Just IT

B2W group

Apprenticeships | Training | Recruitment

Data Technician

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Course Date: 12 May 2025

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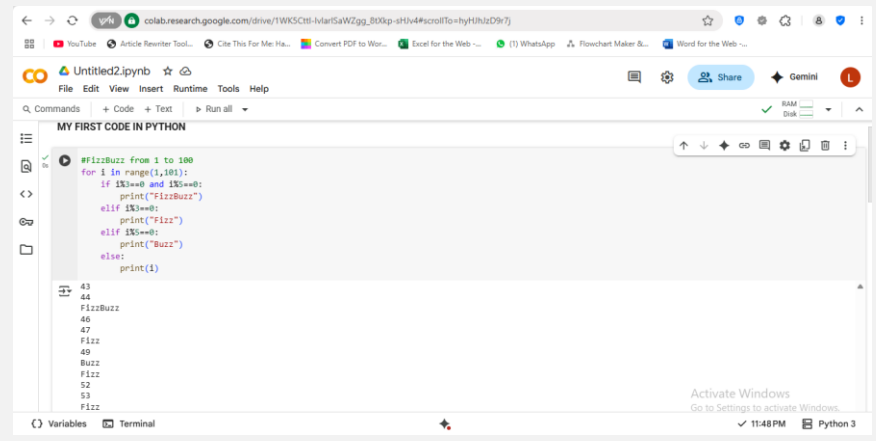
Day 2: Task 1

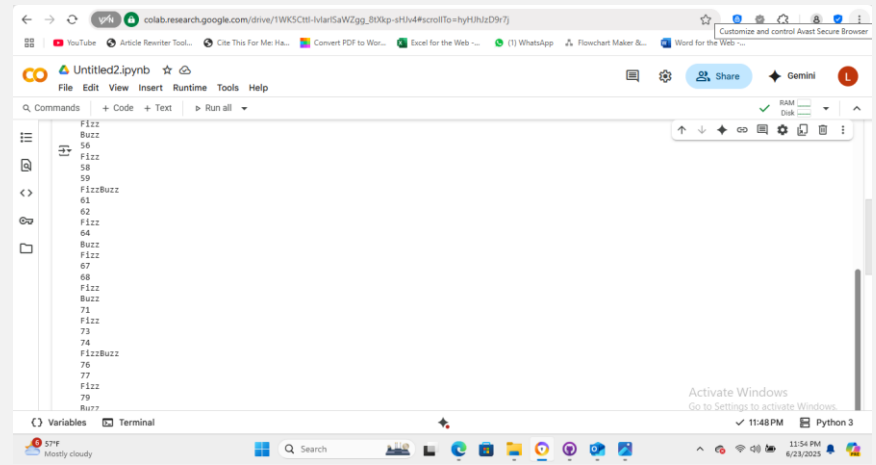
It is a common software development interview question to create the below with a certain programming language. Create the below using Python syntax, test it and past the completed syntax and output below.

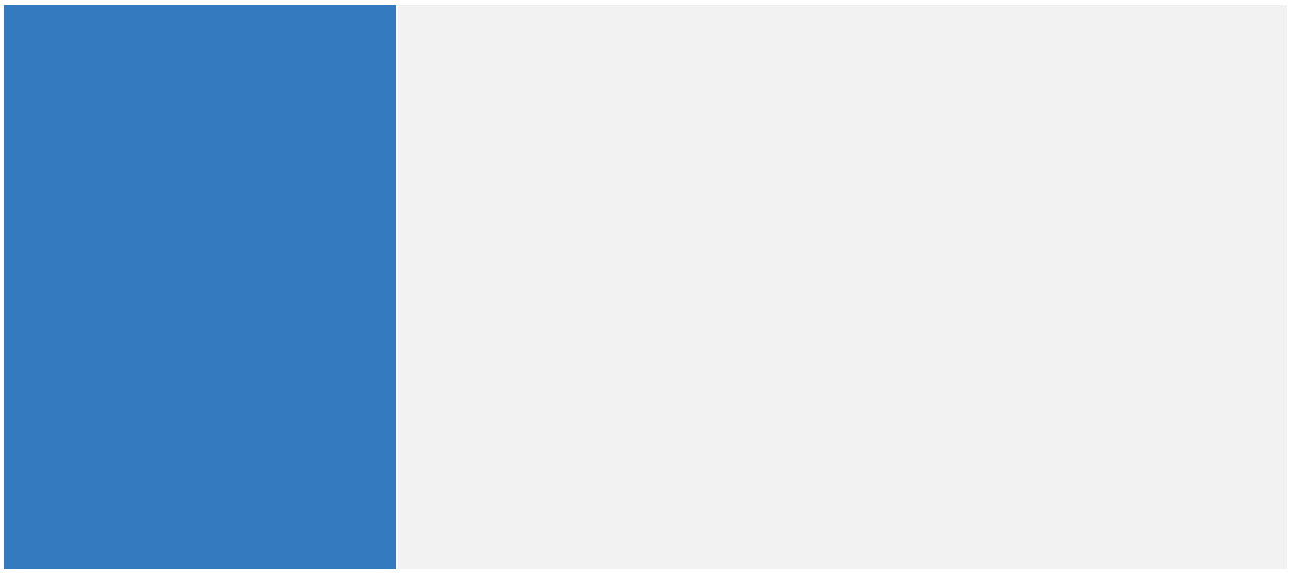
FizzBuzz:

Go through the integers from 1 to 100.
If a number is divisible by 3, print "fizz."
If a number is divisible by 5, print "buzz."
If a number is both divisible by 3 and by 5, print "fizzbuzz."
Otherwise, print just the number.

Paste your completed work to the right







Day 3: Task 1

Download the 'student.csv', complete the below exercises as a group and paste your input and output. Although this is a group activity, everyone should have the below answered so it supports your portfolio:

Exercise 1: Loading and Exploring the Data

1. Question: "Write the code to read a CSV file into a Pandas DataFrame."
2. Question: "Write the code to display the first 5 rows of the DataFrame."
3. Question: "Write the code to get the information about the DataFrame."
4. Question: "Write the code to get summary statistics for the DataFrame."

