Lab1: Write a Pandas program to split the following data frame into groups based on Class and count the number of students in that particular class.
 Also generate a bar chart based on the result and explain the conclusion.
Input:
student_data = pd.DataFrame({
'school_code': ['s001','s002', 's003', 's001','s002', 's004'],
'class': ['V', 'VI', 'VI', 'VI', 'V', 'VI'],
'name': ['Alberto Franco', 'Gino Mcneill', 'Ryan Parkes', 'Eesha Hinton',
'Gino Mcneill',
'David Parkes'],
'age': [12, 12, 13, 13, 14, 12],
'height': [173, 192, 186, 167, 151, 159],
'weight': [35, 32, 33, 30, 31, 32],
'address': ['street1', 'street2', 'street3', 'street1', 'street2', 'street4']},
)


```python
import pandas as pd
import matplotlib.pyplot as plt

# Input data
student_data = pd.DataFrame({
    'school_code': ['s001', 's002', 's003', 's001', 's002', 's004'],
    'class': ['V', 'VI', 'VI', 'VI', 'V', 'VI'],
    'name': ['Alberto Franco', 'Gino Mcneill', 'Ryan Parkes', 'Eesha Hinton',
'Gino Mcneill', 'David Parkes'],
    'age': [12, 12, 13, 13, 14, 12],
    'height': [173, 192, 186, 167, 151, 159],
    'weight': [35, 32, 33, 30, 31, 32],
    'address': ['street1', 'street2', 'street3', 'street1', 'street2', 'street4']
})

# Group by 'class' and count the number of students in each class
class_counts = student_data.groupby('class').size()

# Generate a bar chart based on the result
class_counts.plot(kind='bar', color='skyblue', edgecolor='black')
plt.title('Number of Students in Each Class')
plt.xlabel('Class')
plt.ylabel('Number of Students')
plt.xticks(rotation=0)
```
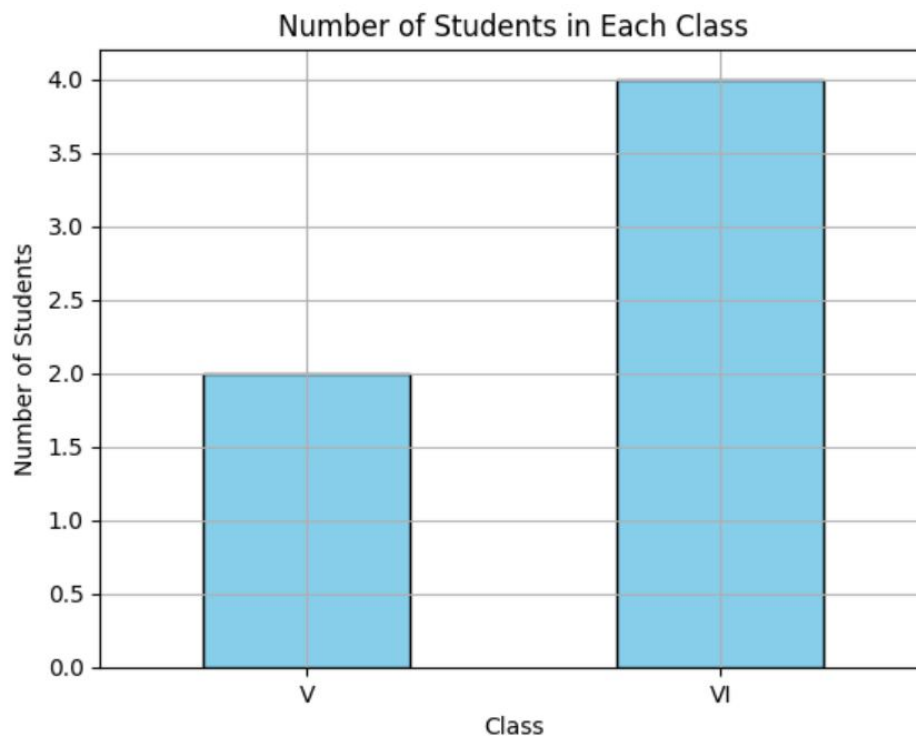
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()

# Print the class counts
print(class_counts)

OUTPUT:

