

ANTHROPIC

# Claude Builder Club Agentic Masterclass 1

@Penn

October 17, 2025

**Check-in for attendance!**



# Introductions

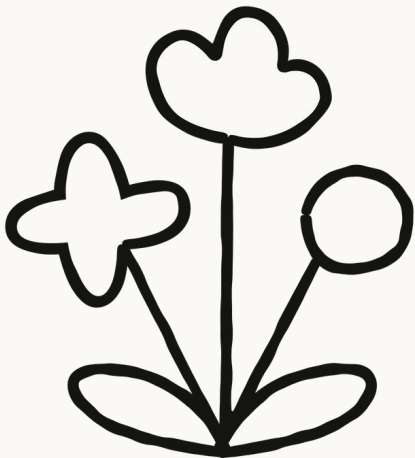
# Today's Presenter



Albert Opher  
CBA | CIS + FNCE '25

# What are Agents?

# MOVING BEYOND SIMPLE CHATBOTS



## Traditional AI:

- You ask → AI answers → Done

## AI Agents:

- You ask → AI plans → AI acts → AI checks → AI iterates → Done

**Key Difference:** Agents can take actions, use tools, and work autonomously toward goals

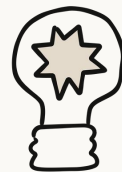
## Real-World Examples:

- Research assistant that searches, reads, synthesizes, and writes reports
- Code reviewer that analyzes files, runs tests, identifies issues, and suggests fixes
- Personal assistant that manages email, schedules, and project tracking

# The Four Pillars of AI Agents

What Makes an Agent Work?

1. Planning & Reasoning Breaking complex tasks into steps, making decisions
2. Tool Use Accessing external capabilities (search, calculators, APIs, file systems)
3. Memory Tracking conversation history, project context, and learned preferences
4. Execution Loop Acting → Observing results → Adjusting approach → Repeating



Think of it like: Brain + Hands + Notebook + Persistence

IBM 5 Pillars to Agentic Governance Video:

<https://www.youtube.com/watch?v=5hK7pQsvpy0>



# Real Applications Across Industries

## Software Development:

- Claude Code, GitHub Copilot Workspace, Devin

## Research & Analysis:

- Perplexity Pro, Elicit, Research Rabbit

## Business Operations:

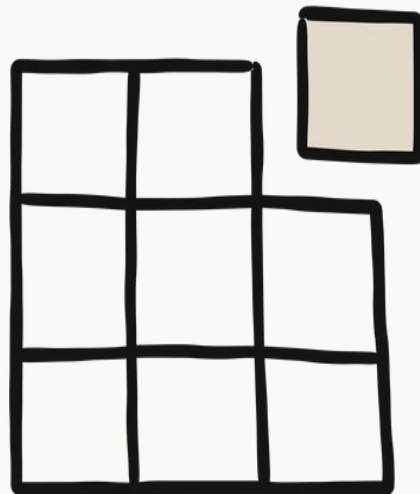
- Customer service bots, data analysis tools, workflow automation

## Creative Work:

- Content generation, image creation workflows, video editing assistants

## Personal Productivity:

- Email management, scheduling, task prioritization





# Claude Agentic Prompting Guide (1)

## Core Prompting Techniques:

- [Prompt Improver](#) - Optimize and refine prompts for better performance
- [Prompt Templates & Variables](#) - Create reusable, dynamic prompts
- [System Prompts](#) - Define agent behavior and constraints

## Agent Architecture:

- Chain-of-thought reasoning patterns, multi-step task decomposition
- Role definition and persona design for specialized agents
- Goal specification and success criteria

## Tool Use & Function Calling:

- Tool description best practices, parameter specification
- Multi-tool orchestration and sequential tool use
- Error recovery and fallback strategies

# Claude Agentic Prompting Guide (2)

## Context & Memory Management:

- Long-context handling techniques, information retrieval patterns
- State management across turns, conversation summarization
- Priority information placement and context window optimization

## Output Control:

- Structured output formats (JSON, XML, markdown)
- Response length and detail calibration
- Citations, sources, and verification patterns

## Safety & Guardrails:

- Input validation and sanitization, boundary setting
- Harmful output prevention, content filtering
- Audit trails and logging for agent actions

## *Claude Agent Role Delineation (Console):*

```
main.py
1 import anthropic
2 client = anthropic.Anthropic()
3 response = client.messages.create(
4     model="claude-3-7-sonnet-20250219",
5     max_tokens=2048,
6     system="You are a seasoned data scientist at a Fortune 500 company.", # <-- role
7     prompt
8     messages=[
9         {"role": "user", "content": "Analyze this dataset for anomalies: <dataset>"}
10    ]
11 )
12 print(response.content)
```

# Demo

# Your First Agent Workflow

Open: <http://claude.ai>

The Task: "Research the top 3 AI coding assistants available today, compare their features and pricing, and create a comparison table in an artifact."

