


# SAS Studio

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- SAS Studio (WRDS) (Registration Required)**

# Introduction to SAS

- SAS is a software platform that allows you to create, store, manage, and analyze your data.
- SAS has many interfaces such as SAS Studio, PC SAS, and Unix SAS.



# Learning Objectives

- Introduction to SAS and SAS Studio
- Accessing WRDS data through SAS Studio
- Using the table view to filter data
- Write and read a basic data step in SAS Studio
- Export a table in SAS Studio

# Logging in to WRDS

- Go to WRDS log in:  
<https://wrds-web.wharton.upenn.edu/>
- Use your username and password.
- Please do not share this information.

# WRDS Sign In Page



## Sign In

Username

Username

Password

.....

 [Register for a WRDS Account](#)

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## Welcome to WRDS!

Wharton Research Data Services (WRDS) is the award-winning research platform and business intelligence tool for over 30,000 corporate, academic, government and nonprofit clients at over 375 institutions in 33 countries.

WRDS provides the user with one location to access over 200 terabytes of data across multiple disciplines including Accounting, Banking, Economics, Finance, ESG, and Statistics.



Flexible data delivery options include a powerful web query method that reduces research time, the WRDS Cloud for executing research and strategy development, and the WRDS client server using PCSAS, Matlab, Python and R.

Our Analytics team, doctoral-level support and rigorous data review and validation give clients the confidence to tailor research within complex databases and create a wide range of reliable data models.

WRDS provides access to S&P Capital IQ, CRSP, NYSE, Thomson Reuters, Bureau van Dijk, Global Insight, OptionMetrics and other important business research databases.

From partnerships with data vendors, to our own tools including the WRDS SEC Analytics Suite, WRDS Quant Alpha Platform and the Wharton School's OTIS - WRDS is the global gold standard in data management and research, all backed by the credibility and leadership of the Wharton School.

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Featured

**BEST PAPER AWARD WINNER**  
Congratulations to the winner of the Eastern Finance Association 2016 *WRDS Best Paper Award* — Gerald Abdesaken, [Conflicts of Interest in Multi-Fund Management](#)

Have you conducted research using WRDS? [Let us know](#) so we can showcase your work.

[View all data available on WRDS](#)