Day3_Notebook.ipynb

File Edit View Insert Runtime Tools Help

Commands + Code + Text Run all

```
[18] # 1. Read the file into a table called df
0s   df = pd.read_csv('student.csv')

     # 3. Peek at the first 5 rows to check your data
     df.head()
```

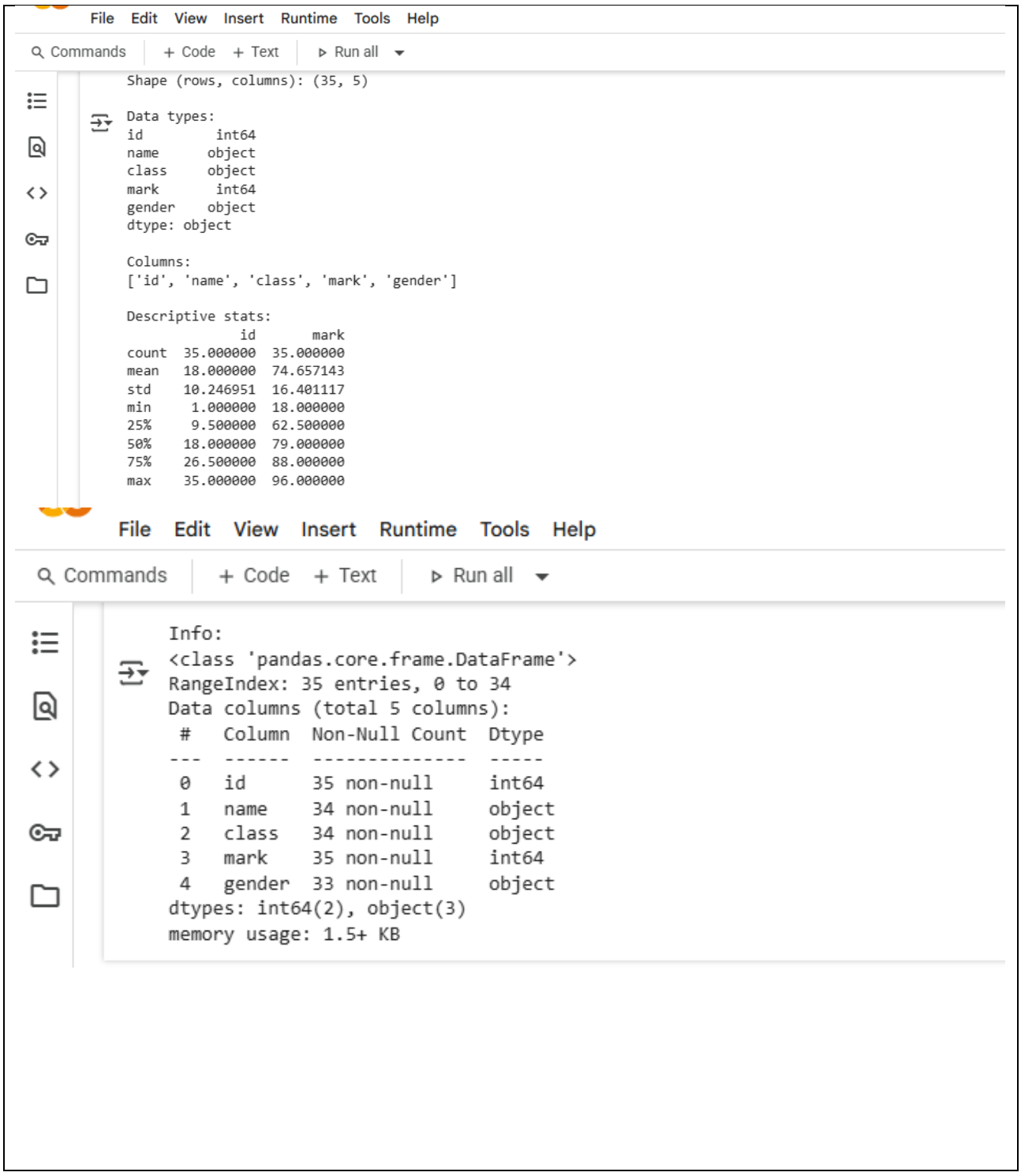
	id	name	class	mark	gender
0	1	John Deo	Four	75	female
1	2	Max Ruin	Three	85	male
2	3	Arnold	Three	55	male
3	4	Krish Star	Four	60	female
4	5	John Mike	Four	60	female

