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please provide me with the markdown file

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# 16-Week Free AI & Agent-Building Curriculum

All resources are free. This curriculum focuses on building core Python, data, ML, and AI

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## Week 1: Python Setup & Scripting Basics

**Key Topics & Resources**
- [Google's Python Class (videos & written)](https://developers.google.com/edu/python)
- [Codecademy: Learn Python 3 (free version)](https://www.codecademy.com/learn/learn-pyth
- [Python for Everybody (audit free)](https://www.coursera.org/specializations/python)

**Project Outline**
- Objective: Write a Python script that pings a REST endpoint and logs JSON results.
- Steps:
  - Set up a virtual environment.
  - Use `requests` to GET API data.
  - Print/log the results to a file.
- Deliverable: Python file with README for setup.

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## Week 2: Data Wrangling Foundations

**Key Topics & Resources**
- [NumPy Quickstart (docs)](https://numpy.org/devdocs/user/quickstart.html)
- [Pandas Official Tutorials](https://pandas.pydata.org/pandas-docs/stable/getting_starte
- [YouTube: Pandas, NumPy, and Matplotlib for ML](https://www.youtube.com/watch?v=vmEHCJo

**Project Outline**
- Objective: Load a CSV, clean data, and plot a column histogram.
- Steps:
  - Read CSV using pandas.
  - Apply basic cleaning (drop NAs, fix types).
  - Use matplotlib to plot.
- Deliverable: Jupyter notebook with code and histogram.

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## Week 3: Python Web APIs

**Key Topics & Resources**
- [FastAPI Official Tutorial](https://fastapi.tiangolo.com/tutorial/)
- [Real Python: Python Requests](https://realpython.com/python-requests/)
- [ScrapingBee: API Calls in Python](https://www.scrapingbee.com/blog/python-requests/)

**Project Outline**
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- Objective: Build a FastAPI endpoint that returns cleaned stats from a CSV.
- Steps:
  - Load CSV at server startup.
  - Build an endpoint returning aggregate stats.
  - Test with curl/Postman.
- Deliverable: GitHub project with API repo and setup steps.

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## Weeks 4–5: Relational Databases & SQL

**Key Topics & Resources**
- [CS50’s Intro to Databases (edX)](https://www.edx.org/learn/sql)
- [FreeCodeCamp: SQL Course](https://www.freecodecamp.org/news/learn-sql-free-relational-
- [Udemy: Free SQL for Beginners](https://www.udemy.com/topic/sql/free/)

**Project Outline**
- Objective: Import a dataset, run SQL queries, and visualize results in pandas.
- Steps:
  - Spin up SQLite locally.
  - Import data and run JOIN/SELECT queries.
  - Use pandas to analyze and plot.
- Deliverable: Notebook with queries, plots, and sample outputs.

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## Week 6: Data Visualization

**Key Topics & Resources**
- [Udemy: Free Data Visualization Courses](https://www.udemy.com/topic/data-visualizatior
- [Noble Desktop Free Tutorials](https://www.nobledesktop.com/learn/data-visualization/fr
- [Simplilearn: Data Visualization (SkillUp)](https://www.simplilearn.com/quick-guide-dat

**Project Outline**
- Objective: Build a Streamlit mini-dashboard showing key metrics.
- Steps:
  - Choose KPIs from SQL data.
  - Plot with matplotlib/seaborn.
  - Deploy with Streamlit.
- Deliverable: Live dashboard link (or screenshots) and code.

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## Weeks 7–8: Classical ML Toolkit

**Key Topics & Resources**
- [Scikit-learn Crash Course](https://www.youtube.com/watch?v=0B5eIE_1vpU)
- [LabEx scikit-learn Tutorials](https://labex.io/tutorials/category/sklearn)
- [Simplilearn: Free ML Basics (SkillUp)](https://www.simplilearn.com/free-ai-program-ski

**Project Outline**
- Objective: Train a classifier on open data, evaluate with F1/confusion.
- Steps:
  - Use scikit-learn’s train/test split.
  - Explore metrics and confusion matrix.
- Deliverable: Notebook with code, plots, and results.
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## Weeks 9–11: Deep Learning Core