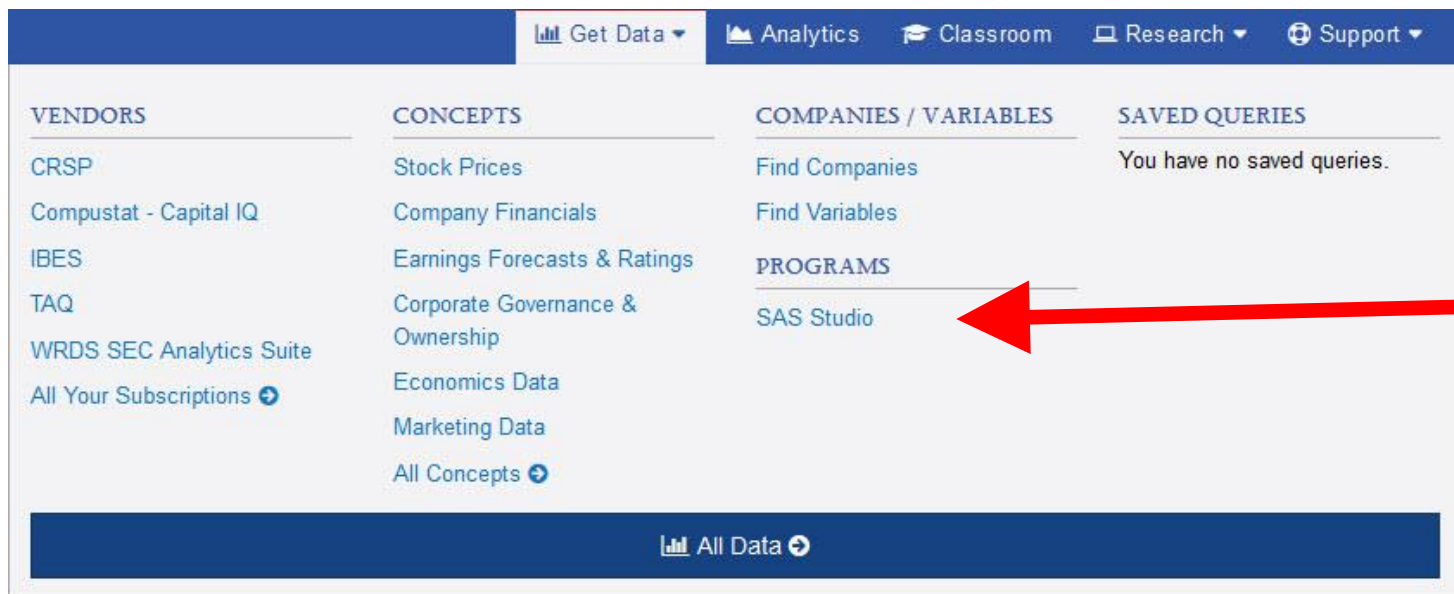
# Access SAS Studio

- From the homepage click the Get Data tab.
- A drop down menu should appear. Under the Programs category click SAS Studio.
- Click the Get Started box.
- You will be directed to the SAS Studio Sign In page.



# Access SAS Studio (cont.)

Step 1:  
Click Get Data  
to see all  
options



The screenshot displays the WRDS web interface. At the top, a navigation bar includes 'Get Data', 'Analytics', 'Classroom', 'Research', and 'Support'. Below this, the 'Get Data' section is expanded, showing four columns: 'VENDORS', 'CONCEPTS', 'COMPANIES / VARIABLES', and 'SAVED QUERIES'. The 'COMPANIES / VARIABLES' column contains links for 'Find Companies', 'Find Variables', and a 'PROGRAMS' section. Under 'PROGRAMS', 'SAS Studio' is listed. A red arrow points from the 'Get Data' dropdown menu to the 'SAS Studio' link. Another red arrow points from the 'SAS Studio' link to the right, towards the 'Step 2' text.

VENDORS	CONCEPTS	COMPANIES / VARIABLES	SAVED QUERIES
CRSP	Stock Prices	Find Companies	You have no saved queries.
Compustat - Capital IQ	Company Financials	Find Variables	
IBES	Earnings Forecasts & Ratings	<b>PROGRAMS</b>	
TAQ	Corporate Governance & Ownership	SAS Studio	
WRDS SEC Analytics Suite	Economics Data		
All Your Subscriptions	Marketing Data		
	All Concepts		

[All Data](#)

Step 2:  
Click  
SAS Studio

# Access SAS Studio (cont.)

## SAS Studio on WRDS

SAS Studio is a web application that lets you access SAS through your browser.

### How It Works

SAS Studio is an interface to the SAS server running on the WRDS environment. It complements [SAS on Unix](#), [SAS Connect on a PC](#), and the SAS Share interface to [R](#), [Matlab](#), and other languages. Since a new connection is established, you will be prompted to **enter your password**.

It looks like the SAS interface found on the PC, but has direct access to WRDS data like on Unix.

All standard browsers are supported, including Firefox, Chrome, Internet Explorer, and Safari.

### Who should use it?

At this time, SAS Share is available to Faculty, staff, PhD students, and research assistants.

People using a **Mac** and those who happen to be at a computer that does not have PC SAS installed will find SAS Share very convenient. Unix users looking for a more **friendly interface** may also find it useful.