What You'll See Claude Do:

1. Search for current information on AI coding tools
2. Visit multiple sources to gather data
3. Synthesize findings
4. Structure information into a table
5. Create an artifact with formatted results

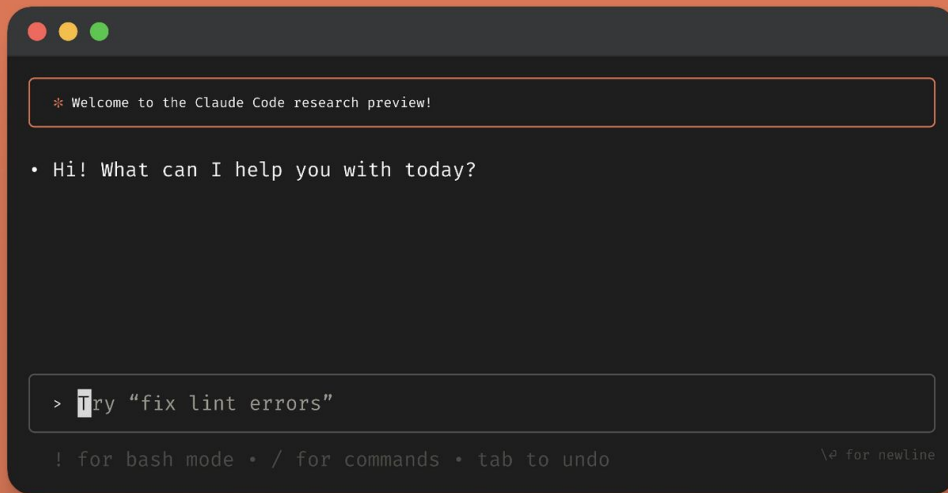


# 10-Minute Hackathon

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What can YOU build in 10 minutes?

- Fork the github code and use claude to build a cool application!
  - <https://github.com/Albinator3000/AgentsMasterclassSession1/blob/main/README.md>
- Build a useful starter app using claude!
- 5 Best Presentations Get Merch!
- Must Use Claude and follow an agentic workflow!
- 



## **SUBMIT HACKATHON PROJECTS HERE:**

Hackathon Submission Link and Google Doc was Here

# Micro-Agent Hackathon Winners:

Advanced Research Agent

AI-Powered Deep Intelligence Gathering • 50+ Sources • Real-Time Analysis

Research Topic

e.g., Latest developments in quantum computing breakthroughs...

Launch Research Agent

Powered by Claude • Autonomous Multi-Step Reasoning • Real-Time Web Intelligence

Learning Circle Organizer

AI-powered peer learning groups that adapt to your goals

What do you want to learn?

e.g., React, Machine Learning, Data Science, Python...

Your Experience Level

Beginner

Intermediate

Advanced

Weekly Time Commitment

3-5 hrs/week

6-8 hrs/week

9-12 hrs/week

Generate Learning Circle

Smart Meal Planning Agent

Plan Generated Successfully!

Agent Configuration

Number of People

2

Dietary Preferences

Vegetarian

Allergies & Restrictions

☐ Gluten-Free

☐ Dairy-Free

☐ Nut-Free

☒ Low Sodium

Weekly Budget (\$)

150

Cooking Time Preference

Quick (< 30 mins)

Generate Smart Meal Plan

Your Personalized Meal Plan

Monday

BREAKFAST

Veggie Scramble

15 min | \$3.5 | 320 cal

LUNCH

Veggie Buddha Bowl

20 min | \$5.5 | 480 cal

Tuesday

BREAKFAST

Overnight Oats

5 min | \$2.5 | 380 cal

LUNCH

Caprese Sandwich

10 min | \$6 | 450 cal

Wednesday

BREAKFAST

Veggie Scramble

15 min | \$3.5 | 320 cal

LUNCH

Caprese Sandwich

10 min | \$6 | 450 cal

Thursday

BREAKFAST

Overnight Oats

5 min | \$2.5 | 380 cal

LUNCH

Veggie Buddha Bowl

20 min | \$5.5 | 480 cal



# YOU WIN FREE CLAUDE PRO

It's TRUE, for coming to this meeting, you have earned a free Claude Pro account.

To redeem:

- Fill out the form attached to the QR code
- Make sure you have a Claude.ai log-in that is connected to your **STUDENT EMAIL**

## **Note to students:**

We will send out an email with your FREE Claude Pro login, this will take up to two business days!

Come to a meeting to get the QR code for Free  
Claude Pro

# Q&A

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**Thank you for  
coming!**

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