

Sort Spreadsheet with Program

User

Could you help me sort a spreadsheet? I need a program that will sort a spreadsheet for me.

ChatGPT

Of course! I can help you create a program to sort a spreadsheet. Which programming language would you prefer to use? Additionally, could you provide more details about the spreadsheet and how you want it to be sorted? For example, the format of the spreadsheet (e.g., Excel, CSV), the column(s) you want to sort by, and whether the sort should be ascending or descending.

User

Yes, the spreadsheet is an excel spreadsheet. The spreadsheet has 5 columns and I would like to sort it by the third column. I do not have a preferred programming language. I do not know how to code so I am happy to use any language that you think makes sense.

ChatGPT

Let's use Python with the `pandas` library, as it's powerful and relatively easy to work with for tasks like this. Here's a step-by-step guide to sorting your Excel spreadsheet by the third column.

Step 1: Install the necessary libraries

You need to have `pandas` and `openpyxl` installed. You can install them using pip:

```
```bash
pip install pandas openpyxl
```
```

Step 2: Create the Python script

Here is a simple Python script to sort the Excel spreadsheet by the third column:

```
```python
import pandas as pd

Load the Excel file
file_path = 'your_spreadsheet.xlsx' # Replace with the path to your Excel file
df = pd.read_excel(file_path)

Sort the DataFrame by the third column (index 2)
df_sorted = df.sort_values(by=df.columns[2])

Save the sorted DataFrame back to an Excel file
sorted_file_path = 'sorted_spreadsheet.xlsx' # Replace with the desired output file path
df_sorted.to_excel(sorted_file_path, index=False)

print(f"The spreadsheet has been sorted and saved to {sorted_file_path}")
```
```

Step 3: Run the script

1. Save the script to a file, for example, `sort_spreadsheet.py`.
2. Open a terminal or command prompt.

```
3. Navigate to the directory where the script is saved.
4. Run the script using Python:
```bash
python sort_spreadsheet.py
```
```

This script will load your Excel file, sort it by the third column, and save the sorted data to a new Excel file.

If you provide the Excel file, I can assist you further by running the script for you.

User

Ok - I do not have Python installed yet. I have a Mac Pro with an Intel chip running MacOS 14.4 Sonoma. How do I get Python running on this device?

ChatGPT

Here's a step-by-step guide to installing Python on your Mac Pro running macOS 14.4 Sonoma and getting everything set up to run the script:

Step 1: Install Homebrew

Homebrew is a package manager for macOS that makes it easy to install software like Python.

1. Open the Terminal application.
2. Install Homebrew by pasting the following command and pressing Enter:

```
```bash
/bin/bash -c "$(curl -fsSL
https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"
```
```

3. Follow the on-screen instructions to complete the installation.

Step 2: Install Python

1. Once Homebrew is installed, you can install Python by running the following command in Terminal:

```
```bash
brew install python
```
```

Step 3: Verify the Installation

1. Check that Python is installed by running:

```
```bash
python3 --version
```
```

You should see something like `Python 3.x.x`.

Step 4: Install `pip` and Necessary Libraries

1. `pip` (Python's package installer) should be installed with Python. Verify it by running:

```
```bash
pip3 --version
```
```

2. Install the `pandas` and `openpyxl` libraries:

```
```bash
pip3 install pandas openpyxl
```
```

Step 5: Create and Run the Script

1. Open a text editor (like TextEdit or VS Code) and paste the following script:

```

```python
import pandas as pd

Load the Excel file
file_path = 'your_spreadsheet.xlsx' # Replace with the path to your Excel
file
df = pd.read_excel(file_path)

Sort the DataFrame by the third column (index 2)
df_sorted = df.sort_values(by=df.columns[2])

Save the sorted DataFrame back to an Excel file
sorted_file_path = 'sorted_spreadsheet.xlsx' # Replace with the desired
output file path
df_sorted.to_excel(sorted_file_path, index=False)

print(f"The spreadsheet has been sorted and saved to {sorted_file_path}")
```

```

2. Save this script as `sort_spreadsheet.py`.
3. Move the script and your Excel file to the same directory.

Step 6: Run the Script

1. In Terminal, navigate to the directory where your script and Excel file are located:

```

```bash
cd /path/to/your/directory
```

```

2. Run the script:

```

```bash
python3 sort_spreadsheet.py
```

```

This will sort your Excel spreadsheet by the third column and save the sorted data to a new file.

