Fitting estimator with 41 features.
Fitting estimator with 40 features.
Fitting estimator with 39 features.
Fitting estimator with 38 features.
Fitting estimator with 37 features.
Fitting estimator with 36 features.
Fitting estimator with 35 features.
Fitting estimator with 34 features.
Fitting estimator with 33 features.
Fitting estimator with 32 features.
Fitting estimator with 31 features.
Fitting estimator with 30 features.
Fitting estimator with 29 features.
Fitting estimator with 28 features.
Fitting estimator with 27 features.
Fitting estimator with 26 features.
Fitting estimator with 25 features.
Fitting estimator with 24 features.
Fitting estimator with 23 features.
Fitting estimator with 22 features.
Fitting estimator with 21 features.
Fitting estimator with 20 features.
Fitting estimator with 19 features.
Fitting estimator with 18 features.
Fitting estimator with 17 features.
Fitting estimator with 16 features.
Fitting estimator with 15 features.
Fitting estimator with 14 features.
Fitting estimator with 13 features.
Fitting estimator with 12 features.
Fitting estimator with 11 features.
```

In [25]:
```
selector.support_
```

Out[25]:
```
array([False, False,  True,  True, False, False, False, False, False,
       False, False, False, False, False, False, False, False, False,
       False, False, False, False, False, False, False, False, False,
        True, False, False, False, False, False, False, False, False,
       False,  True, False, False, False, False,  True,  True, False,
        True, False, False, False,  True, False, False, False, False,
       False, False,  True, False, False,  True, False])
```

In [26]:
```
selector.ranking_
```

Out[26]:
```
array([51, 17,  1,  1, 47, 49, 52, 43, 26,  3, 44, 10, 50,  6, 29, 21,
39,
       11, 13, 36, 27, 16,  4, 28, 30,  8, 24,  1,  2, 19, 23, 31, 38,
18,
       42, 40, 45,  1, 34, 35, 37, 46,  1,  1,  9,  1, 32, 15, 33,  1,
7,
       22, 14,  5, 20, 25,  1, 48, 12,  1, 41])
```

In [27]:
```
selector.score(x_train, y_train)
```

Out[27]:
```
0.046098376528930896
```

In [28]:
```
selector.score(x_test, y_test)
```

Out[28]:
```
-0.01842198680295626
```

In [29]:
```
from sklearn.linear_model import LinearRegression
# from sklearn.preprocessing import RobustScaler
# scaler = RobustScaler().fit(x_train)
# x_train = scaler.transform(x_train)
# x_test = scaler.transform(x_test)

#estimator = LinearRegression()
#from sklearn.svm import SVC
from sklearn.tree import DecisionTreeClassifier
estimator = DecisionTreeClassifier(random_state=0)

#estimator = SVR(kernel="linear",verbose=True)
```

```
#estimator = SVC(kernel="linear",verbose=True)
selector = RFE(estimator, n_features_to_select=10, step=1,verbose=1)
print('################')
selector = selector.fit(x_train, y_train)
```

```
################
Fitting estimator with 61 features.
Fitting estimator with 60 features.
Fitting estimator with 59 features.
Fitting estimator with 58 features.
Fitting estimator with 57 features.
Fitting estimator with 56 features.
Fitting estimator with 55 features.
Fitting estimator with 54 features.
Fitting estimator with 53 features.
Fitting estimator with 52 features.
Fitting estimator with 51 features.
Fitting estimator with 50 features.
Fitting estimator with 49 features.
Fitting estimator with 48 features.
Fitting estimator with 47 features.
Fitting estimator with 46 features.
Fitting estimator with 45 features.
Fitting estimator with 44 features.
Fitting estimator with 43 features.
Fitting estimator with 42 features.
Fitting estimator with 41 features.
Fitting estimator with 40 features.
Fitting estimator with 39 features.
Fitting estimator with 38 features.
Fitting estimator with 37 features.
Fitting estimator with 36 features.
Fitting estimator with 35 features.
Fitting estimator with 34 features.
Fitting estimator with 33 features.
Fitting estimator with 32 features.
Fitting estimator with 31 features.
Fitting estimator with 30 features.
Fitting estimator with 29 features.
Fitting estimator with 28 features.
```

```
Fitting estimator with 27 features.
Fitting estimator with 26 features.
Fitting estimator with 25 features.
Fitting estimator with 24 features.
Fitting estimator with 23 features.
Fitting estimator with 22 features.
Fitting estimator with 21 features.
Fitting estimator with 20 features.
Fitting estimator with 19 features.
Fitting estimator with 18 features.
Fitting estimator with 17 features.
Fitting estimator with 16 features.
Fitting estimator with 15 features.
Fitting estimator with 14 features.
Fitting estimator with 13 features.
Fitting estimator with 12 features.
Fitting estimator with 11 features.
```

In [30]:
```
selector.support_
```

Out[30]:
```
array([ True, False, False, False, False,  True, False, False,  True,
       False, False, False,  True, False, False, False, False, False,
       False, False,  True, False, False, False, False, False, False,
        True, False, False, False, False, False, False, False, False,
        True, False, False, False,  True,  True, False, False, False,
       False, False, False, False, False, False, False, False, False,
       False, False, False,  True, False, False, False])
```

In [31]:
```
selector.ranking_
```

Out[31]:
```
array([ 1, 45, 51, 46, 19,  1, 52, 12,  1, 18, 42, 16,  1, 37, 11, 28,
10,
       50, 29, 33,  1, 26, 22,  9, 41, 17, 15,  1, 30, 23, 36, 38, 25,
21,
        8,  3,  1, 48,  2, 31,  1,  1, 24, 43,  6, 47, 20, 14, 34, 27,
13,
        5, 40, 39, 35, 49, 44,  1,  7, 32,  4])
```

In [32]:
```
selector.score(x_train, y_train)
```

Out[32]:
```
1.0
```

In [33]:
```
selector.score(x_test, y_test)
```

Out[33]:
```
0.01694915254237288
```

In [ ]:
```

```