Number of Students in Each Class


```
class
V     2
VI    4
dtype: int64
```

Lab4: Write a Pandas program to split the following data frame into groups and calculate monthly purchase amount. Also generate a bar chart based on the result and explain the conclusion.
Input:
df= pd.DataFrame({
'ord_no':[70001,70009,70002,70004,70007,70005,70008,70010,70003,70012,70011, 70013],
'purch_amt':[150.5,270.65.65.26,110.5,948.5.2400.6,5760,
1983.43,2480.4,250.45, 75.29,3045.6],
'ord date':
['05-10-2012','09-10-2012','05-10-2012','08-17-2012', '10-09-2012','07-27-2012','10-09- 2012','10-10-2012','10-10-2012',

```
'06-17-2012','07-08-2012', '04-25-2012"],
'customer_id":[3001,3001,3005,3001,3005,3001,3005,3001,3005,3001,30
05,3005],
'salesman_id':
[5002,5005,5001,5003,5002,5001,5001,5006,5003,5002,5007,5001]))

import pandas as pd
import matplotlib.pyplot as plt

# Create the DataFrame
df = pd.DataFrame({
    'ord_no': [70001, 70009, 70002, 70004, 70007, 70005, 70008, 70010,
70003, 70012, 70011, 70013],
    'purch_amt': [150.5, 270.65, 65.26, 110.5, 948.5, 2400.6, 5760,
1983.43, 2480.4, 250.45, 75.29, 3045.6],
    'ord_date': ['05-10-2012', '09-10-2012', '05-10-2012', '08-17-2012', '10-
09-2012', '07-27-2012', '10-09-2012',
            '10-10-2012', '10-10-2012', '06-17-2012', '07-08-2012', '04-25-
2012'],
    'customer_id': [3001, 3001, 3005, 3001, 3005, 3001, 3005, 3001, 3005,
3001, 3005, 3005],
    'salesman_id': [5002, 5005, 5001, 5003, 5002, 5001, 5001, 5006, 5003,
5002, 5007, 5001]
})

# Convert 'ord_date' to datetime format and extract month
df['ord_date'] = pd.to_datetime(df['ord_date'])
df['month'] = df['ord_date'].dt.month

# Group by month and calculate the monthly purchase amount
monthly= df.groupby('month')['purch_amt'].sum()

# Generate a bar chart based on the result
monthly.plot(kind='bar', color='skyblue', edgecolor='black')
plt.title('Monthly Purchase Amount')
plt.xlabel('Month')
plt.ylabel('Purchase Amount ($)')
plt.xticks(rotation=0)
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()

# Print the monthly purchase amounts
print(monthly)
```
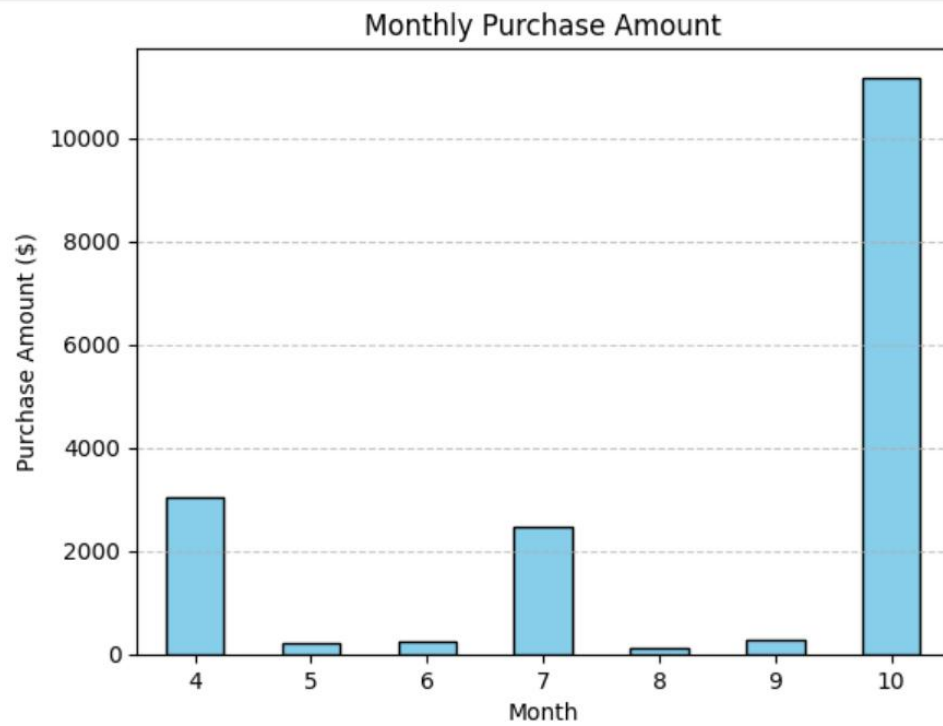
OUTPUT:

Monthly Purchase Amount


```
month
4       3045.60
5        215.76
6        250.45
7       2475.89
8        110.50
9        270.65
10     11172.33
Name: purch_amt, dtype: float64
```