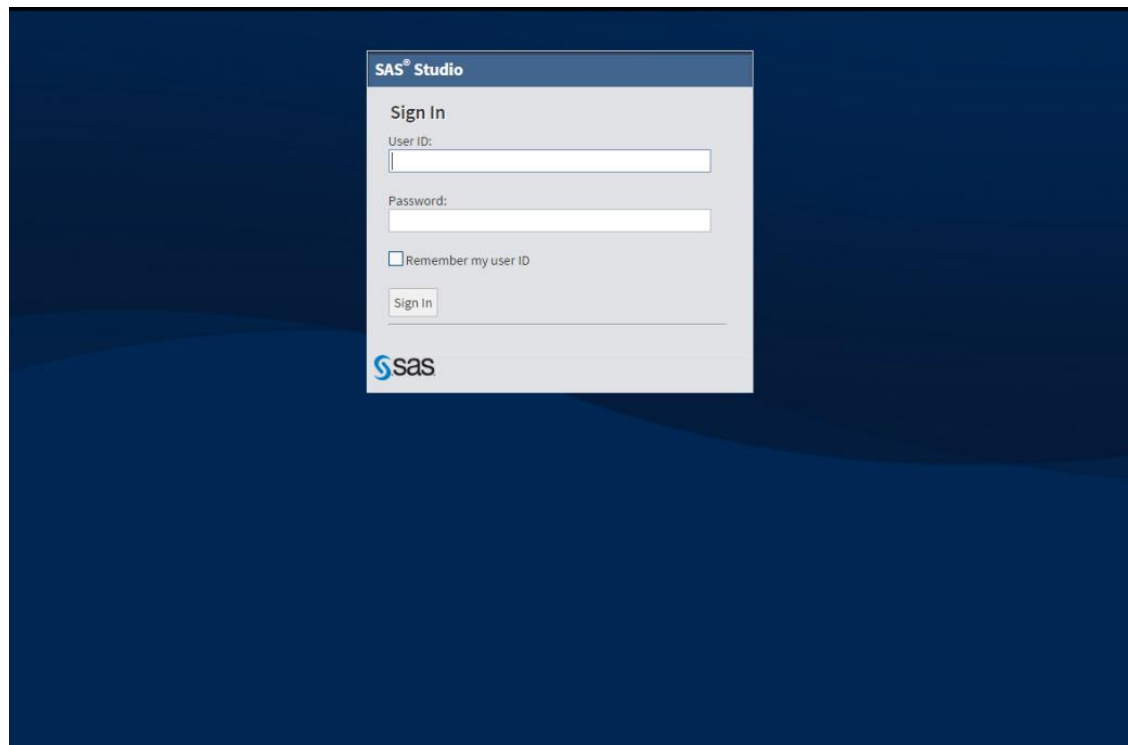
Step 3: Click  
Get Started



» Get Started

SAS Studio is currently being beta tested. If you have feedback or experience any problems, please [let us know!](#)

# Access SAS Studio (cont.)



Step 4: Enter User ID  
and Password  
(It should be the same  
as the WRDS login  
credentials.)

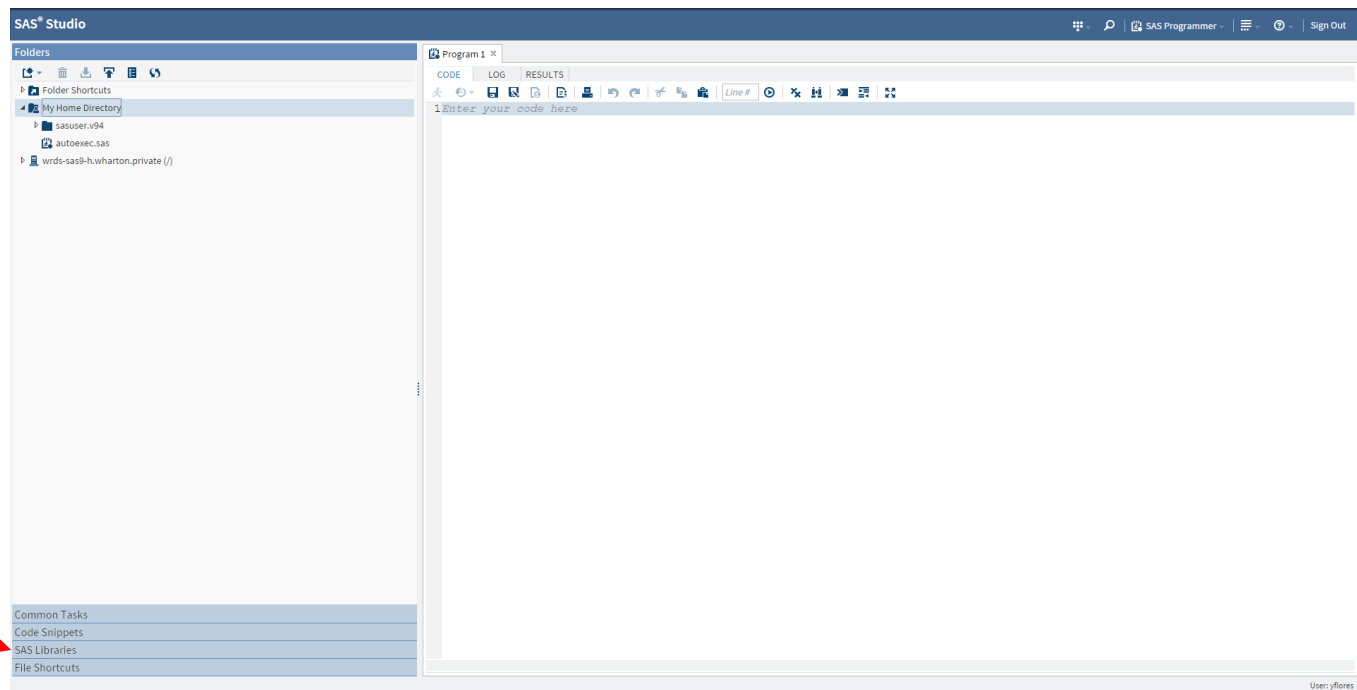
# Assignment: Retrieving Stock Price Data