**Key Topics & Resources**
- [TensorFlow Tutorials](https://www.tensorflow.org/tutorials)
- [YouTube: TensorFlow 2.0 Course](https://www.youtube.com/watch?v=tPYj3fFJGjk)
- [PyTorch Tutorials](https://docs.pytorch.org/tutorials/)
- [FreeCodeCamp: Learn PyTorch](https://www.freecodecamp.org/news/learn-pytorch-for-deep-

**Project Outline**
- Objective: Replicate MNIST digit classifier in both TF & PyTorch, compare.
- Steps:
  - Follow beginner notebook in both frameworks.
  - Document setup and results differences.
- Deliverable: Two notebooks and a comparison report.

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## Week 12: Modern LLMs & GPT

**Key Topics & Resources**
- [Simplilearn: Introduction to AI (SkillUp)](https://www.simplilearn.com/ai-for-everyone
- [edX AI & Machine Learning Courses](https://www.edx.org/learn/artificial-intelligence)
- [CS50's Introduction to AI with Python](https://pll.harvard.edu/course/cs50s-introducti

**Project Outline**
- Objective: Probe GPT-4 (or public GPT-3.5 API) with structured prompts.
- Steps:
  - Document prompt variations.
  - Analyze strengths/weaknesses ("black box" effects).
- Deliverable: Notebook of results and reflection.

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## Week 13: RAG, LangChain & Agent Frameworks

**Key Topics & Resources**
- [LangChain Official Docs](https://python.langchain.com/docs/get_started/introduction)
- [edX: Building AI Apps](https://www.edx.org/learn/machine-learning)
- [YouTube: Free LangChain Tutorials](https://www.youtube.com/results?search_query=langch

**Project Outline**
- Objective: Create a retrieval-augmented (RAG) FAQ bot on docs.
- Steps:
  - Index docs with free vector DB (FAISS).
  - Use LangChain to build bot logic.
- Deliverable: Notebook or repo with demo queries.

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## Week 14: No-Code AI Tools

**Key Topics & Resources**
- [LangFlow (GitHub)](https://github.com/logspace-ai/langflow)
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- [CrewAI: Free Community Tooling](https://crewai.com/)
- [Simplilearn n8n Tutorial](https://www.simplilearn.com/tutorials/n8n-tutorial)

**Project Outline**
- Objective: Recreate FAQ agent with a no-code AI agent builder.
- Steps:
  - Choose a no-code tool (LangFlow, CrewAI, n8n).
  - Import docs/setup flow visually.
- Deliverable: Video/screenshot walkthrough of flow.

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## Week 15: AI Code Editors & MCP

**Key Topics & Resources**
- [Replit AI (free tier)](https://replit.com/site/ai)
- [Cursor IDE (preview free)](https://www.cursor.so/)
- [YouTube: MCP server demo](https://www.youtube.com/results?search_query=mcp+server+ai)

**Project Outline**
- Objective: Refactor ML project with AI-powered code editor, deploy via MCP.
- Steps:
  - Try AI suggestion features.
  - Deploy project on MCP.
- Deliverable: Refactored codebase with AI assist notes.

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## Week 16: Capstone—Autonomous Business Agent

**Key Topics & Resources**
- [edX: Applied Machine Learning](https://www.edx.org/learn/machine-learning)
- [Simplilearn: Agents & Automation](https://www.simplilearn.com/tutorials/artificial-int
- [LangChain Open-Source Tutorials](https://python.langchain.com/docs/get_started/introdu

**Project Outline**
- Objective: Ship an agent that triages emails, queries DB, drafts responses.
- Steps:
  - Integrate NLP, DB, and web interface.
  - Add logging, monitor outputs.
- Deliverable: Live demo (or video/screenshots), deployment guide, post-mortem blog.

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## Study Cadence

- **Mon–Wed:** Learn via video, docs, notebooks.
- **Thu:** Code-along and push to GitHub.
- **Fri:** Build project and write README.
- **Weekend:** Reflect, blog, plan next week.

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## Additional Free Resource Lists

- [edX Free AI/Machine Learning Courses](https://www.edx.org/courses?q=free+online+course
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- [Simplilearn SkillUp AI & Data Science](https://www.simplilearn.com/introducing-simpli

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