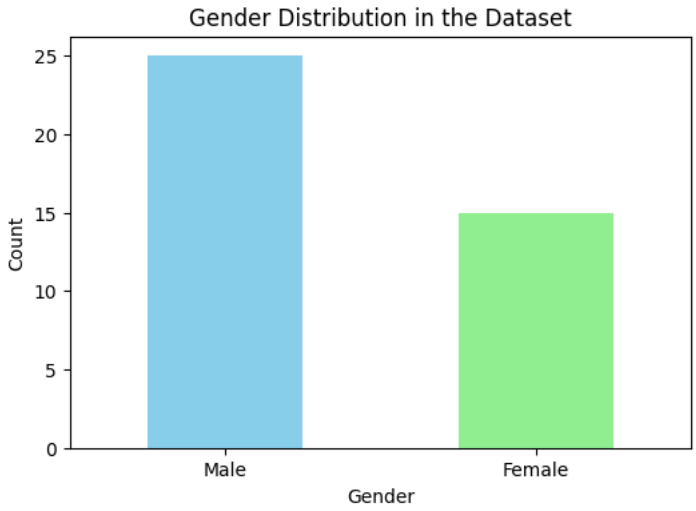
Task 1: Data Overview Objective: Understand the dataset structure

```
import pandas as pd

#Load the dataset

file_path = '/mnt/data/Data_set 2 - Copy.csv'
df = pd.read_csv('/content/Data_set 2 - Copy.csv')

#information from the dataset

df_info = df.info()

#Display row

df_head = df.head()
df_info, df_head
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 40 entries, 0 to 39
Data columns (total 24 columns):
 #   Column                              Non-Null Count  Dtype 
---  ------                              --------------  ----- 
 0   gender                              40 non-null     object
 1   age                                 40 non-null     int64 
 2   Investment_Avenues                  40 non-null     object
 3   Mutual_Funds                        40 non-null     int64 
 4   Equity_Market                       40 non-null     int64 
 5   Debentures                          40 non-null     int64 
 6   Government_Bonds                    40 non-null     int64 
 7   Fixed_Deposits                      40 non-null     int64 
 8   PPF                                 40 non-null     int64 
 9   Gold                                40 non-null     int64 
 10  Stock_Marktet                       40 non-null     object
 11  Factor                              40 non-null     object
 12  Objective                           40 non-null     object
 13  Purpose                             40 non-null     object
 14  Duration                            40 non-null     object
 15  Invest_Monitor                      40 non-null     object
 16  Expect                              40 non-null     object
 17  Avenue                              40 non-null     object
 18  What are your savings objectives?   40 non-null     object
 19  Reason_Equity                       40 non-null     object
 20  Reason_Mutual                       40 non-null     object
 21  Reason_Bonds                        40 non-null     object
 22  Reason_FD                           40 non-null     object
 23  Source                              40 non-null     object
dtypes: int64(8), object(16)
memory usage: 7.6+ KB
(None,
    gender  age Investment_Avenues  Mutual_Funds  Equity_Market  Debentures  \
 0  Female   34                Yes             1              2           5
 1  Female   23                Yes             4              3           2
 2    Male   30                Yes             3              6           4
 3    Male   22                Yes             2              1           3
 4  Female   24                 No             2              1           3

    Government_Bonds  Fixed_Deposits  PPF  Gold  ...           Duration  \
 0                 3               7    6     4  ...          1-3 years
 1                 1               5    6     7  ...  More than 5 years
 2                 2               5    1     7  ...          3-5 years
 3                 7               6    4     5  ...   Less than 1 year
 4                 6               4    5     7  ...   Less than 1 year

   Invest_Monitor   Expect       Avenue What are your savings objectives?  \
 0        Monthly  20%-30%  Mutual Fund                  Retirement Plan
 1         Weekly  20%-30%  Mutual Fund                      Health Care
 2          Daily  20%-30%       Equity                  Retirement Plan
 3          Daily  10%-20%       Equity                  Retirement Plan
 4          Daily  20%-30%       Equity                  Retirement Plan

          Reason_Equity         Reason_Mutual     Reason_Bonds  \
 0  Capital Appreciation        Better Returns  Safe Investment
 1             Dividend        Better Returns  Safe Investment
 2  Capital Appreciation          Tax Benefits  Assured Returns
 3             Dividend  Fund Diversification   Tax Incentives
```