- Your assignment is to access WRDS and download the monthly stock prices for IBM, Amazon, and Wal-Mart in 2001 using the SAS Studio interface.

# Filtering in the Table View

- Stock price data is provided by Compustat. To query the Compustat data, select COMP in the left navigation menu under SAS Libraries.
- Inside COMP, click on SECM.
- Select the necessary columns: **datadate**, **tic**, **prccm**
- Filter the table to get a subset of the observations needed.

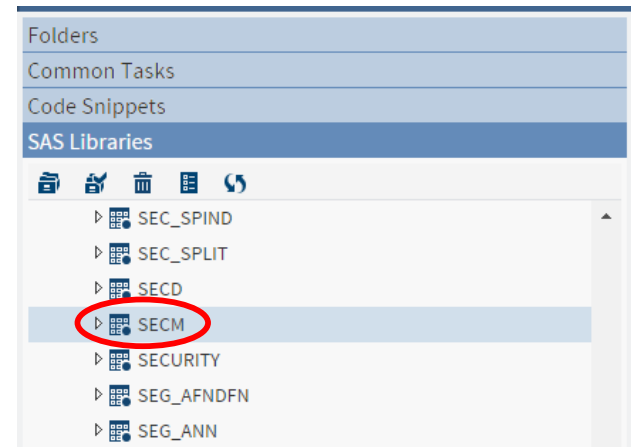
# Filtering in the Table View (cont.)



Expand  
SAS  
Libraries

# Filtering in the Table View (cont.)

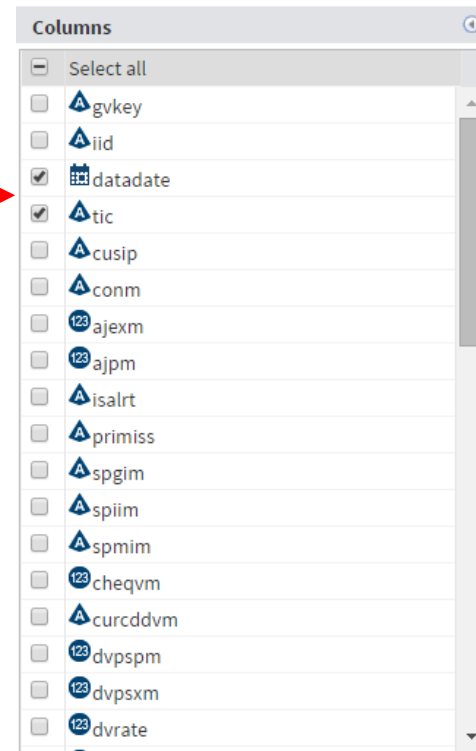
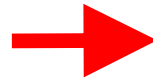
- Expand My Libraries under SAS Libraries.
- Find and expand the COMP library.
- Scroll down, find the SECM table, and double click it.



# Filtering in the Table View (cont.)

- Select the necessary columns in the Columns box:

- **datadate**
- **tic**
- **prccm**





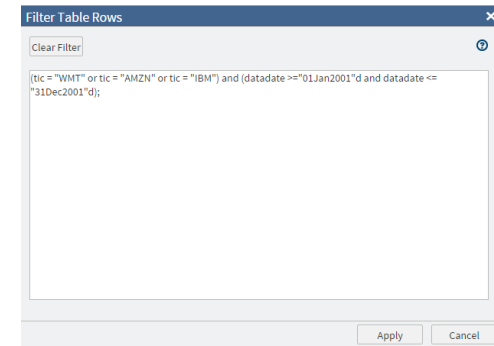
# Filtering in the Table View (cont.)