If you have any issues or need further assistance, feel free to ask!

User

Hello - When I ran Step 4 item 2 and tried to install the 'pandas' and 'openpyxl' libraries, I got the following error:

ChatGPT

I can help you troubleshoot the issue. Let's start by ensuring that you are using the correct commands and that there are no typos. The correct package name is `openpyxl` (with an "l" at the end, not a "1").

Here are the steps to ensure you install the packages correctly:

Step 1: Check Python and pip Installation

First, verify that Python and `pip` are correctly installed:

```

```bash
python3 --version
pip3 --version
```

```

You should see the versions of Python and `pip` printed. If these commands do not work, you may need to adjust your PATH or install Python properly.

Step 2: Install `pandas` and `openpyxl`

Run the following commands to install `pandas` and `openpyxl`:

```
```bash
pip3 install pandas openpyxl
```
```

Common Issues and Solutions

1. ****Permission Errors****: If you encounter permission errors, try using `--user` flag to install the packages locally for your user:

```
```bash
pip3 install --user pandas openpyxl
```
```

2. ****Network Issues****: If you encounter network-related issues, ensure you have a stable internet connection. Sometimes retrying the command solves the issue.

3. ****Outdated `pip`****: Ensure `pip` is up to date:

```
```bash
pip3 install --upgrade pip
```
```

Step 3: Verify Installation

After running the installation commands, verify that the packages were installed correctly:

```
```bash
python3 -c "import pandas; import openpyxl; print('Packages installed
successfully')"
```

If this prints "Packages installed successfully" without any errors, you are ready to proceed.

If you still encounter errors, please provide the exact error message, and I can help you troubleshoot further.

### User

#### Here is the error:

error: externally-managed-environment

× This environment is externally managed

└> To install Python packages system-wide, try `brew install xyz`, where `xyz` is the package you are trying to install.

If you wish to install a Python library that isn't in Homebrew, use a virtual environment:

```
python3 -m venv path/to/venv
source path/to/venv/bin/activate
python3 -m pip install xyz
```

If you wish to install a Python application that isn't in Homebrew, it may be easiest to use `'pipx install xyz'`, which will manage a virtual environment for you. You can install `pipx` with

```
brew install pipx
```

You may restore the old behavior of `pip` by passing the `'--break-system-packages'` flag to `pip`, or by adding

'break-system-packages = true' to your pip.conf file. The latter will permanently disable this error.

If you disable this error, we STRONGLY recommend that you additionally pass the '--user' flag to pip, or set 'user = true' in your pip.conf file. Failure to do this can result in a broken Homebrew installation.

Read more about this behavior here: <<https://peps.python.org/pep-0668/>>

note: If you believe this is a mistake, please contact your Python installation or OS distribution provider. You can override this, at the risk of breaking your Python installation or OS, by passing --break-system-packages.

hint: See PEP 668 for the detailed specification.

## ChatGPT

To avoid conflicts with the system-managed Python environment, it's a good practice to use a virtual environment. Here's how you can set up and use a virtual environment on your Mac:

### ### Step 1: Create a Virtual Environment

1. Open Terminal.
2. Create a directory for your project (if you don't already have one):

```
```bash
mkdir my_project
cd my_project
```
```
3. Create a virtual environment:

```
```bash
python3 -m venv venv
```
```

### ### Step 2: Activate the Virtual Environment

1. Activate the virtual environment:

```
```bash
source venv/bin/activate
```
```

You should now see `(venv)` at the beginning of your terminal prompt, indicating that the virtual environment is active.

### ### Step 3: Install `pandas` and `openpyxl` in the Virtual Environment

1. Install the necessary packages:

```
```bash
pip install pandas openpyxl
```
```

### ### Step 4: Create and Run the Script

1. Create your Python script (e.g., `sort\_spreadsheet.py`):

