```
ls drive/MyDrive/bank_train.csv
```

```
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```

```
import pandas as pd
import numpy as np
exam_data = {
    'name': ['Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
    'score': [12.5, 9, 16.5, np.nan, 9, 20, 14.5, np.nan, 8, 19],
    'attempts': [1, 3, 4, 3, 5, 3, 6, 1, 7, 1]
}

df = pd.DataFrame(exam_data)
selected_columns = df[['name', 'score']]
print(selected_columns)
```

```
        name  score
0  Anastasia   12.5
1       Dima    9.0
2  Katherine   16.5
3      James    NaN
4      Emily    9.0
5    Michael   20.0
6    Matthew   14.5
7      Laura    NaN
8      Kevin    8.0
9      Jonas   19.0
```

```
attempts_3= df[df['attempts'] > 3]
print(attempts_3)
```

```
        name  score  attempts
2  Katherine   16.5         4
4      Emily    9.0         5
6    Matthew   14.5         6
8      Kevin    8.0         7
```

```
data = {'name': ['Alice', 'Bob', 'Charlie', 'Dave'],

 'age': [25, 35, 40, 28],
 'gender': ['F', 'M', 'M', 'M'],
'salary': [50000, 70000, 60000, 80000]}

df = pd.DataFrame(data)
rows=df[df['age'] > 30]
print(rows)
```

```
      name  age gender  salary
1      Bob   35      M   70000
2  Charlie   40      M   60000
```

```
name_e=df[df['name'].str.contains('e')]
print(name_e)
```

```
      name  age gender  salary
0    Alice   25      F   50000
2  Charlie   40      M   60000
3     Dave   28      M   80000
```

```
select_rows=df[(df['gender'] == 'M') & (df['salary'] > 65000)]
print(select_rows)
```

```
    name  age gender  salary
1    Bob   35      M   70000
3  Dave   28      M   80000
```

```
select_cols=df[['name','age']]
print(select_cols)
```

```
      name  age
0    Alice   25
1      Bob   35
2  Charlie   40
3     Dave   28
```

```
df=pd.read_csv('/content/bank_train.csv')
print(df)
```

```
      age          job   marital  education default  balance housing loan  \
0      76      retired   married  secondary      no   2302.0      no   no
1      66      retired  divorced    unknown      no     53.0      no   no
2      51   management   married   tertiary      no   2455.0     yes   no
3      41  blue-collar   married  secondary      no    356.0     yes   no
4      51   technician   married  secondary      no  -1944.0     yes   no
...   ...          ...       ...        ...     ...      ...     ...  ...
4461   33   management   married   tertiary      no    133.0     yes   no
```

```
4462   39     services  divorced  secondary      no    687.0     yes   no
4463   40       admin.    single  secondary      no   2040.0     yes   no
4464   31   technician    single  secondary      no    628.0     yes   no
4465   70      retired  divorced    primary      no    383.0      no   no

        contact  day month  duration  campaign  pdays  previous poutcome  \
0     telephone    5   feb       110         1     87         2  failure
1      cellular   12   jul       562         4     -1         0  unknown
2      cellular   21   jul       553         1     -1         0  unknown
3      cellular   14   may        90         5     -1         0  unknown
4      cellular    7   may       623         1     -1         0  unknown
...         ...  ...   ...       ...       ...    ...       ...      ...
4461    unknown   26   may       308         4     -1         0  unknown
4462   cellular    9   jul       869         1     -1         0  unknown
4463   cellular   18   may       906         2    350         2  failure
4464    unknown   12   may      1083         2     -1         0  unknown
4465   cellular   28   apr        50         2     -1         0  unknown

     deposit
0         no
1        yes
2        yes
3         no
4        yes
...      ...
4461      no
4462     yes
4463     yes
4464      no
4465      no

[4466 rows x 17 columns]
```

```
prime_subscribed=df.loc[(df['education'] == 'primary') & (df['deposit'] == 'yes')]

print(prime_subscribed)
```

```
       age          job   marital education default  balance housing loan  \
29      39  blue-collar  divorced   primary      no   1317.0     yes   no
39      31   unemployed    single   primary      no    163.0      no   no
56      49  blue-collar    single   primary      no    566.0     yes   no
66      53  blue-collar   married   primary     yes   -462.0      no   no
103     42  blue-collar    single   primary      no   4930.0      no   no
...    ...          ...       ...       ...     ...      ...     ...  ...
4411    55    housemaid   married   primary      no      0.0     yes   no
4422    80      retired   married   primary      no   1468.0      no   no
4451    41  blue-collar   married   primary      no    143.0     yes  yes
4452    53  blue-collar   married   primary      no    421.0     yes   no
4458    32  blue-collar   married   primary      no   -454.0     yes  yes

       contact  day month  duration  campaign  pdays  previous poutcome  \
29    cellular   20   nov       543         1    170         4    other
39    cellular   30   jan       707         2      2         1    other
56    cellular   25   jul       979         2     -1         0  unknown
```