- Click the Filter icon.



- We will filter the data so tic is AMZN, IBM, or WMT and datadate is between Jan. 1, 2001 and Dec. 31, 2001. Enter the code below in the window and click Apply.

(tic = "WMT" or tic = "AMZN" or tic = "IBM") and  
(datadate >="01Jan2001"d and datadate <=  
"31Dec2001"d);



# Filtering in the Table View (cont.)

Your filtered table should have 36 rows.

The screenshot displays the SAS Studio interface. On the left, the 'SAS Libraries' pane shows a tree structure with 'My Libraries' expanded, listing various datasets under the 'COMP' library. The main workspace shows a table view with columns 'date', 'tic', and 'prccm'. The table is filtered, and the status bar at the bottom indicates 'Total rows: 5981177' and 'Filtered rows: 36'. The filter criteria are visible in the top right: 'Filter: (tic = "WMT" or tic = "AMZN" or tic = "IBM") and (date >= "01Jan2001" and date <= "31Dec2001")'. The table data includes rows for various companies like AMZN, IBM, and WMT, with their respective dates and prices.

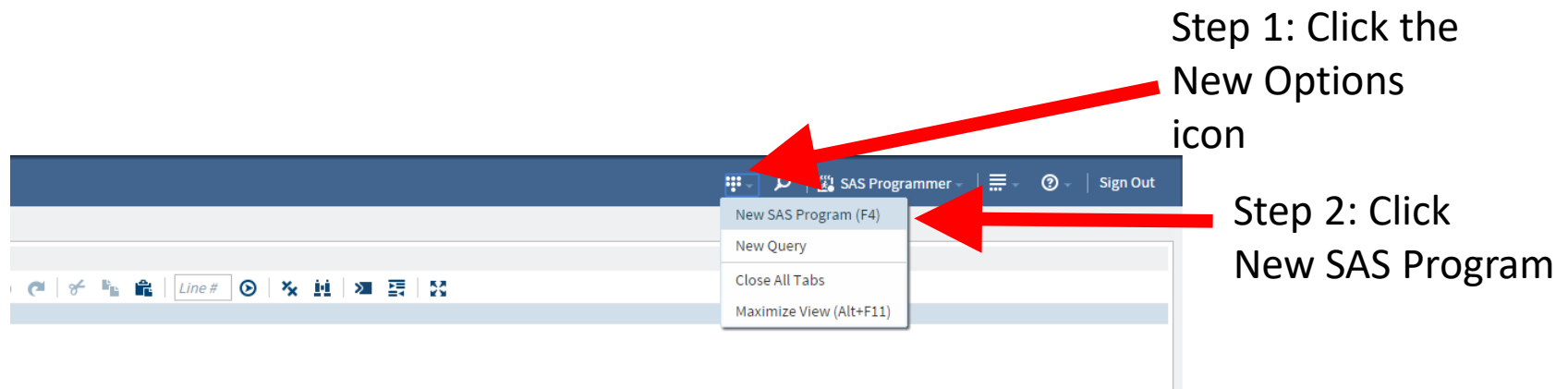
	date	tic	prccm
1	20010131	AMZN	17.3125
2	20010228	AMZN	10.1875
3	20010331	AMZN	10.2300
4	20010430	AMZN	15.7800
5	20010531	AMZN	16.6900
6	20010630	AMZN	14.1500
7	20010731	AMZN	12.4900
8	20010831	AMZN	8.9400
9	20010930	AMZN	5.9700
10	20011031	AMZN	6.9800
11	20011130	AMZN	11.3200
12	20011231	AMZN	10.8200
13	20010131	IBM	112.0000
14	20010228	IBM	99.9000
15	20010331	IBM	96.1800
16	20010430	IBM	115.1400
17	20010531	IBM	111.8000
18	20010630	IBM	113.0000
19	20010731	IBM	105.2100
20	20010831	IBM	99.9500
21	20010930	IBM	91.7200
22	20011031	IBM	108.0700
23	20011130	IBM	115.5900
24	20011231	IBM	120.9600
25	20010131	WMT	56.8000
26	20010228	WMT	50.0900
27	20010331	WMT	50.5000
28	20010430	WMT	51.7400
29	20010531	WMT	51.7500
30	20010630	WMT	48.8000
31	20010731	WMT	55.9000
32	20010831	WMT	48.0500

# Subset Using a Query

- It is possible to create the same table using a query instead of filtering in the Table view.
- Open a new program to write a query.
- Write a query that reads a table and creates a separate filtered table.
- Create a subset of data using **keep** and **where** statements.
- Export the new table into a CSV file.