```
```python
import pandas as pd

# Load the Excel file
file_path = 'your_spreadsheet.xlsx' # Replace with the path to your Excel file
df = pd.read_excel(file_path)

# Sort the DataFrame by the third column (index 2)
df_sorted = df.sort_values(by=df.columns[2])
```
```

```

Save the sorted DataFrame back to an Excel file
sorted_file_path = 'sorted_spreadsheet.xlsx' # Replace with the desired
output file path
df_sorted.to_excel(sorted_file_path, index=False)

print(f"The spreadsheet has been sorted and saved to {sorted_file_path}")
```

```

2. Save the script in the same directory as your virtual environment and Excel file.

3. Run the script:

```

```bash
python sort_spreadsheet.py
```

```

Step 5: Deactivate the Virtual Environment

When you are done, you can deactivate the virtual environment by running:

```

```bash
deactivate
```

```

This setup ensures that your system Python environment remains unaltered and you can easily manage dependencies for your project. If you encounter any issues during these steps, please let me know!

User

Ok so in step 4, if my file is /Users/ejcasey/Dropbox (Personal)/Uploads/Annual Survey List 2024.xlsx and I want to sort it by Column C, then what would the Python script be?

ChatGPT

Given your file path and the requirement to sort by Column C, here is the updated Python script:

```

```python
import pandas as pd

Load the Excel file
file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Annual Survey List
2024.xlsx'
df = pd.read_excel(file_path)

Sort the DataFrame by Column C (index 2, as columns are 0-indexed)
df_sorted = df.sort_values(by=df.columns[2])

Save the sorted DataFrame back to an Excel file
sorted_file_path = '/Users/ejcasey/Dropbox
(Personal)/Uploads/Sorted_Annual_Survey_List_2024.xlsx'
df_sorted.to_excel(sorted_file_path, index=False)

print(f"The spreadsheet has been sorted and saved to {sorted_file_path}")
```

```

Steps to Run the Script

1. Follow the steps to create and activate a virtual environment, as described previously.
2. Copy the script above into a new file named `sort_spreadsheet.py`.
3. Save the script in the same directory where you have activated your virtual

environment.

4. Run the script using:

```
```bash
python sort_spreadsheet.py
```
```

This script will read your Excel file, sort it by Column C, and save the sorted data to a new file named `Sorted_Annual_Survey_List_2024.xlsx` in the same directory. If you encounter any issues, please let me know!

User

I received another error. Here is the error:

ChatGPT

Please provide the specific error message you received so I can assist you more effectively.

In the meantime, here are a few common issues and their solutions:

Common Issues and Solutions

1. **File Not Found Error**:

- Ensure the file path is correct and the file exists at the specified location.
- You can verify the file path by running:

```
```bash
ls "/Users/ejcasey/Dropbox (Personal)/Uploads/Annual Survey List 2024.xlsx"
```
```

2. **Permission Error**:

- Ensure you have the necessary permissions to read from and write to the specified directories.

3. **Invalid File Path**:

- Make sure the file path does not contain any typos or incorrect directory names.

4. **Excel File Issues**:

- Ensure the Excel file is not corrupted and can be opened by other applications like Excel.

Script Debugging

Here is a modified version of the script with additional print statements to help identify where the issue might be:

```
```python
import pandas as pd
import os

Define the file paths
file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Annual Survey List 2024.xlsx'
sorted_file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Sorted_Annual_Survey_List_2024.xlsx'

Check if the file exists
if not os.path.exists(file_path):
 print(f"Error: The file at {file_path} does not exist.")
else:
```

