Provide seperate github directories under parent directory for all these assignments. provide all artifacts as well as for each assignment, a expanation screencast

a) Simple Agents assignment

Build a very simple python agent and demonstrate multiple backend tools (use chatgpt to write the backends to various tools) - provide more tools than the hint as well as an outer loop.

hint: **https://til.simonwillison.net/llms/python-react-pattern**
and **https://docs.google.com/presentation/d/11jJYgT6sZOtrwx6YK6-yqyfCMrO-j2KdA_-UuhSSQ1U/edit#slide=id.g285ab91e5c8_0_338** (see notes)

b) Implement auto agent

Leverage auto agent to build a virtual company to do a project (use gpt4) and provide all the artifacts of the project. come up with novel example other than the hint file

Hint: https://github.com/Link-AGI/AutoAgents

c) Finetune LLM for your custom task

Use Lora to finetune the model
- **https://docs.google.com/presentation/d/11jJYgT6sZOtrwx6YK6-yqyfCMrO-j2KdA_-UuhSSQ1U/edit#slide=id.g28b63e79207_0_7014** (see notes)
Create custom data sets and fine tune for this assignment
Hint :
https://www.youtube.com/watch?v=fYyZiRi6yNE&t=772s

(colab in description) and mistral slides

d) use QLora to finetune a model. generate custom data set.

hint: **https://docs.google.com/presentation/d/11jJYgT6sZOtrwx6YK6-yqyfCMrO-j2KdA_-UuhSSQ1U/edit#slide=id.g28b63e79207_0_7021** (see notes slide) and mistral slides

e) use mistral llm with RAG and demonstrate a production usecase

hint: **https://docs.google.com/presentation/d/11jJYgT6sZOtrwx6YK6-yqyfCMrO-j2KdA_-UuhSSQ1U/edit#slide=id.g28b63e79207_0_7046**

deploy the finetuned model on production

f) integrate mistral model as backend with langchain - demonstrate simple prompts

Hint: **https://docs.google.com/presentation/d/11jJYgT6sZOtrwx6YK6-yqyfCMrO-j2KdA_-UuhSSQ1U/edit#slide=id.g28b63e79207_0_7102**

(see notes)

g) Quantize llm with ggml and gguf and build an end2end chat application on mobile phone and load the model and demonstrate using MLC end2end.

h) Use LLM studio and LLM Data Studio to demonstrate data set generation, fine tuning, deployment to huggingface and inference (Gradio)