Task 2: Gender Distribution Objective: Visualize gender distribution in the dataset.

```
import matplotlib.pyplot as plt

# Extract gender information

gender_counts = df['gender'].value_counts()

# Create a bar chart for gender distribution
plt.figure(figsize=(6, 4))
gender_counts.plot(kind='bar', color=['skyblue', 'lightgreen'])
plt.title('Gender Distribution in the Dataset')
plt.xlabel('Gender')
plt.ylabel('Count')
plt.xticks(rotation=0)
plt.show()
```



Task 3: Descriptive Statistics Objective: Present basic statistics for numerical columns

```
# Identify numerical columns
numerical_columns = df.select_dtypes(include=['int64', 'float64'])

# Calculate descriptive statistics: mean, median, and standard deviation

descriptive_stats = numerical_columns.agg(['mean', 'median', 'std'])

descriptive_stats
```

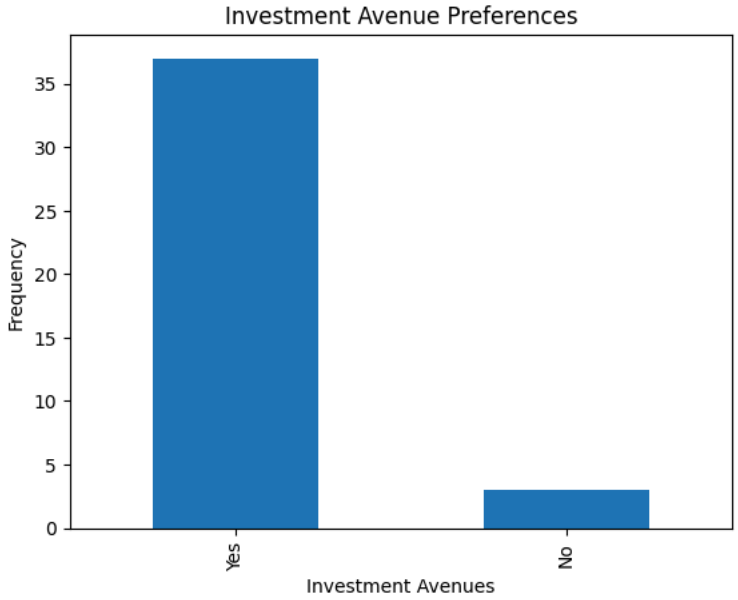
	age	Mutual_Funds	Equity_Market	Debentures	Government_Bonds	Fixed_Depo
mean	27.800000	2.550000	3.475000	5.750000	4.650000	3.57
median	27.000000	2.000000	4.000000	6.500000	5.000000	3.50
std	3.560467	1.197219	1.131994	1.675617	1.369072	1.79

Next steps: Generate code with `descriptive_stats` View recommended plots New interactive sheet

Task 4: Most Preferred Investment Avenue Objective: Identify the most preferred investment avenue

```
# Extract the 'Investment_Avenues' column
avenue_counts = df['Investment_Avenues'].value_counts()

# Display the most preferred investment avenue
most_preferred = avenue_counts.idxmax()
print(f"The most preferred investment avenue is: {most_preferred}")

# Optional: Visualize the distribution
avenue_counts.plot(kind='bar', title='Investment Avenue Preferences')
plt.xlabel('Investment Avenues')
plt.ylabel('Frequency')
plt.show()
```

```
The most preferred investment avenue is: Yes
```



Task 5: Reasons for Investment Objective: Analyze and summarize reasons for investment choices.