# Subset Using a Query (cont.)

- To open a new program, click the New Options icon and click New SAS Program.



# Data Step

Write the following code in the program:

```
1 data work.monthlyStocks;  
2   set comp.secm;  
3   keep datadate tic prccm;  
4   where (tic = "WMT" or tic = "AMZN" or tic = "IBM") and (datadate >= "01Jan2001"d and datadate <= "31Dec2001"d);  
5 run;
```

Line 1: Initializes a data step and creates a new table, **monthlyStocks**, in the WORK library

Line 2: Reads the **secm** table from the **comp** library

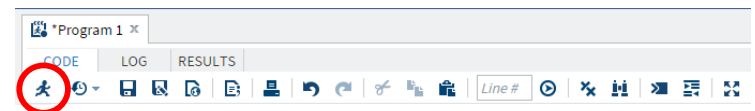
Line 3: Keeps 3 columns - **datadate**, **tic**, and **prccm** - in the filtered table

Line 4: Filters the rows to include only observations where **tic** is AMZN, IBM or WMT, and **datadate** is between Jan. 1, 2001 and Dec. 31, 2001

(Note: The code after the keyword WHERE is the same as the code submitted in the filter window in the table view.)

Line 5: Ends the data step

Click the Run icon to submit the code.

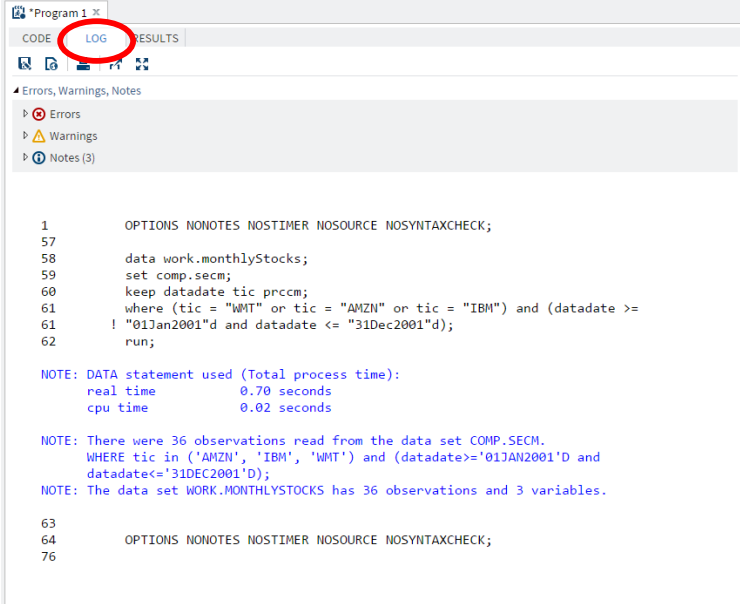


# Data Step (cont.)

- Make sure all statements end with a semicolon.
- Keywords such as **data**, **set**, **keep**, **where**, and **run** are not case sensitive.
- Values are case sensitive. Everything enclosed by quotes must be the proper case. In this case they must be uppercase.