```
66    cellular   29   jan       470         1     -1         0  unknown
103    unknown   18   jun       973         1     -1         0  unknown
...        ...  ...   ...       ...       ...    ...       ...      ...
4411  cellular   17   jul      1303         2     -1         0  unknown
4422  cellular   13   jan       330         3     -1         0  unknown
4451   unknown    2   jun       659         2     -1         0  unknown
4452  cellular   20   nov       677         1     -1         0  unknown
4458  cellular   18   may       801         5    355         2  failure

     deposit
29       yes
39       yes
56       yes
66       yes
103      yes
...      ...
4411     yes
4422     yes
4451     yes
4452     yes
4458     yes

[243 rows x 17 columns]
```

Start coding or generate with AI.

```
not_subscribed = df.loc[df['deposit'] == 'no']
print(not_subscribed)
```

```
      age          job   marital  education default  balance housing loan  \
0      76      retired   married  secondary      no   2302.0      no   no
3      41  blue-collar   married  secondary      no    356.0     yes   no
6      59      retired   married  secondary      no    136.0      no   no
7      34  blue-collar   married    primary      no   5299.0     yes   no
9      44  blue-collar   married  secondary      no    879.0     yes   no
...   ...          ...       ...        ...     ...      ...     ...  ...
4457   43   management   married   tertiary      no   1336.0     yes  yes
4460   54      retired   married  secondary      no    522.0      no  yes
4461   33   management   married   tertiary      no    133.0     yes   no
4464   31   technician    single  secondary      no    628.0     yes   no
4465   70      retired  divorced    primary      no    383.0      no   no

        contact  day month  duration  campaign  pdays  previous poutcome  \
0     telephone    5   feb       110         1     87         2  failure
3      cellular   14   may        90         5     -1         0  unknown
6      cellular    6   aug       301         4     -1         0  unknown
7       unknown   26   jun        75         5     -1         0  unknown
9      cellular    3   apr       383         1     -1         0  unknown
...         ...  ...   ...       ...       ...    ...       ...      ...
4457   cellular   27   may        82         2    309         1  failure
4460   cellular   14   jul        81         3     -1         0  unknown
4461    unknown   26   may       308         4     -1         0  unknown
```

```
4464    unknown   12   may      1083         2     -1         0  unknown
4465   cellular   28   apr        50         2     -1         0  unknown

     deposit
0         no
3         no
6         no
7         no
9         no
...      ...
4457      no
4460      no
4461      no
4464      no
4465      no

[2354 rows x 17 columns]
```

```
subscribed_with_loans = df.loc[(df['deposit'] == 'yes') & ((df['housing'] == 'yes') | (df['loan'] == 'yes'))]
print(subscribed_with_loans)
```

```
      age          job   marital  education default  balance housing loan  \
2      51   management   married   tertiary      no   2455.0     yes   no
4      51   technician   married  secondary      no  -1944.0     yes   no
15     37   management    single   tertiary      no    455.0     yes   no
17     24        admin.    single   tertiary      no      0.0     yes   no
21     33        admin.   married   tertiary      no     79.0     yes   no
...   ...          ...       ...        ...     ...      ...     ...  ...
4454   30  blue-collar    single  secondary      no    155.0     yes  yes
4458   32  blue-collar   married    primary      no   -454.0     yes  yes
4459   37   technician    single  secondary      no   3326.0     yes   no
4462   39     services  divorced  secondary      no    687.0     yes   no
4463   40        admin.    single  secondary      no   2040.0     yes   no

       contact  day month  duration  campaign  pdays  previous poutcome  \
2     cellular   21   jul       553         1     -1         0  unknown
4     cellular    7   may       623         1     -1         0  unknown
15    cellular   13   aug       904         6     -1         0  unknown
17    cellular   27   may       122         2     -1         0  unknown
21    cellular    5   may       389         1    195         4  success
...        ...  ...   ...       ...       ...    ...       ...      ...
4454  cellular    9   jul      1426         3     -1         0  unknown
4458  cellular   18   may       801         5    355         2  failure
4459   unknown   21   may       799         1     -1         0  unknown
4462  cellular    9   jul       869         1     -1         0  unknown
4463  cellular   18   may       906         2    350         2  failure

     deposit
2        yes
4        yes
15       yes
17       yes
21       yes
```

```
...      ...
4454     yes
4458     yes
4459     yes
4462     yes
4463     yes