File Edit View Insert Runtime Tools Help

Commands + Code + Text Run all

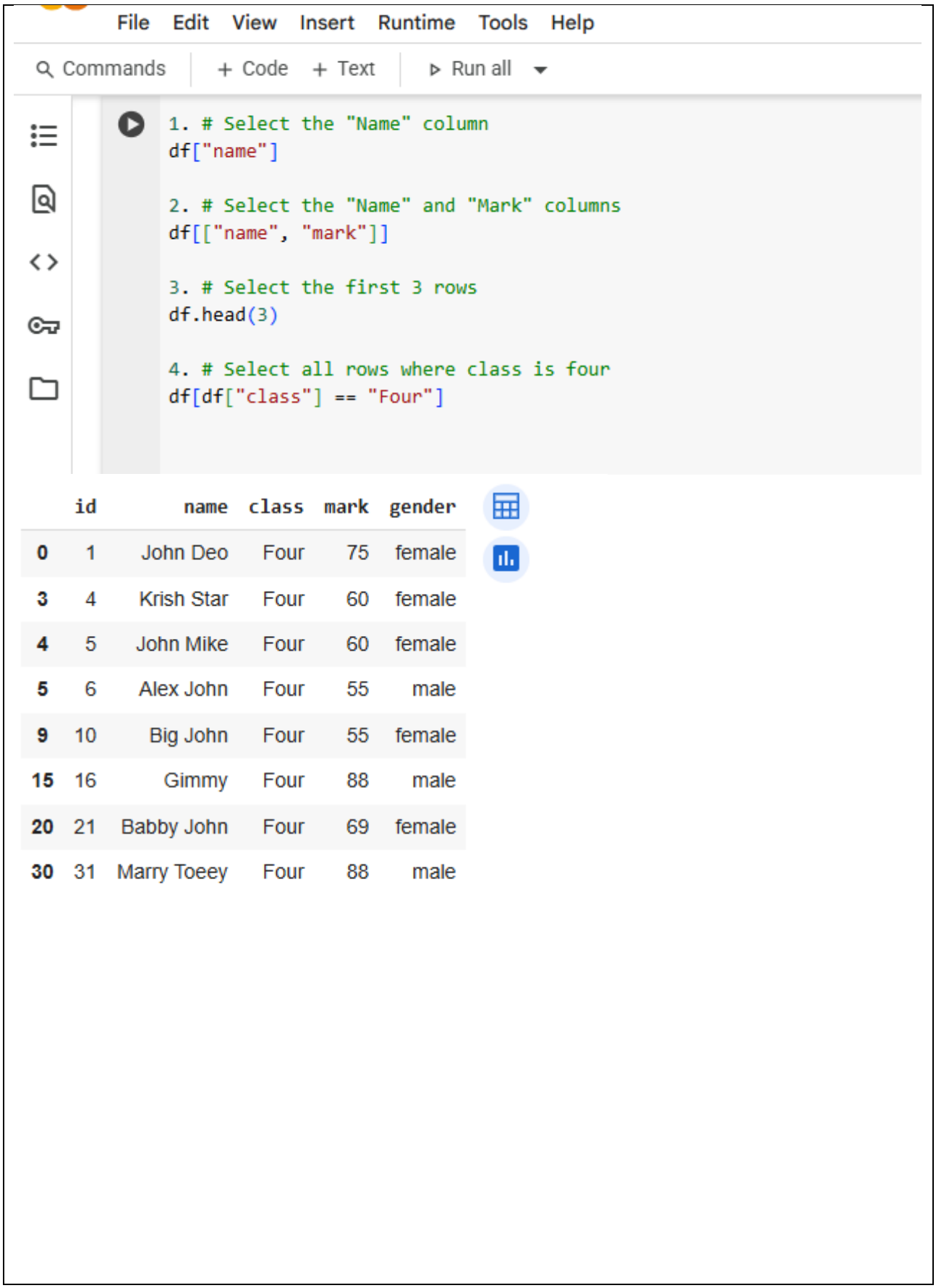
```
0s   df = pd.read_csv('student.csv')

     # 2. Peek at the first 5 rows to check your data
     df.head()

     # 3. Check the shape (rows & columns)
     print("Shape (rows, columns):", df.shape)

     # 4. Check the data types
     print("\nData types:")
     print(df.dtypes)

     # 5. List all column names
     print("\nColumns:")
     print(list(df.columns))

     # 6. See basic statistics
     print("\nDescriptive stats:")
     print(df.describe())

     # 7. Get full info
     print("\nInfo:")
     df.info()
```

Variables Terminal



Exercise 2: Indexing and Slicing

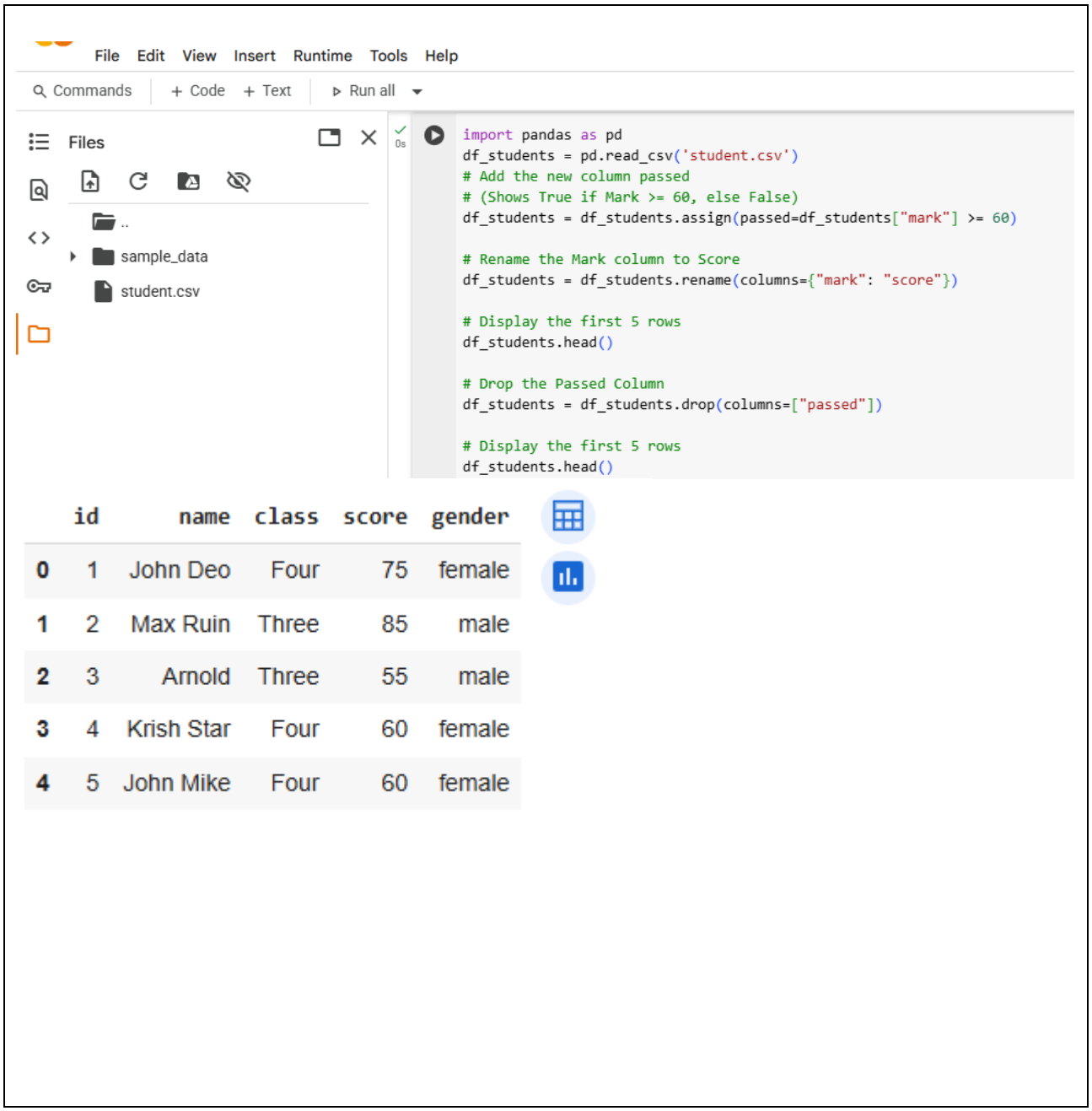
1. Question: "Write the code to select the 'name' column."
2. Question: "Write the code to select the 'name' and 'mark' columns."
3. Question: "Write the code to select the first 3 rows."
4. Question: "Write the code to select all rows where the 'class' is 'Four'."