# Data Step (cont.)

- After you have run your code, check the log to confirm that the code ran without errors, and that the table was created.



```
*Program 1
CODE LOG RESULTS
Errors, Warnings, Notes
Errors
Warnings
Notes (3)

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
57
58      data work.monthlyStocks;
59      set comp.secm;
60      keep datadate tic prccm;
61      where (tic = "WMT" or tic = "AMZN" or tic = "IBM") and (datadate >=
62      ! "01Jan2001"d and datadate <= "31Dec2001"d);
63      run;

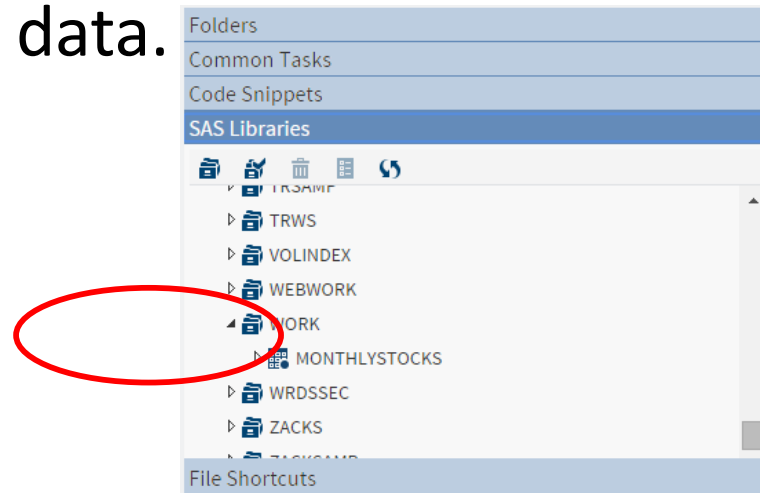
NOTE: DATA statement used (Total process time):
      real time        0.70 seconds
      cpu time         0.02 seconds

NOTE: There were 36 observations read from the data set COMP.SECM.
      WHERE tic in ('AMZN', 'IBM', 'WMT') and (datadate>='01JAN2001'D and
      datadate<='31DEC2001'D);
NOTE: The data set WORK.MONTHLYSTOCKS has 36 observations and 3 variables.

63
64      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
76
```

# Data Step (cont.)

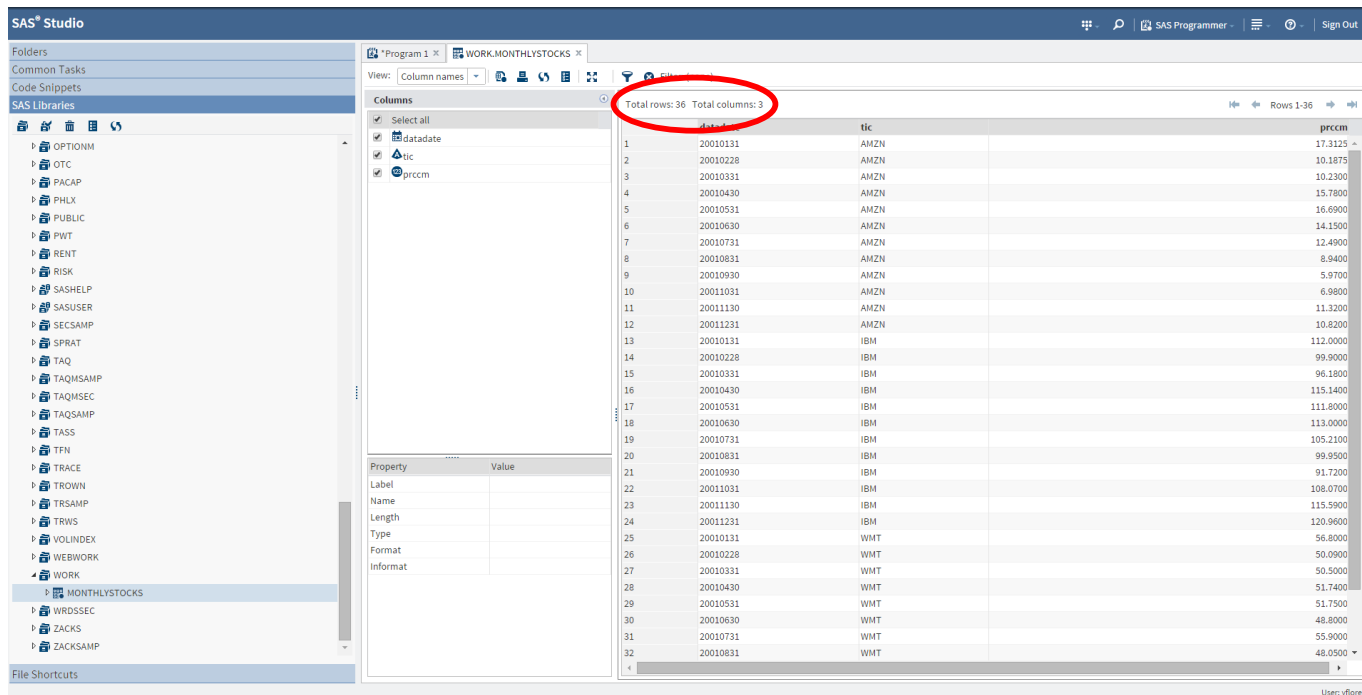
- In the SAS Libraries Directory, expand the WORK library. The WORK library is a temporary library whose content is deleted after each session.
- Double click the MONTHLYSTOCKS table just created to view your data.





