

# **AI with Code Execution**

MGMT 675: Generative AI for Finance

---

Kerry Back

# Benefit of Bundling Code Execution with AI

- LLMs can write code, but writing is not the same as running
- Attaching a code execution tool enables:
  - Data analysis with real calculations
  - Visualizations and charts
  - File processing (Excel, CSV, PDF)
  - **Iterative debugging—run, fix, repeat**
- Transforms chatbots into computational tools

*Fortune, Jan 29, 2026*

**Boris Cherny**, head of Claude Code at Anthropic:

*“For me personally, it has been 100% for two+ months now, I don’t even make small edits by hand.”*

Across Anthropic, Cherny says “pretty much 100%” of code is AI-generated . . . An Anthropic spokesperson said company-wide the figure is between 70% and 90%.

# Code Execution Approaches

## Chat-Based

- ChatGPT, Claude, Gemini
- Upload files, ask questions
- Server-side sandbox
- No internet access

## Local Agents

- Cursor, VS Code, Claude Code
- AI runs code on your machine
- Full environment access
- Internet, databases, APIs

## Cloud Agents

- Jules, GitHub Copilot agent
- Work on GitHub repos
- Cloud sandbox execution
- Async—runs in background

# ChatGPT



## What is it?

- A Python environment that runs inside ChatGPT
- ChatGPT writes code, executes it, and returns results
- If code fails, it reads error messages and fixes them
- Sandboxed environment: secure but limited

## Accessing Code Interpreter

- Available on free tier (limited to twice per day)
- ChatGPT Plus (\$20/month) provides more usage
- GPT-5 is now the default model (GPT-4o still available)
- Code Interpreter is enabled automatically
- Upload files directly to the conversation

# ChatGPT: What You Can Do

- Upload CSV, Excel files
- Statistical analysis
- Financial analysis
- Create visualizations
- Download results

## ChatGPT: Limitations

- **No internet access**—cannot fetch live data
- Maximum file upload: 512 MB
- Runtime limit: 120 seconds per execution
- Session state clears when environment resets
- Pre-installed packages only

## ChatGPT Exercise

*"I'm uploading an Excel file with monthly returns for WMT, the excess market return (MKT-RF) and the risk-free rate (RF). Calculate excess returns for WMT and regress on MKT-RF to estimate the beta of WMT. Plot the data and the regression line."*

ChatGPT will write Python code, run it, show results, and let you download the chart.

[Download Data for Beta Exercise](#)

## What Do We Need to Check?

- Mostly, that it used the correct left-hand side and right-hand variables. Miscommunication could possibly cause an error.
- AI knows how to run regressions with Python, so that is not an issue.
- Can ask to see the code. Python is mostly readable. If something is unclear, ask ChatGPT about it.
- Can check against calculation by other method, but then no need to use AI, unless we are taking a step towards building an app.

# Claude



# Claude: Two Code Execution Features

## Artifacts

- JavaScript in your browser
- Fast, lightweight
- Can save and publish artifacts

## Python Execution

- Python/Bash on server
- Full linux environment
- **Can install packages (pip)**
- No internet access

## Claude Exercise

*"I'm uploading an Excel file with monthly returns for WMT, the excess market return (MKT-RF) and the risk-free rate (RF). Calculate excess returns for WMT and regress on MKT-RF to estimate the beta of WMT. Plot the data and the regression line."*

Claude will write Python code, run it, show results, and let you download the chart.

Use same betas.xlsx file.

## Claude Artifacts

- Interactive content in a panel next to the chat
- Codes in React/JavaScript—runs in your browser
- View, edit, and iterate in real-time
- **Save** artifacts to your account for later use
- **Publish** to create a public URL others can use (with charges to **their account, not yours.**)
- Create and check once. Use forever!

## Claude Artifact Exercise

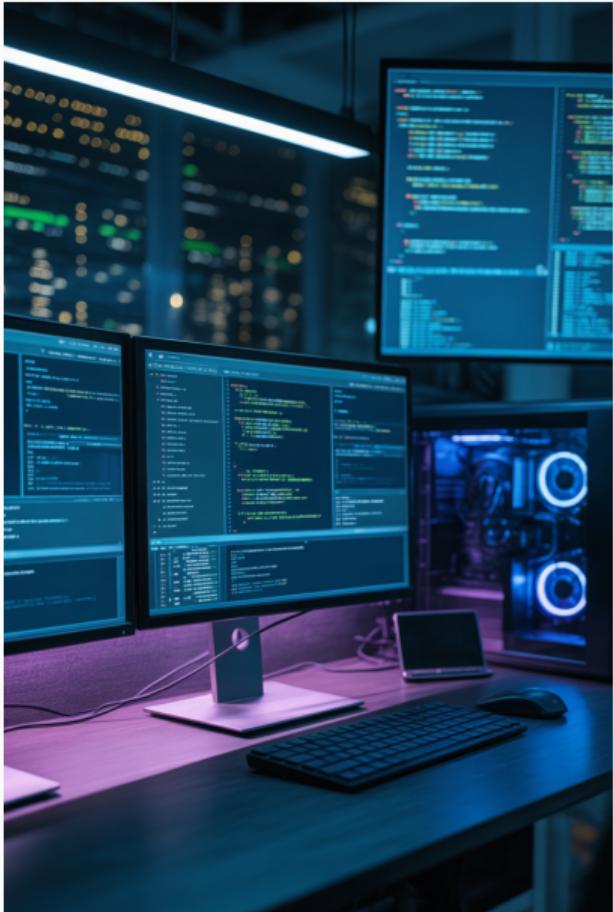
*"Create an artifact that allows me to upload a csv file containing the return of a stock, the market excess return, and the risk-free rate over a given time period. Compute excess returns of the stock and regress them on the market excess return. Display the beta of the stock and a plot of the data with the regression line."*

Claude creates an interactive artifact with file upload, regression calculations, and a chart—all running in your browser.

## Claude Artifact Limitations

- Artifacts use JavaScript only (not Python)
- Limited libraries
- No direct file system access
- Uploaded files consume context window

# Local Execution



## Local Execution: Advantages

- **No sandboxing**—access databases, APIs, local files
- **Install anything**—pip install, npm, system packages
- **Large datasets**—no upload limits
- **Persistent state**—pick up where you left off
- **Version control**—code saved in your repo
- **Production path**—code is ready to deploy

## Leading Local Execution Tools

- **Claude Code**—terminal agent
- **VS Code + Claude/Copilot**
- **Cursor**—AI-native IDE
- **Google AntiGravity**
- AI writes and runs code in your environment