[893 rows x 17 columns]
```

```
secondary_not_subscribed = df.loc[(df['education'] == 'secondary') & (df['deposit'] == 'no')]
print(secondary_not_subscribed)
```

```
       age          job  marital  education default  balance housing loan  \
0       76      retired  married  secondary      no   2302.0      no   no
3       41  blue-collar  married  secondary      no    356.0     yes   no
6       59      retired  married  secondary      no    136.0      no   no
9       44  blue-collar  married  secondary      no    879.0     yes   no
10      34     services  married  secondary      no   1637.0     yes   no
...    ...          ...      ...        ...     ...      ...     ...  ...
4446    35     services  married  secondary      no      0.0     yes   no
4453    31     services  married  secondary      no    505.0      no   no
4456    54  blue-collar  married  secondary      no   -102.0     yes   no
4460    54      retired  married  secondary      no    522.0      no  yes
4464    31   technician   single  secondary      no    628.0     yes   no

         contact  day month  duration  campaign  pdays  previous poutcome  \
0      telephone    5   feb       110         1     87         2  failure
3       cellular   14   may        90         5     -1         0  unknown
6       cellular    6   aug       301         4     -1         0  unknown
9       cellular    3   apr       383         1     -1         0  unknown
10      cellular   21   nov       107         4     -1         0  unknown
...          ...  ...   ...       ...       ...    ...       ...      ...
4446    cellular   24   jul       810         1     -1         0  unknown
4453    cellular   11   jul       773         3     -1         0  unknown
4456    cellular   27   aug       164         7     -1         0  unknown
4460    cellular   14   jul        81         3     -1         0  unknown
4464     unknown   12   may      1083         2     -1         0  unknown

     deposit
0         no
3         no
6         no
9         no
10        no
...      ...
4446      no
4453      no
4456      no
4460      no
4464      no

[1229 rows x 17 columns]
```

```
unemployed_not_subscribed = df.loc[(df['job'] == 'unemployed') & (df['deposit'] == 'no')]
print(unemployed_not_subscribed)
```

```
       age         job   marital  education default  balance housing loan  \
74      37  unemployed    single  secondary      no     48.0      no   no
304     48  unemployed   married  secondary      no    855.0     yes   no
404     57  unemployed   married    primary      no      0.0     yes   no
464     47  unemployed  divorced  secondary      no    947.0      no   no
494     45  unemployed   married   tertiary      no   1148.0      no   no
550     55  unemployed   married    primary      no   8585.0      no   no
644     35  unemployed    single  secondary      no   2116.0     yes   no
690     31  unemployed    single    unknown      no    167.0      no   no
705     42  unemployed  divorced  secondary      no    759.0      no   no
811     38  unemployed   married  secondary      no    995.0      no   no
821     43  unemployed   married  secondary      no   1943.0     yes   no
827     52  unemployed   married  secondary      no   1639.0      no   no
856     31  unemployed   married  secondary      no     20.0      no   no
966     42  unemployed   married  secondary      no   -165.0     yes  yes
967     57  unemployed   married  secondary      no   1350.0      no   no
1003    35  unemployed   married  secondary      no   2080.0     yes   no
1123    50  unemployed   married  secondary      no   3478.0     yes   no
1236    43  unemployed  divorced  secondary      no   1854.0      no   no
1351    38  unemployed  divorced  secondary      no    189.0     yes  yes
1424    40  unemployed  divorced  secondary      no    262.0     yes   no
1633    41  unemployed    single   tertiary      no   4517.0     yes   no
1828    31  unemployed    single  secondary      no    209.0     yes   no
1848    41  unemployed   married    primary      no    183.0     yes   no
1850    30  unemployed   married  secondary      no    142.0     yes   no
1961    58  unemployed   married  secondary      no    610.0     yes   no
2060    33  unemployed    single  secondary      no    233.0     yes   no
2184    41  unemployed  divorced  secondary      no    271.0     yes   no
2292    40  unemployed   married  secondary      no   1289.0      no   no
2308    50  unemployed   married  secondary      no    297.0     yes   no
2364    43  unemployed   married  secondary      no    553.0      no   no
2464    55  unemployed   married    primary      no   1221.0      no  yes
2513    55  unemployed   married  secondary      no    512.0      no   no
2603    33  unemployed    single  secondary      no    682.0      no   no
2681    40  unemployed   married   tertiary      no   2430.0      no   no
2699    52  unemployed   married   tertiary      no   2133.0      no  yes
2754    55  unemployed   married   tertiary      no   5345.0      no   no
2762    43  unemployed   married  secondary      no    775.0      no   no
2827    54  unemployed    single  secondary      no   3611.0     yes   no
2913    44  unemployed   married    primary      no     97.0     yes   no
2929    40  unemployed   married  secondary      no   1077.0     yes  yes
3145    36  unemployed   married  secondary      no    439.0     yes   no
3263    47  unemployed    single  secondary      no   4819.0      no   no
3313    45  unemployed    single  secondary      no    382.0     yes  yes
3556    40  unemployed   married  secondary      no    219.0     yes   no
3704    59  unemployed    single  secondary      no    865.0      no   no
3733    46  unemployed  divorced  secondary      no      0.0      no   no
3745    58  unemployed    single   tertiary      no   2094.0      no   no
3905    33  unemployed   married   tertiary      no   3335.0      no   no
3949    46  unemployed   married  secondary      no   2940.0     yes   no
4027    36  unemployed    single   tertiary      no    221.0      no   no
4066    42  unemployed   married   tertiary      no      0.0      no   no
```