# Data Step (cont.)

- The table should have 36 rows and three columns.



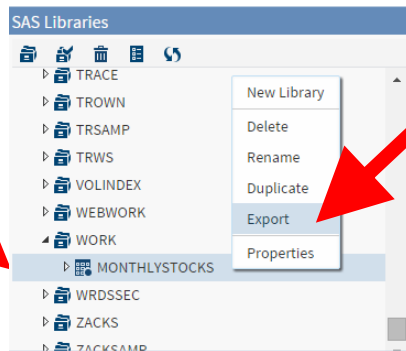
The screenshot displays the SAS Studio interface. On the left is the 'SAS Libraries' pane showing various libraries like OPTIONM, OTC, PACAP, etc. The main window shows a data table with 36 rows and 3 columns. The columns are labeled 'date', 'tic', and 'prccm'. The rows contain data for various companies, including AMZN and IBM, with dates and prices. A red circle highlights the status bar text 'Total rows: 36 Total columns: 3'.

	date	tic	prccm
1	20010131	AMZN	17.3125
2	20010228	AMZN	10.1875
3	20010331	AMZN	10.2300
4	20010430	AMZN	15.7800
5	20010531	AMZN	16.6900
6	20010630	AMZN	14.1500
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19	20010731	IBM	105.2100
20	20010831	IBM	99.9500
21	20010930	IBM	91.7200
22	20011031	IBM	108.0700
23	20011130	IBM	115.5900
24	20011231	IBM	120.9600
25	20010131	WMT	56.8000
26	20010228	WMT	50.0900
27	20010331	WMT	50.5000
28	20010430	WMT	51.7400
29	20010531	WMT	51.7500
30	20010630	WMT	48.8000
31	20010731	WMT	55.9000
32	20010831	WMT	48.0500

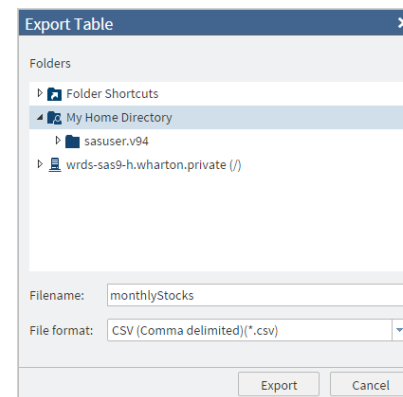
# Export Data

- Right-click MONTHLYSTOCKS in the WORK library.
- In the menu click Export.
- An Export Table window will appear. Choose a folder in the home directory to place the new file, enter a filename, and pick a file format. Then click Export.

Step 1:  
Right-click  
table



Step 2: Click  
Export



Step 3: Choose a  
folder in the home  
directory, enter a  
filename, and file  
format

Step 4: Click Export

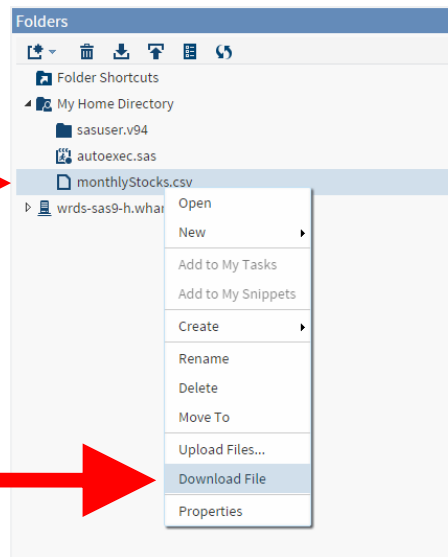
# Export Data (cont.)

- Expand Folders and locate your file.
- Right-click your file and click Download File.
- The file should be downloaded to your machine.

Step 1: Right-click  
your file



Step 2: Click  
Download File



# Additional Help

For SAS help:

<https://support.sas.com/techsup/contact/>

For Compustat SECM table information:

[https://wrds-web.wharton.upenn.edu/wrds/tools/variable.cfm?library\\_id=7&file\\_id=65619](https://wrds-web.wharton.upenn.edu/wrds/tools/variable.cfm?library_id=7&file_id=65619)

# Thank You



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