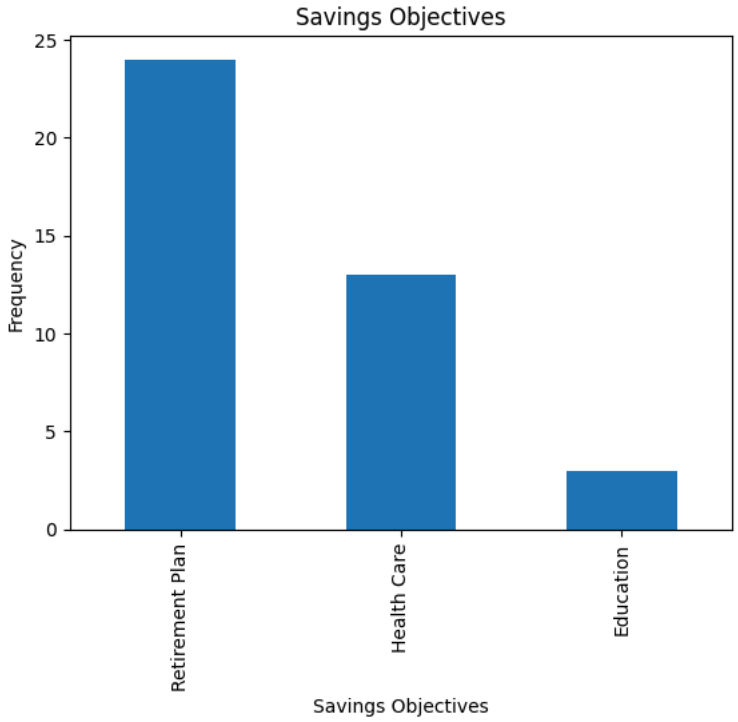
```
# Extract all reason columns
reason_columns = ['Reason_Equity', 'Reason_Mutual', 'Reason_Bonds', 'Reason_FD']
all_reasons = df[reason_columns].values.flatten()

# Convert to DataFrame for easier analysis
reasons_df = pd.DataFrame(all_reasons, columns=['Reason'])

# Group by reason and count occurrences
reason_counts = reasons_df['Reason'].value_counts()
print(reason_counts)

# Optional: Categorize into themes manually based on content analysis
```

```
Reason
Capital Appreciation    30
Assured Returns         26
Better Returns          24
Risk Free               19
Fixed Returns           18
Safe Investment         13
Fund Diversification    13
Dividend                 8
High Interest Rates      3
Tax Benefits             3
Liquidity                2
Tax Incentives           1
Name: count, dtype: int64
```

Task 6: Savings Objectives Objective: Identify and present main savings objectives

```
# Extract the 'savings objectives' column
savings_objectives = df['What are your savings objectives?']

# Count occurrences of each unique objective
objective_counts = savings_objectives.value_counts()

# Print the summary
print("Main Savings Objectives:\n", objective_counts)

# Optional: Visualize with a bar chart
objective_counts.plot(kind='bar', title='Savings Objectives')
plt.xlabel('Savings Objectives')
plt.ylabel('Frequency')
plt.show()
```

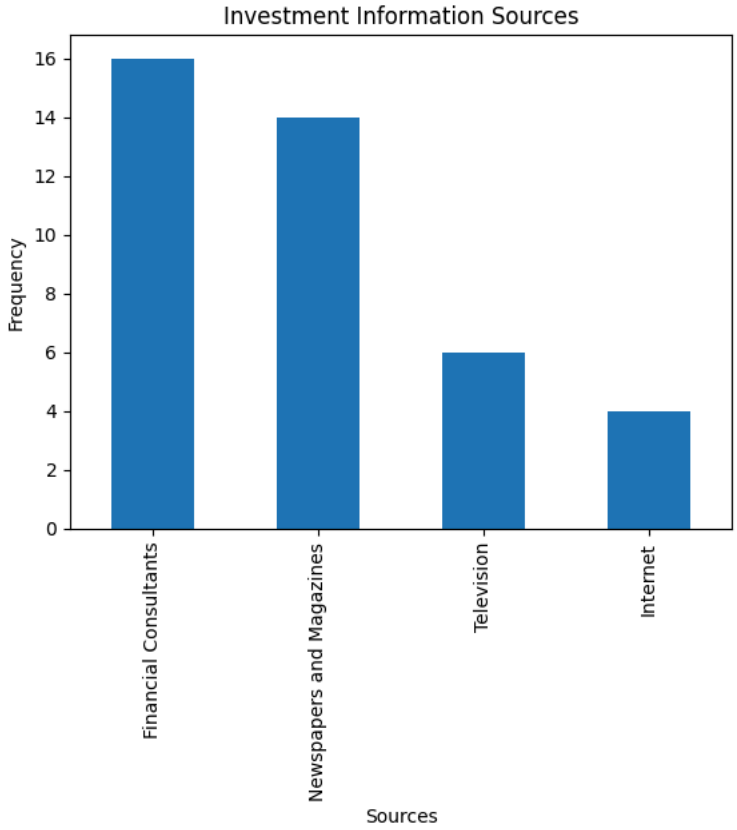
```
Main Savings Objectives:
 What are your savings objectives?
Retirement Plan    24
Health Care        13
Education           3
Name: count, dtype: int64
```