	id	name	class	mark	gender
0	1	John Deo	Four	75	female
3	4	Krish Star	Four	60	female
4	5	John Mike	Four	60	female
5	6	Alex John	Four	55	male
9	10	Big John	Four	55	female
15	16	Gimmy	Four	88	male
20	21	Babby John	Four	69	female
30	31	Marry Toeey	Four	88	male

Exercise 3: Data Manipulation

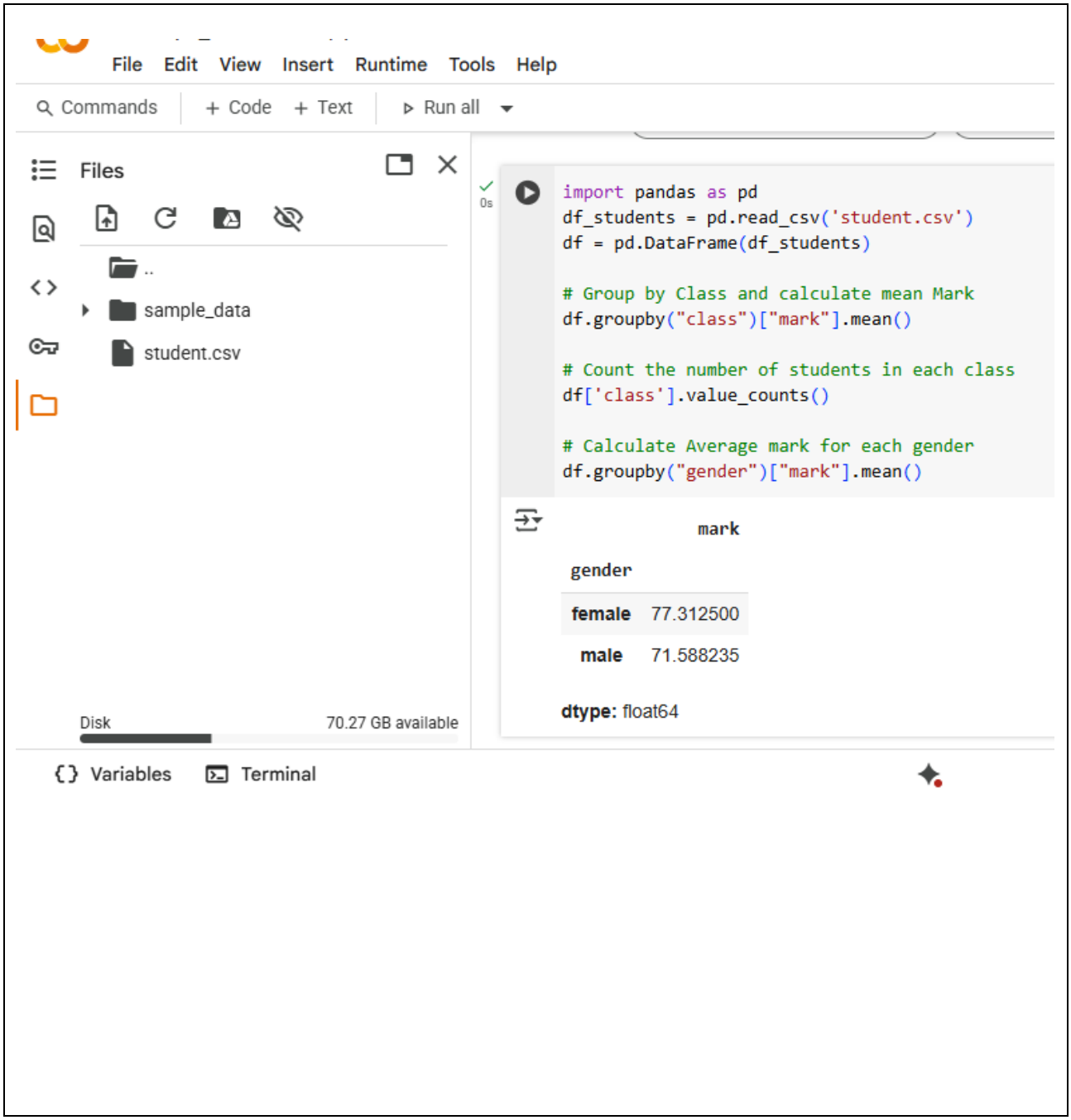
1. Question: "Write the code to add a new column 'passed' that indicates whether the student passed (mark >= 60)."
2. Question: "Write the code to rename the 'mark' column to 'score'."
3. Question: "Write the code to drop the 'passed' column."



	id	name	class	score	gender
0	1	John Deo	Four	75	female
1	2	Max Ruin	Three	85	male
2	3	Arnold	Three	55	male
3	4	Krish Star	Four	60	female
4	5	John Mike	Four	60	female