```
Load the Excel file
try:
 df = pd.read_excel(file
```

### User

```
(venv) Wotan:my_project ejcasey$ import pandas as pd
-bash: import: command not found
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ # Load the Excel file
(venv) Wotan:my_project ejcasey$ file_path = 'your_spreadsheet.xlsx' # Replace
with the path to your Excel file
-bash: file_path: command not found
(venv) Wotan:my_project ejcasey$ df = pd.read_excel(file_path)
-bash: syntax error near unexpected token `('
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ # Sort the DataFrame by the third column (index
2)
(venv) Wotan:my_project ejcasey$ df_sorted = df.sort_values(by=df.columns[2])
-bash: syntax error near unexpected token `('
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ # Save the sorted DataFrame back to an Excel
file
(venv) Wotan:my_project ejcasey$ sorted_file_path = 'sorted_spreadsheet.xlsx' #
Replace with the desired output file path
-bash: sorted_file_path: command not found
(venv) Wotan:my_project ejcasey$ df_sorted.to_excel(sorted_file_path,
index=False)
-bash: syntax error near unexpected token `sorted_file_path,'
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ print(f"The spreadsheet has been sorted and
saved to {sorted_file_path}")
-bash: syntax error near unexpected token `f"The spreadsheet has been sorted and
saved to {sorted_file_path}"'
(venv) Wotan:my_project ejcasey$ import pandas as pd
-bash: import: command not found
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ # Load the Excel file
(venv) Wotan:my_project ejcasey$ file_path = '/Users/ejcasey/Dropbox
(Personal)/Uploads/Annual Survey List 2024.xlsx'
-bash: file_path: command not found
(venv) Wotan:my_project ejcasey$ df = pd.read_excel(file_path)
-bash: syntax error near unexpected token `('
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ # Sort the DataFrame by Column C (index 2, as
columns are 0-indexed)
(venv) Wotan:my_project ejcasey$ df_sorted = df.sort_values(by=df.columns[2])
-bash: syntax error near unexpected token `('
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ # Save the sorted DataFrame back to an Excel
file
(venv) Wotan:my_project ejcasey$ sorted_file_path = '/Users/ejcasey/Dropbox
(Personal)/Uploads/Sorted_Annual_Survey_List_2024.xlsx'
-bash: sorted_file_path: command not found
(venv) Wotan:my_project ejcasey$ df_sorted.to_excel(sorted_file_path,
index=False)
-bash: syntax error near unexpected token `sorted_file_path,'
(venv) Wotan:my_project ejcasey$
(venv) Wotan:my_project ejcasey$ print(f"The spreadsheet has been sorted and
saved to {sorted_file_path}")
-bash: syntax error near unexpected token `f"The spreadsheet has been sorted and
```



```
saved to {sorted_file_path}"'
(venv) Wotan:my_project ejcasey$
```

### ChatGPT

It looks like you are trying to run Python code directly in the bash shell. The commands you posted should be in a Python script file, not entered line-by-line in the Terminal. Let's go through the steps again to ensure everything is done correctly.

#### ### Step 1: Create the Python Script

1. Open a text editor (such as TextEdit, VS Code, or any code editor you prefer).
2. Copy and paste the following Python script into the editor:

```
```python
import pandas as pd
import os

# Define the file paths
file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Annual Survey List
2024.xlsx'
sorted_file_path = '/Users/ejcasey/Dropbox
(Personal)/Uploads/Sorted_Annual_Survey_List_2024.xlsx'

# Check if the file exists
if not os.path.exists(file_path):
    print(f"Error: The file at {file_path} does not exist.")
else:
    # Load the Excel file
    try:
        df = pd.read_excel(file_path)
        # Sort the DataFrame by Column C (index 2, as columns are 0-indexed)
        df_sorted = df.sort_values(by=df.columns[2])
        # Save the sorted DataFrame back to an Excel file
        df_sorted.to_excel(sorted_file_path, index=False)
        print(f"The spreadsheet has been sorted and saved to {sorted_file_path}")
    except Exception as e:
        print(f"An error occurred: {e}")
```
```

3. Save the file as `sort\_spreadsheet.py` in your project directory.

#### ### Step 2: Run the Python Script

1. Open Terminal.
2. Navigate to the directory where you saved `sort\_spreadsheet.py`:

```
```bash
cd /path/to/your/project/directory
```
```
3. Ensure your virtual environment is activated:

```
```bash
source venv/bin/activate
```
```
4. Run the Python script:

```
```bash
python sort_spreadsheet.py
```
```

This should execute the script correctly and sort your Excel spreadsheet by Column C. If you encounter any further errors, please copy the exact error message so I can assist you further.

## User

On Step three, I get the following error: `-bash: venv/bin/activate: No such file or directory`

## ChatGPT

It looks like the virtual environment may not have been created correctly or you might not be in the correct directory. Let's go through the process of creating the virtual environment again to ensure everything is set up properly.

### ### Step 1: Create a Virtual Environment

1. Open Terminal.
2. Navigate to your project directory:  
```bash  
cd /path/to/your/project/directory
```

Replace ``/path/to/your/project/directory`` with the actual path to your project directory.

3. Create the virtual environment:  
```bash  
python3 -m venv venv
```

### ### Step 2: Activate the Virtual Environment

1. Activate the virtual environment:  
```bash  
source venv/bin/activate
```

### ### Step 3: Install `pandas` and `openpyxl` in the Virtual Environment

1. Install the necessary packages:  
```bash  
pip install pandas openpyxl
```

### ### Step 4: Create the Python Script

1. Open a text editor (such as TextEdit, VS Code, or any code editor you prefer).
2. Copy and paste the following Python script into the editor:

```
```python
import pandas as pd
import os

# Define the file paths
file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Annual Survey List 2024.xlsx'
sorted_file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Sorted_Annual_Survey_List_2024.xlsx'

# Check if the file exists
if not os.path.exists(file_path):
    print(f"Error: The file at {file_path} does not exist.")
else:
    # Load the Excel file
    try:
        df = pd.read_excel(file_path)
        # Sort the DataFrame by Column C (index 2, as columns are 0-indexed)
        df_sorted = df.sort_values(by=df.columns[2])
        # Save the sorted DataFrame back to an Excel file
        df_sorted.to_excel(sorted_file_path, index=False)
        print(f"The spreadsheet has been sorted and saved to {sorted_file_path}")
    except Exception as e:
        print(f"An error occurred: {e}")
```
```

```

except Exception as e:
 print(f"An error occurred: {e}")
...

```

3. Save the file as `sort\_spreadsheet.py` in your project directory.

### Step 5: Run the Python Script

1. Ensure you are in the project directory and the virtual environment is activated:

```

```bash
cd /path/to/your/project/directory
source venv/bin/activate
```

```

2. Run the Python script:

```

```bash
python sort_spreadsheet.py
```

```

This should execute the script correctly and sort your Excel spreadsheet by Column C. If you encounter any further errors, please copy the exact error message so I can assist you further.

### User

On Step 5 item 2, I received the following error: (venv) Wotan:Desktop ejcasey\$

```

pip install pandas openpyxl

```

```

Collecting pandas

```

```

 Using cached pandas-2.2.2-cp312-cp312-macosx_10_9_x86_64.whl.metadata (19 kB)

```

```

Collecting openpyxl

```

```

 Using cached openpyxl-3.1.4-py2.py3-none-any.whl.metadata (2.5 kB)

```

```

Collecting numpy>=1.26.0 (from pandas)

```

```

 Using cached numpy-2.0.0-cp312-cp312-macosx_14_0_x86_64.whl.metadata (60 kB)

```

```

Collecting python-dateutil>=2.8.2 (from pandas)

```

```

 Using cached python_dateutil-2.9.0.post0-py2.py3-none-any.whl.metadata (8.4 kB)

```