Task 7: Common Information Sources Objective: Analyze common sources participants rely on for investment information.

```
# Extract the 'Source' column
info_sources = df['Source']

# Count occurrences of each unique source
source_counts = info_sources.value_counts()

# Print the summary
print("Common Information Sources:\n", source_counts)

# Optional: Visualize with a bar chart
source_counts.plot(kind='bar', title='Investment Information Sources')
plt.xlabel('Sources')
plt.ylabel('Frequency')
plt.show()
```

```
Common Information Sources:
 Source
Financial Consultants       16
Newspapers and Magazines    14
Television                   6
Internet                     4
Name: count, dtype: int64
```



Task 8: Investment Duration Objective: Calculate the average investment duration.

```
# Map duration categories to numerical values (in years)
duration_mapping = {
    'Less than 1 year': 0.5,
    '1-3 years': 2,
    '3-5 years': 4,
    'More than 5 years': 6  # or another estimate
}

# Apply the mapping to the 'Duration' column
df['Duration_Numeric'] = df['Duration'].map(duration_mapping)

# Calculate the average duration
average_duration = df['Duration_Numeric'].mean()
print(f"The average investment duration is approximately {average_duration:.2f} years.")
```

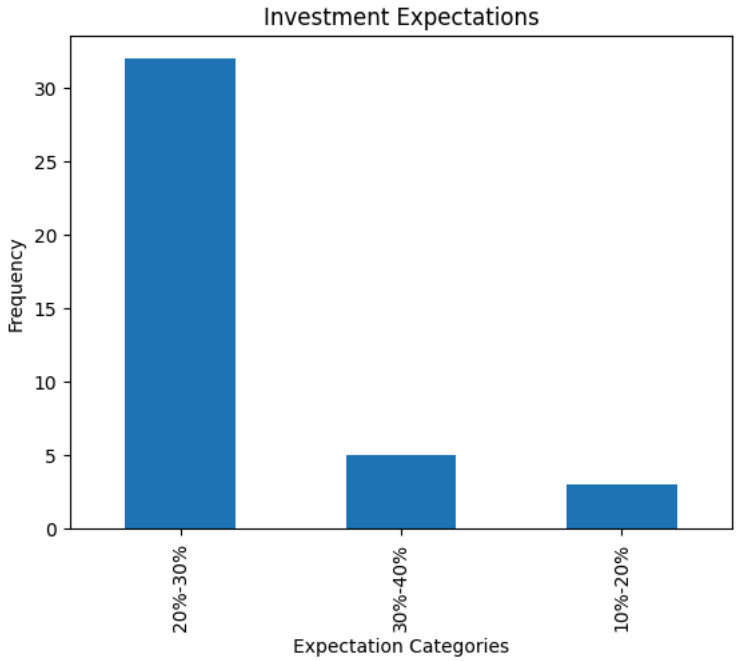
```
The average investment duration is approximately 2.98 years.
```

Task 9: Expectations from Investments Objective: Summarize participants' expectations from investments

```
# Extract the 'Expect' column
expectations = df['Expect']

# Count occurrences of each unique expectation
expectation_counts = expectations.value_counts()

# Print the summary
print("Participants' Investment Expectations:\n", expectation_counts)

# Optional: Visualize with a bar chart
expectation_counts.plot(kind='bar', title='Investment Expectations')
```