```
4102   30  unemployed    single  secondary      no      0.0     yes   no
4125   27  unemployed    single   tertiary      no   3060.0      no   no
4130   34  unemployed   married  secondary      no    200.0     yes   no
4140   37  unemployed   married  secondary      no   4769.0      no   no
4179   43  unemployed  divorced  secondary      no      0.0     yes   no
4181   46  unemployed   married  secondary      no  16397.0      no   no
```

```
successful_campaign = df.loc[(df['deposit'] == 'yes') & (df['poutcome'] == 'success')]

print(successful_campaign)
```

```
       age           job   marital  education default  balance housing loan  \
19     76  self-employed   married    unknown      no   4984.0      no   no
21     33         admin.   married   tertiary      no     79.0     yes   no
45     71        retired  divorced  secondary      no      0.0      no   no
51     68        retired   married  secondary      no   1146.0      no   no
52     46     management   married   tertiary      no    273.0     yes   no
...   ...            ...       ...        ...     ...      ...     ...  ...
4338   38         admin.  divorced  secondary      no     19.0     yes   no
4372   20        student    single  secondary      no    215.0      no   no
4376   42     technician   married  secondary      no    994.0     yes   no
4408   29      housemaid    single   tertiary      no     19.0      no   no
4448   27    blue-collar    single  secondary      no    535.0      no   no

        contact  day month  duration  campaign  pdays  previous poutcome  \
19    telephone   28   apr       403         1    182         1  success
21     cellular    5   may       389         1    195         4  success
45     cellular   26   feb       771         1    171         1  success
51     cellular   13   may       356         1     71         5  success
52     cellular   18   mar       910         2    184         4  success
...         ...  ...   ...       ...       ...    ...       ...      ...
4338   cellular    5   feb      1130         3    251         2  success
4372   cellular   24   feb       175         1     92         6  success
4376   cellular   12   nov       227         3     93         6  success
4408   cellular    4   may       268         1     88         4  success
4448   cellular   16   aug       265         3     95         4  success

     deposit
19       yes
21       yes
45       yes
51       yes
52       yes
...      ...
4338     yes
4372     yes
4376     yes
4408     yes
4448     yes

[392 rows x 17 columns]
```

```
young_clients = df.loc[df['age']<= 30, ['education', 'balance']]
print(young_clients)
```

```
      education  balance
17     tertiary      0.0
22      primary    544.0
26    secondary     30.0
27    secondary    195.0
40    secondary    743.0
...         ...      ...
4440   tertiary    674.0
4448  secondary    535.0
4449  secondary     81.0
4454  secondary    155.0
4455   tertiary    265.0

[809 rows x 2 columns]
```