```

Collecting pytz>=2020.1 (from pandas)

```

```

 Using cached pytz-2024.1-py2.py3-none-any.whl.metadata (22 kB)

```

```

Collecting tzdata>=2022.7 (from pandas)

```

```

 Using cached tzdata-2024.1-py2.py3-none-any.whl.metadata (1.4 kB)

```

```

Collecting et-xmlfile (from openpyxl)

```

```

 Using cached et_xmlfile-1.1.0-py3-none-any.whl.metadata (1.8 kB)

```

```

Collecting six>=1.5 (from python-dateutil>=2.8.2->pandas)

```

```

 Using cached six-1.16.0-py2.py3-none-any.whl.metadata (1.8 kB)

```

```

Using cached pandas-2.2.2-cp312-cp312-macosx_10_9_x86_64.whl (12.5 MB)

```

```

Using cached openpyxl-3.1.4-py2.py3-none-any.whl (251 kB)

```

```

Using cached numpy-2.0.0-cp312-cp312-macosx_14_0_x86_64.whl (6.6 MB)

```

```

Using cached python_dateutil-2.9.0.post0-py2.py3-none-any.whl (229 kB)

```

```

Using cached pytz-2024.1-py2.py3-none-any.whl (505 kB)

```

```

Using cached tzdata-2024.1-py2.py3-none-any.whl (345 kB)

```

```

Using cached et_xmlfile-1.1.0-py3-none-any.whl (4.7 kB)

```

```

Using cached six-1.16.0-py2.py3-none-any.whl (11 kB)

```

```

Installing collected packages: pytz, tzdata, six, numpy, et-xmlfile, python-
dateutil, openpyxl, pandas

```

```

Successfully installed et-xmlfile-1.1.0 numpy-2.0.0 openpyxl-3.1.4 pandas-2.2.2
python-dateutil-2.9.0.post0 pytz-2024.1 six-1.16.0 tzdata-2024.1

```

```

(venv) Wotan:Desktop ejcasey$ python sort_spreadsheet.py

```

```

File "/Users/ejcasey/Desktop/sort_spreadsheet.py", line 1

```

```

 {\rtf1\ansi\ansicpg1252\cocoartf2761

```

```

 ^

```

```

SyntaxError: unexpected character after line continuation character

```

The error you're seeing indicates that your `sort\_spreadsheet.py` file is not saved correctly as a plain text file, but rather in a format like RTF (Rich Text Format) which includes formatting information.

Let's correct this by ensuring you save your script as a plain text file. Here's how you can do it:

### ### Step 1: Create the Python Script Using a Plain Text Editor

1. Open a text editor that allows you to save files as plain text. **\*\*VS Code\*\*** or **\*\*Sublime Text\*\*** are good options, or even the built-in **\*\*TextEdit\*\*** on macOS (make sure it's set to plain text mode).

#### #### Using TextEdit:

- Open **\*\*TextEdit\*\***.
- Go to **\*\*Format\*\*** in the menu and select **\*\*Make Plain Text\*\*** (or press `Shift + Command + T`).

2. Copy and paste the following Python script into the text editor:

```
```python
import pandas as pd
import os

# Define the file paths
file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Annual Survey List 2024.xlsx'
sorted_file_path = '/Users/ejcasey/Dropbox (Personal)/Uploads/Sorted_Annual_Survey_List_2024.xlsx'

# Check if the file exists
if not os.path.exists(file_path):
    print(f"Error: The file at {file_path} does not exist.")
else:
    # Load the Excel file
    try:
        df = pd.read_excel(file_path)
        # Sort the DataFrame by Column C (index 2, as columns are 0-indexed)
        df_sorted = df.sort_values(by=df.columns[2])
        # Save the sorted DataFrame back to an Excel file
        df_sorted.to_excel(sorted_file_path, index=False)
        print(f"The spreadsheet has been sorted and saved to {sorted_file_path}")
    except Exception as e:
        print(f"An error occurred: {e}")
```
```

3. Save the file with the name `sort\_spreadsheet.py` in your project directory.

#### #### Using VS Code:

- Open **\*\*VS Code\*\***.
- Create a new file, paste the script into the editor.
- Save the file with the name `sort\_spreadsheet.py` and make sure the file type is set to **\*\*Python\*\***.

### ### Step 2: Run the Python Script

1. Open Terminal.

2. Navigate to your project directory:

```
```bash
cd /path/to/your/project/directory
```
```

3. Ensure your virtual environment is activated:

```
```bash
source venv/bin/activate
```
```

4. Run the Python script:

```
```bash
python sort_spreadsheet.py
```
```

This should execute the script correctly and sort your Excel spreadsheet by Column C. If you encounter any further errors, please copy the exact error message so I can assist you further.

**User**

This was fantastic - it worked perfectly. Thank you!!

**ChatGPT**

You're welcome! I'm glad to hear that it worked perfectly. If you have any more questions or need further assistance with anything else, feel free to ask. Happy coding!