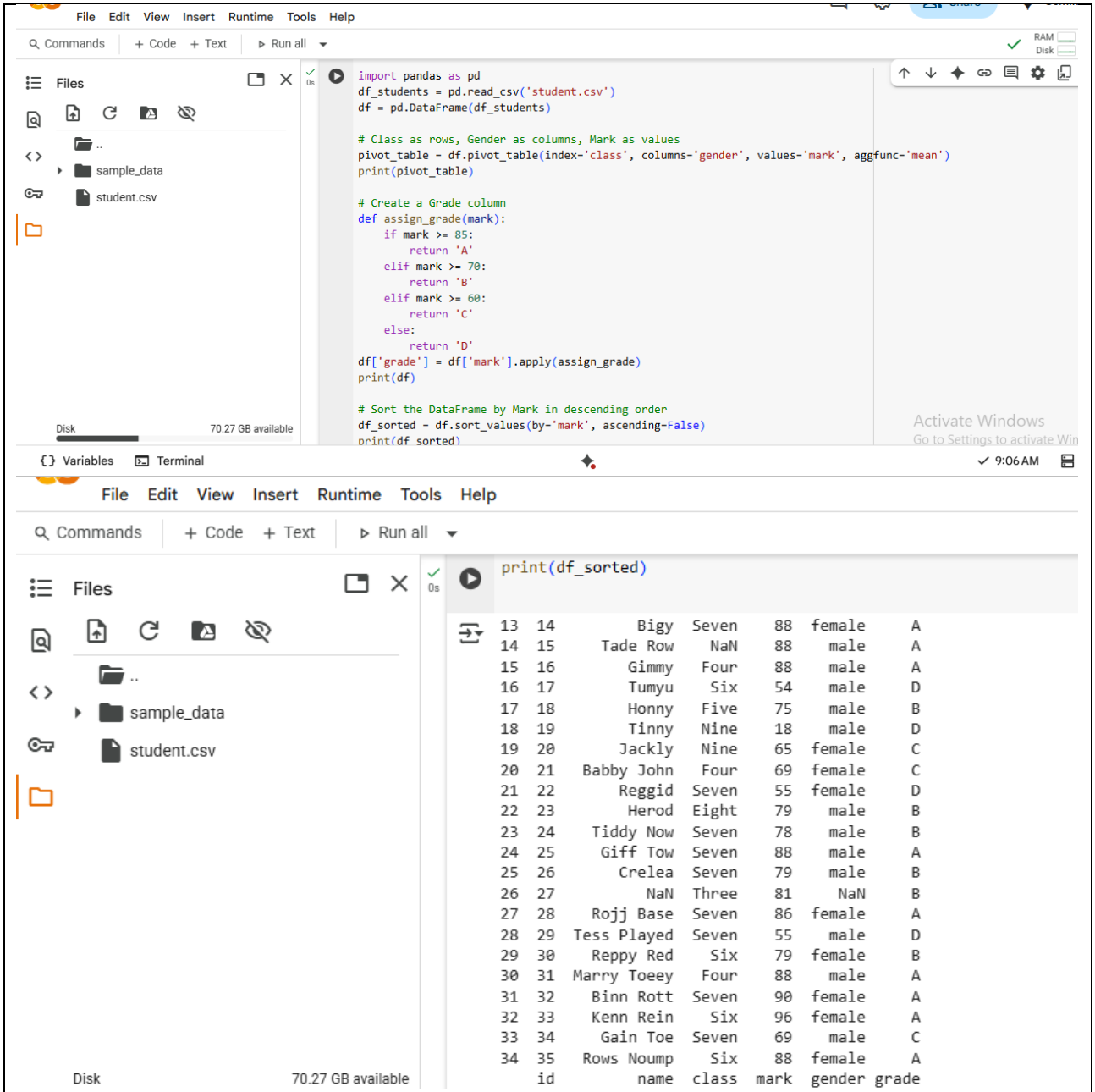
Exercise 4: Aggregation and Grouping

1. Question: "Write the code to group the DataFrame by the 'class' column and calculate the mean 'mark' for each group."
2. Question: "Write the code to count the number of students in each class."
3. Question: "Write the code to calculate the average mark for each gender."



Exercise 5: Advanced Operations

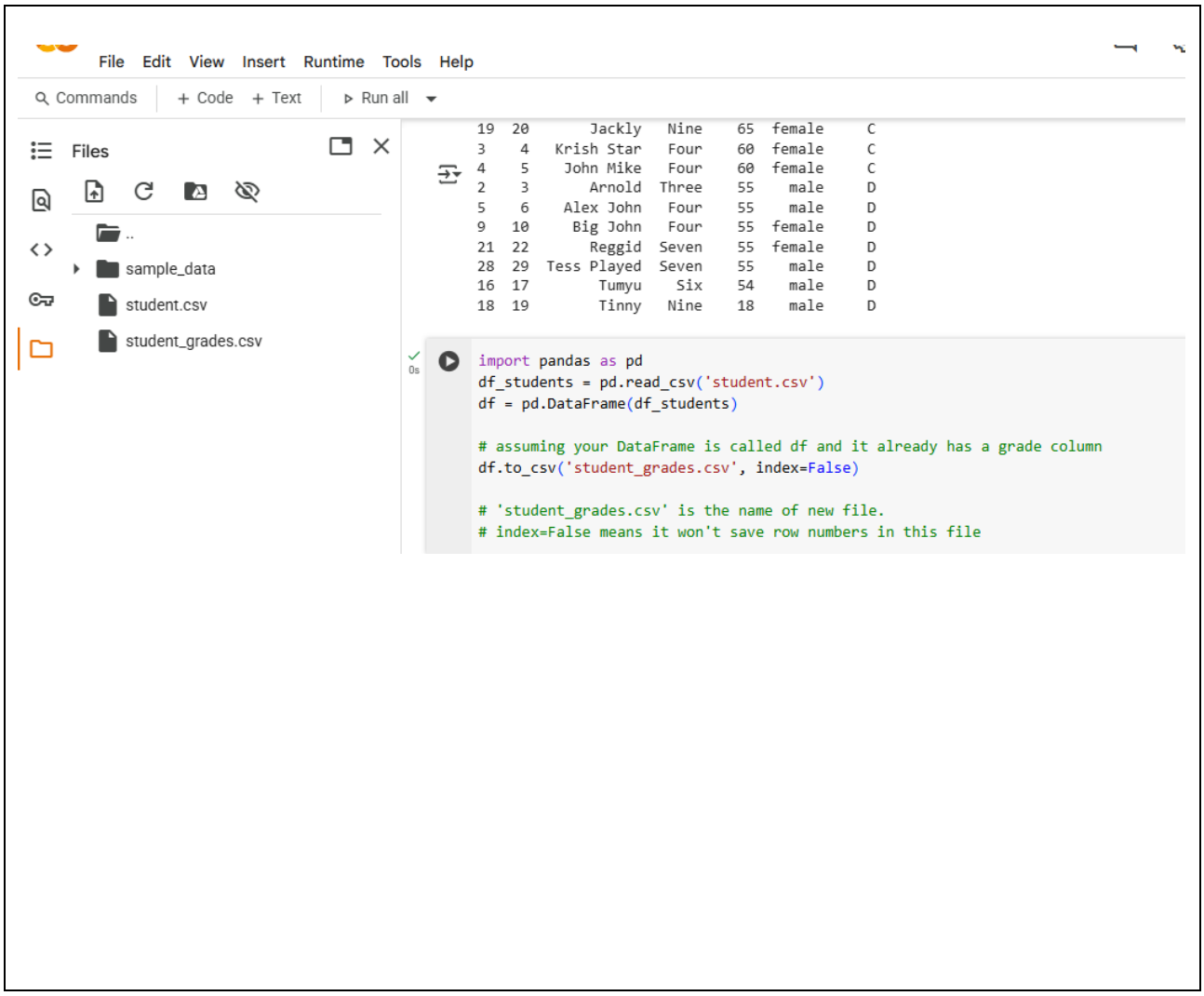
1. Question: "Write the code to create a pivot table with 'class' as rows, 'gender' as columns, and 'mark' as values."
2. Question: "Write the code to create a new column 'grade' where marks >= 85 are 'A', 70-84 are 'B', 60-69 are 'C', and below 60 are 'D'."
3. Question: "Write the code to sort the DataFrame by 'mark' in descending order."