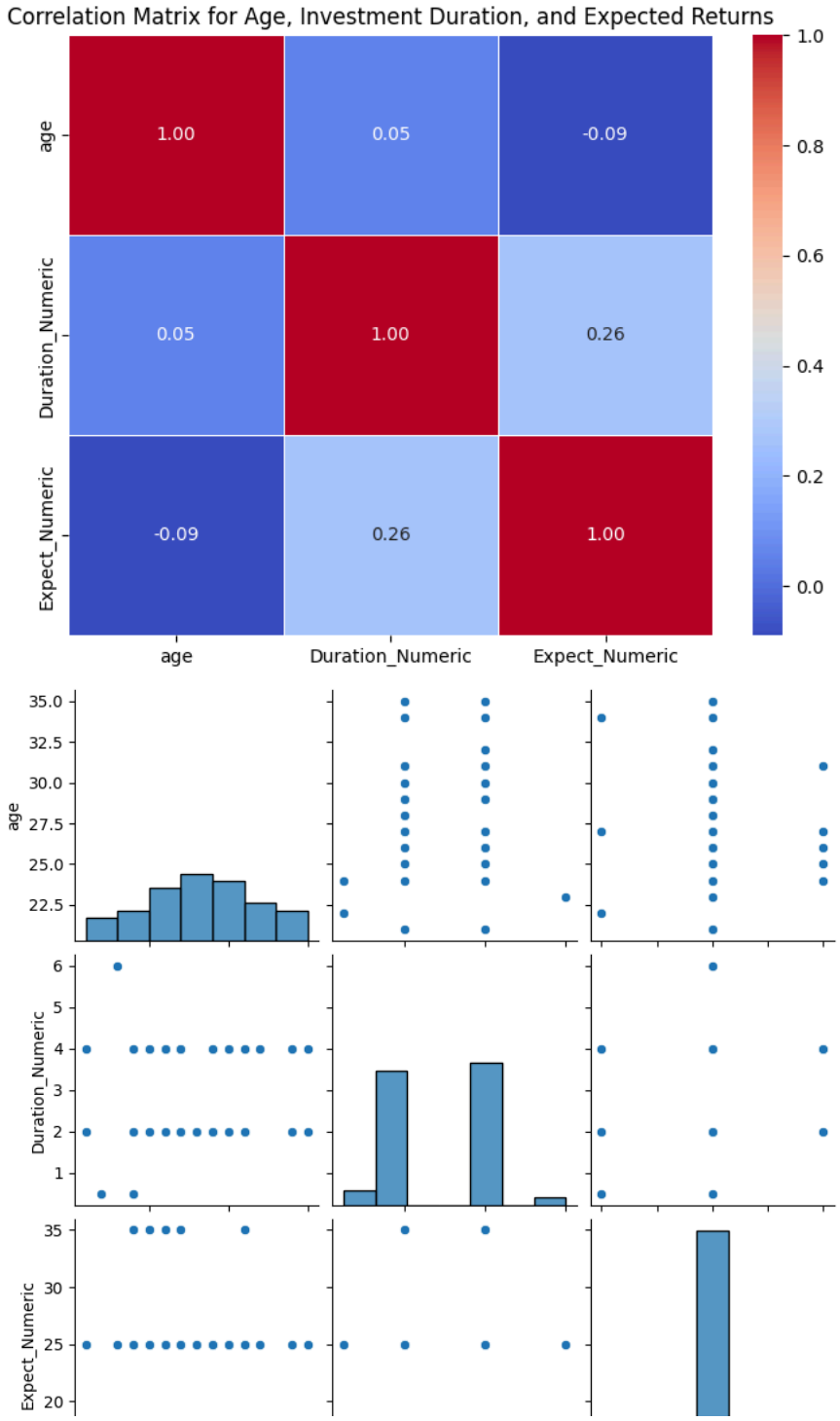
```
plt.xlabel('Expectation Categories')
plt.ylabel('Frequency')
plt.show()
```

```
Participants' Investment Expectations:
 Expect
20%-30%    32
30%-40%     5
10%-20%     3
Name: count, dtype: int64
```



Task 10: Correlation Analysis Objective: Explore potential correlations between factors

```
import seaborn as sns
import matplotlib.pyplot as plt

# Ensure that all relevant columns are numeric
# Assuming 'Duration_Numeric' already created, we may also map 'Expect' to numeric

expectation_mapping = {'10%-20%': 15, '20%-30%': 25, '30%-40%': 35, 'More than 40%': 45}
df['Expect_Numeric'] = df['Expect'].map(expectation_mapping)

# Select numerical columns for correlation
corr_columns = ['age', 'Duration_Numeric', 'Expect_Numeric']

# Calculate correlation matrix
correlation_matrix = df[corr_columns].corr()

# Visualize the correlation matrix with a heatmap
plt.figure(figsize=(8, 6))
sns.heatmap(correlation_matrix, annot=True, cmap='coolwarm', fmt='.2f', linewidths=0.5)
plt.title('Correlation Matrix for Age, Investment Duration, and Expected Returns')
plt.show()

# Optional: Scatter plots to visualize relationships
sns.pairplot(df[corr_columns])
plt.show()
```


Correlation Matrix for Age, Investment Duration, and Expected Returns
age
Duration_Numeric
Expect_Numeric
1.00
0.05
-0.09
0.05
1.00
0.26
-0.09
0.26
1.00
1.0
0.8
0.6
0.4
0.2
0.0
35.0
32.5
30.0
27.5
25.0
22.5
6
5
4
3
2
1
35
30
25
20