File Edit View Insert Runtime Tools Help
Commands + Code + Text Run all
RAM
Disk
Files
..
sample_data
student.csv
Disk 70.27 GB available
import pandas as pd
df_students = pd.read_csv('student.csv')
df = pd.DataFrame(df_students)
# Class as rows, Gender as columns, Mark as values
pivot_table = df.pivot_table(index='class', columns='gender', values='mark', aggfunc='mean')
print(pivot_table)
# Create a Grade column
def assign_grade(mark):
if mark >= 85:
return 'A'
elif mark >= 70:
return 'B'
elif mark >= 60:
return 'C'
else:
return 'D'
df['grade'] = df['mark'].apply(assign_grade)
print(df)
# Sort the DataFrame by Mark in descending order
df_sorted = df.sort_values(by='mark', ascending=False)
print(df_sorted)
Activate Windows
Go to Settings to activate Win
Variables Terminal
9:06 AM

File Edit View Insert Runtime Tools Help
Commands + Code + Text Run all
Files
..
sample_data
student.csv
Disk 70.27 GB available
print(df_sorted)
13 14 Bigy Seven 88 female A
14 15 Tade Row NaN 88 male A
15 16 Gimmy Four 88 male A
16 17 Tumyu Six 54 male D
17 18 Honny Five 75 male B
18 19 Tinny Nine 18 male D
19 20 Jackly Nine 65 female C
20 21 Babby John Four 69 female C
21 22 Reggid Seven 55 female D
22 23 Herod Eight 79 male B
23 24 Tiddy Now Seven 78 male B
24 25 Giff Tow Seven 88 male A
25 26 Crelea Seven 79 male B
26 27 NaN Three 81 NaN B
27 28 Rojj Base Seven 86 female A
28 29 Tess Played Seven 55 male D
29 30 Reppy Red Six 79 female B
30 31 Marry Toeey Four 88 male A
31 32 Binn Rott Seven 90 female A
32 33 Kenn Rein Six 96 female A
33 34 Gain Toe Seven 69 male C
34 35 Rows Noump Six 88 female A
id name class mark gender grade

Exercise 6: Exporting Data

1. Question: "Write the code to save the DataFrame with the new 'grade' column to a new CSV file."

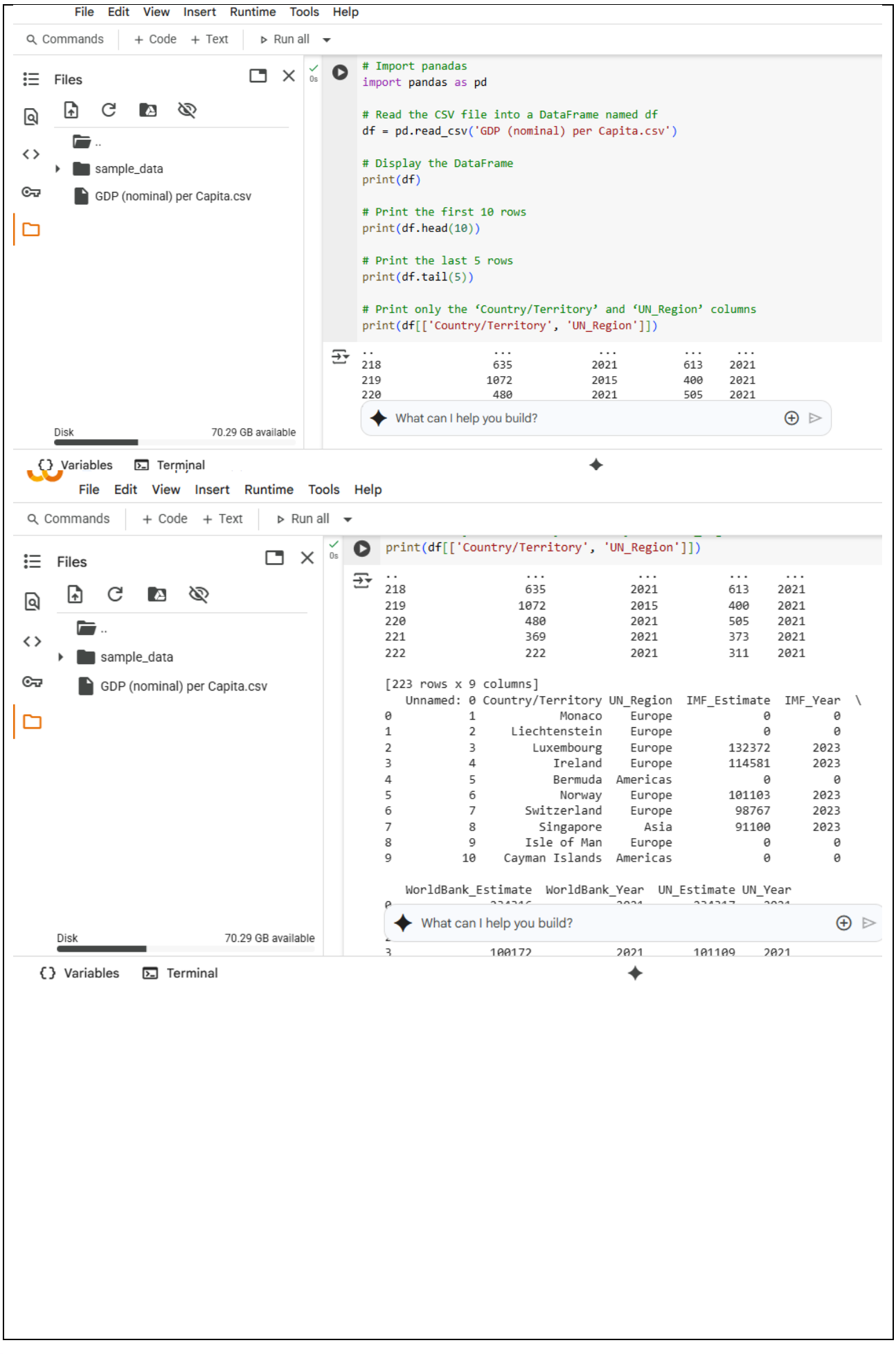


Exercise 7: If finished early try visualising the results

Day 4: Task 1

Using the 'GDP (nominal) per Capita.csv' which can be downloaded from the shared Folder, complete the below exercises and paste your input and output. Work individually, but we will work and support each other in the room.

- Read and save the 'GDP (nominal) per Capita' data to a data frame called "df" in Jyputer notebook
- Print the first 10 rows
- Print the last 5 rows
- Print 'Country/Territory' and 'UN_Region' columns

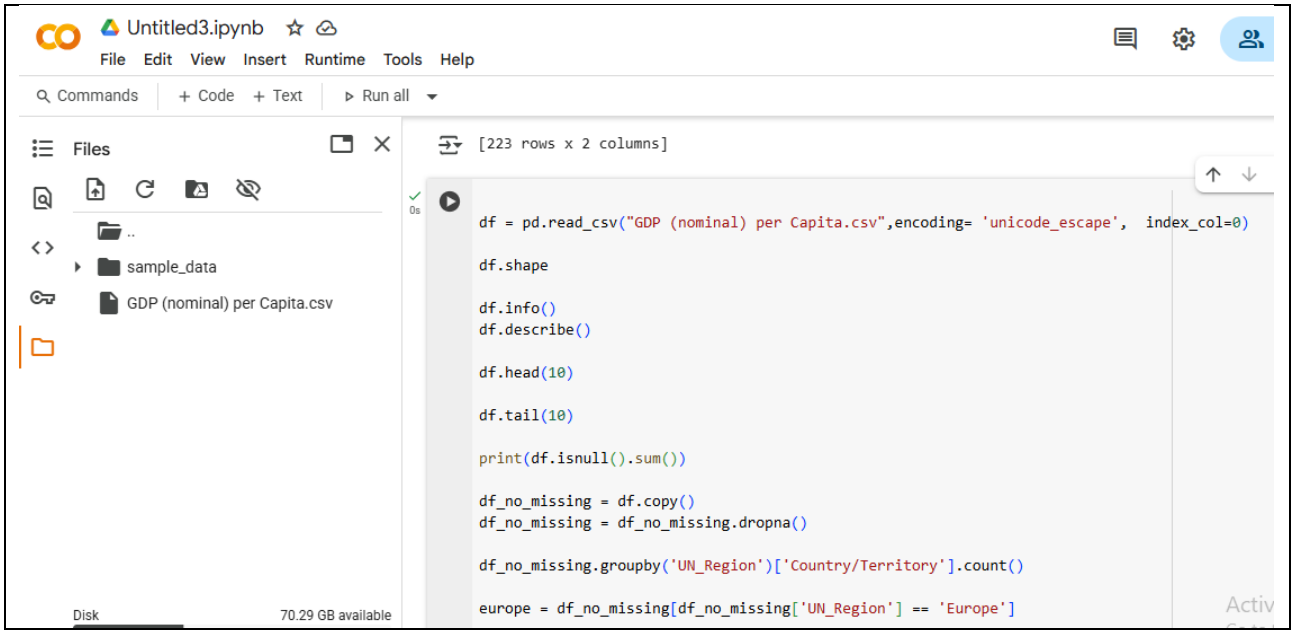

File Edit View Insert Runtime Tools Help
Commands + Code + Text Run all
Files
..
sample_data
GDP (nominal) per Capita.csv
Disk 70.29 GB available
# Import panadas
import pandas as pd
# Read the CSV file into a DataFrame named df
df = pd.read_csv('GDP (nominal) per Capita.csv')
# Display the DataFrame
print(df)
# Print the first 10 rows
print(df.head(10))
# Print the last 5 rows
print(df.tail(5))
# Print only the 'Country/Territory' and 'UN_Region' columns
print(df[['Country/Territory', 'UN_Region']])
218 635 2021 613 2021
219 1072 2015 400 2021
220 480 2021 505 2021
What can I help you build?
Variables Terminal
File Edit View Insert Runtime Tools Help
Commands + Code + Text Run all
Files
..
sample_data
GDP (nominal) per Capita.csv
Disk 70.29 GB available
print(df[['Country/Territory', 'UN_Region']])
218 635 2021 613 2021
219 1072 2015 400 2021
220 480 2021 505 2021
221 369 2021 373 2021
222 222 2021 311 2021
[223 rows x 9 columns]
Unnamed: 0 Country/Territory UN_Region IMF_Estimate IMF_Year \
0 1 Monaco Europe 0 0
1 2 Liechtenstein Europe 0 0
2 3 Luxembourg Europe 132372 2023
3 4 Ireland Europe 114581 2023
4 5 Bermuda Americas 0 0
5 6 Norway Europe 101103 2023
6 7 Switzerland Europe 98767 2023
7 8 Singapore Asia 91100 2023
8 9 Isle of Man Europe 0 0
9 10 Cayman Islands Americas 0 0
WorldBank_Estimate WorldBank_Year UN_Estimate UN_Year
What can I help you build?
Variables Terminal

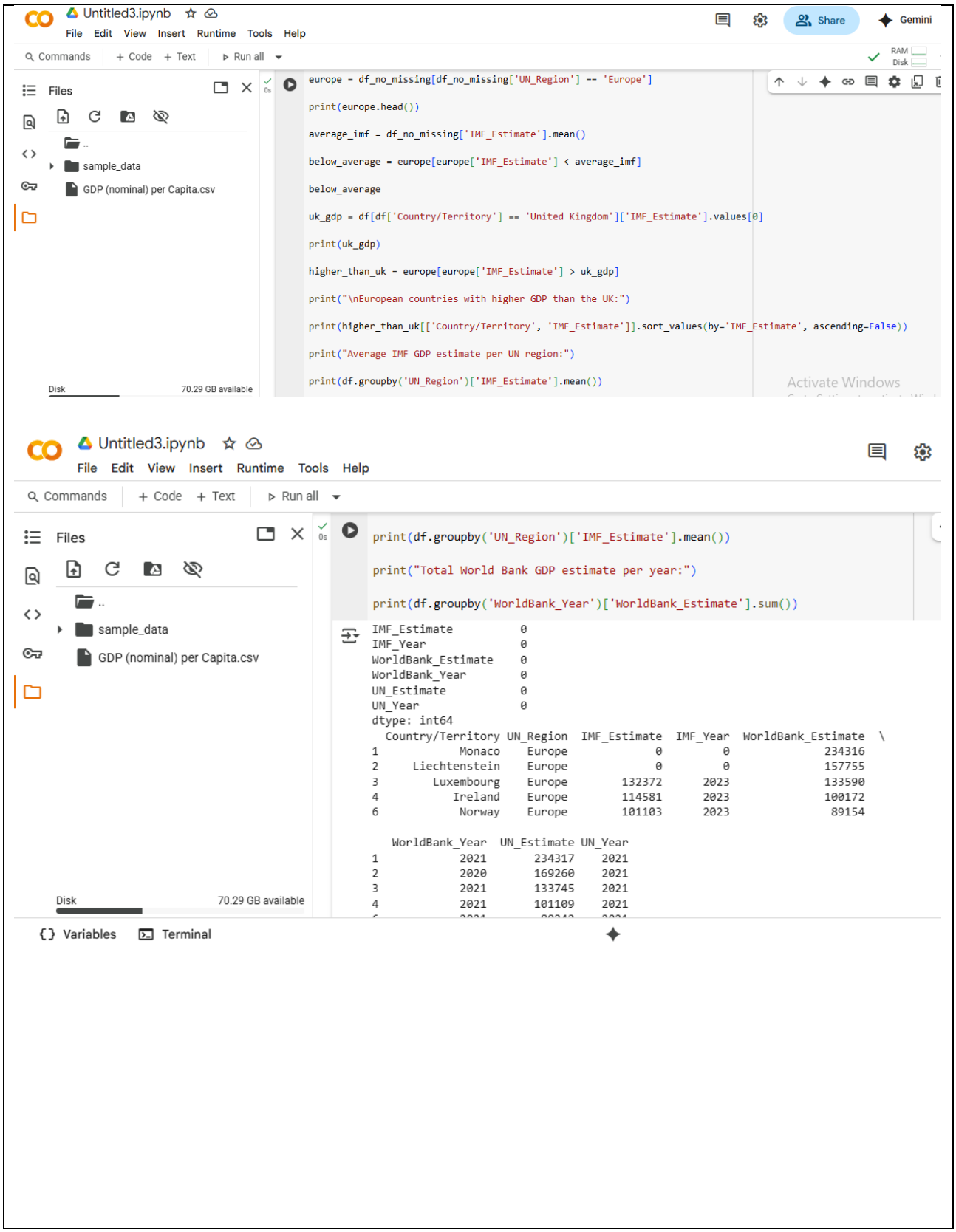
Day 4: Task 2

Back with 'GDP (nominal) per Capita'. As a group, import and work your way through the Day_4_Python_Activity.ipynb notebook which can be found on the shared Folder. There are questions to answer, but also opportunities to have fun with the data – paste your input and output below.

Once complete, and again as a group, work with some more data and have some fun – there is no set agenda for this section, other than to embed the skills developed this week. Paste your input and output below and upon return we'll discuss progress made.

[Additional data found here.]

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sample_data
GDP (nominal) per Capita.csv
Disk
70.29 GB available
europe = df_no_missing[df_no_missing['UN_Region'] == 'Europe']
print(europe.head())
average_imf = df_no_missing['IMF_Estimate'].mean()
below_average = europe[europe['IMF_Estimate'] < average_imf]
below_average
uk_gdp = df[df['Country/Territory'] == 'United Kingdom']['IMF_Estimate'].values[0]
print(uk_gdp)
higher_than_uk = europe[europe['IMF_Estimate'] > uk_gdp]
print("\nEuropean countries with higher GDP than the UK:")
print(higher_than_uk[['Country/Territory', 'IMF_Estimate']].sort_values(by='IMF_Estimate', ascending=False))
print("Average IMF GDP estimate per UN region:")
print(df.groupby('UN_Region')['IMF_Estimate'].mean())
Activate Windows
Untitled3.ipynb
File Edit View Insert Runtime Tools Help
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Run all
Files
..
sample_data
GDP (nominal) per Capita.csv
Disk
70.29 GB available
print(df.groupby('UN_Region')['IMF_Estimate'].mean())
print("Total World Bank GDP estimate per year:")
print(df.groupby('WorldBank_Year')['WorldBank_Estimate'].sum())
IMF_Estimate 0
IMF_Year 0
WorldBank_Estimate 0
WorldBank_Year 0
UN_Estimate 0
UN_Year 0
dtype: int64
Country/Territory UN_Region IMF_Estimate IMF_Year WorldBank_Estimate \
1 Monaco Europe 0 0 234316
2 Liechtenstein Europe 0 0 157755
3 Luxembourg Europe 132372 2023 133590
4 Ireland Europe 114581 2023 100172
6 Norway Europe 101103 2023 89154
WorldBank_Year UN_Estimate UN_Year
1 2021 234317 2021
2 2020 169260 2021
3 2021 133745 2021
4 2021 101109 2021
Variables
Terminal

Course Notes

It is recommended to take notes from the course, use the space below to do so, or use the revision guide shared with the class:

We have included a range of additional links to further resources and information that you may find useful, these can be found within your revision guide.

END OF WORKBOOK

Please check through your work thoroughly before submitting and update the table of contents if required.

Please send your completed work booklet to your trainer.