

Introduction to Agentic AI

Lesson 3: Best Practices

by Hand 

Prof. Tom Yeh



University of Colorado
Boulder

Hosted by



GENAI.WORKS

Interactive

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I am from _____.

Textbook

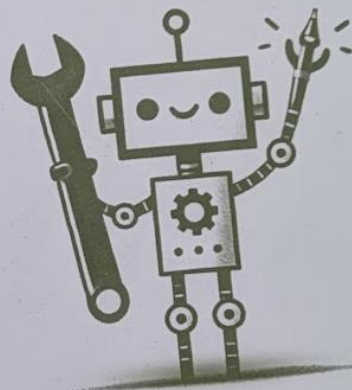
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AI Agents

50



Best Practices

Dr. Maryam Miradi

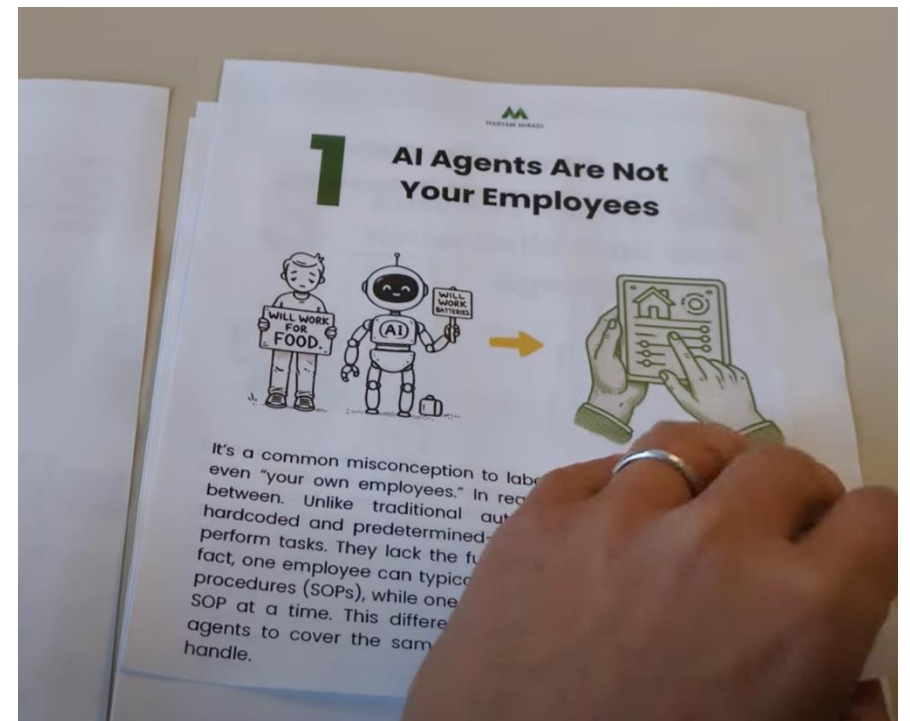
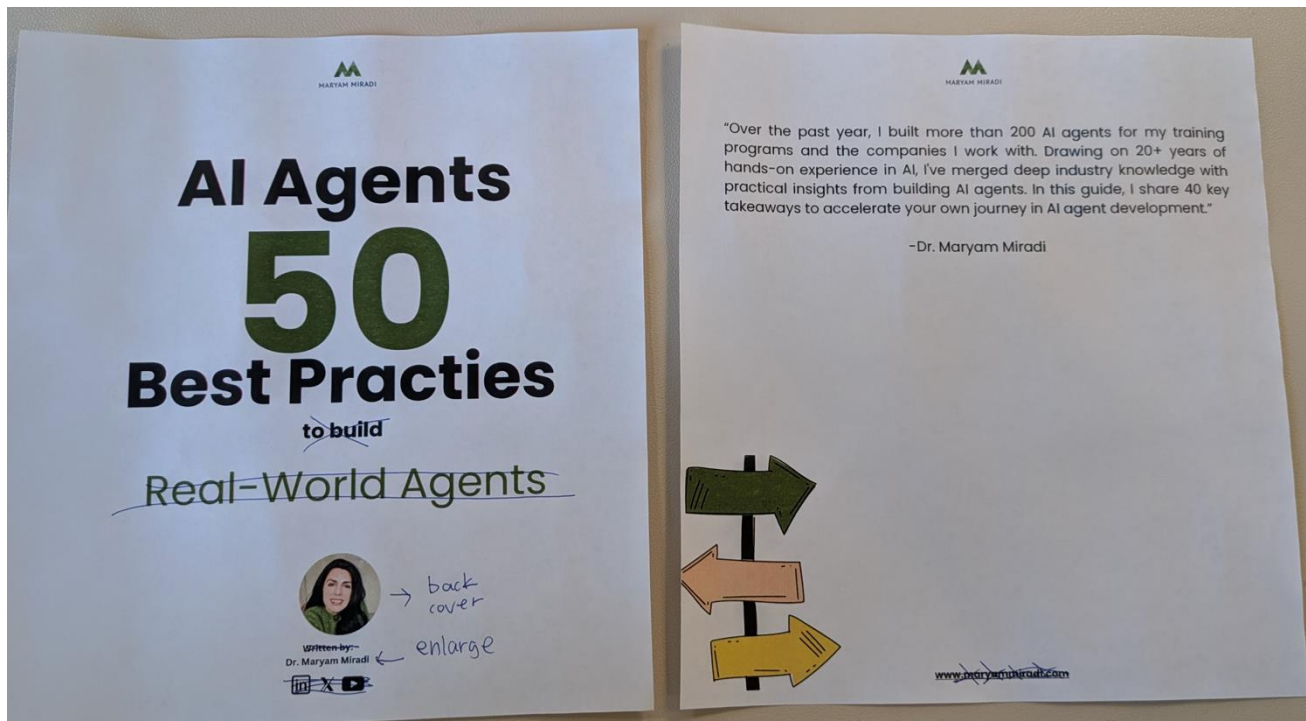
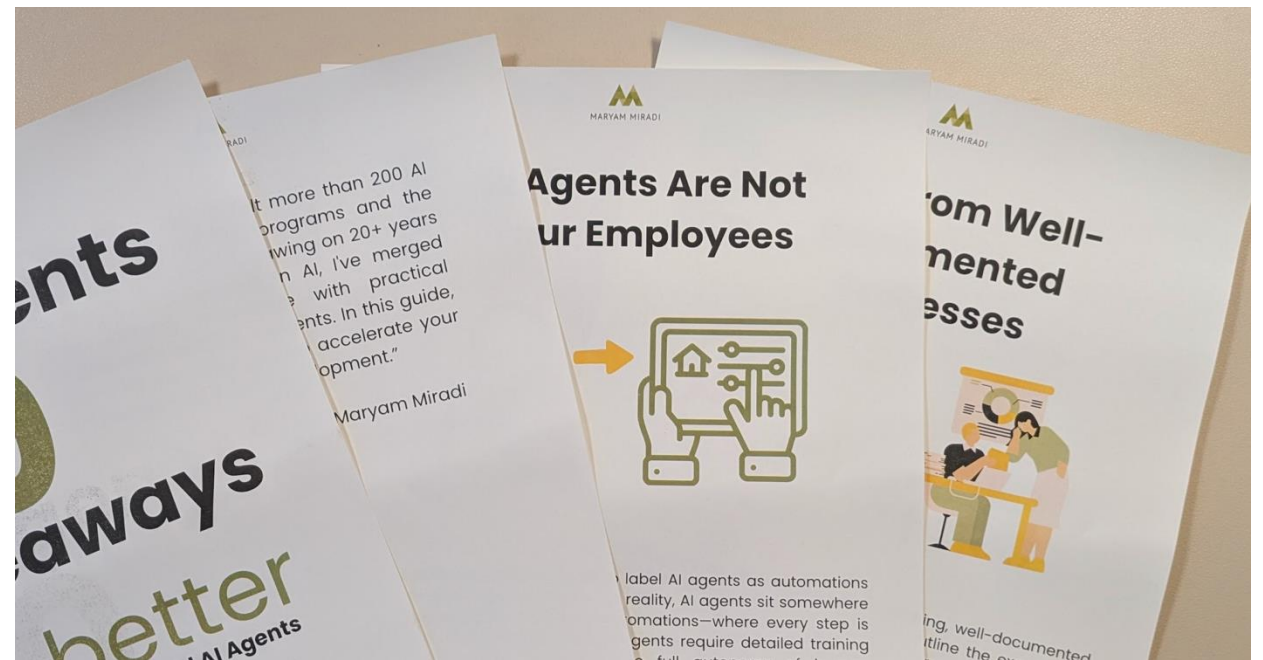
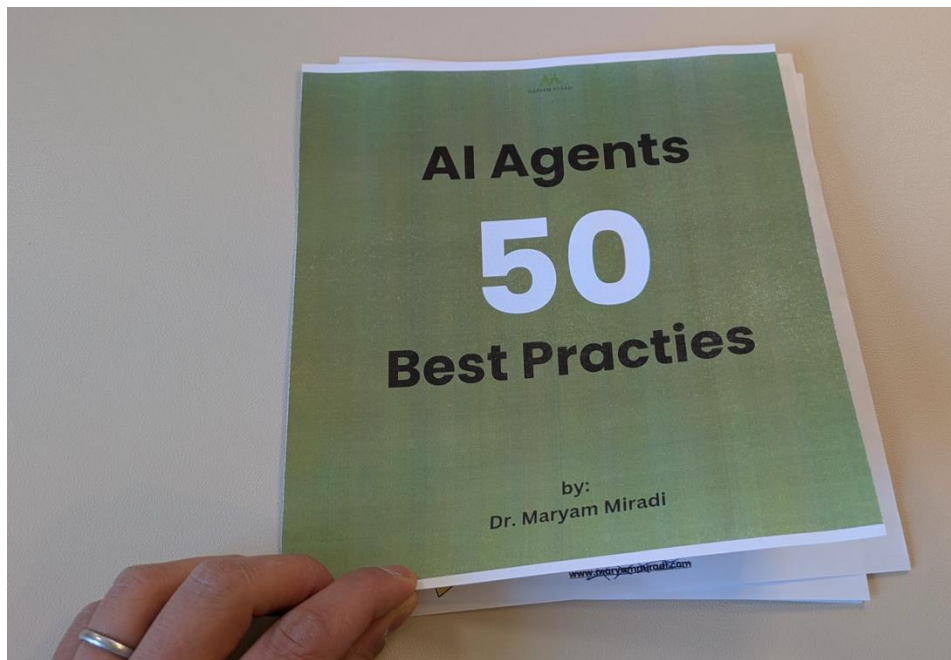
to my friend
Prof. Tom Yeh



curated by
Dr. Maryam Miradi
www.maryamiradi.com

AI Agents + RAG





Review Assignments

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Lesson 1: Agent



Samiul



Vicent



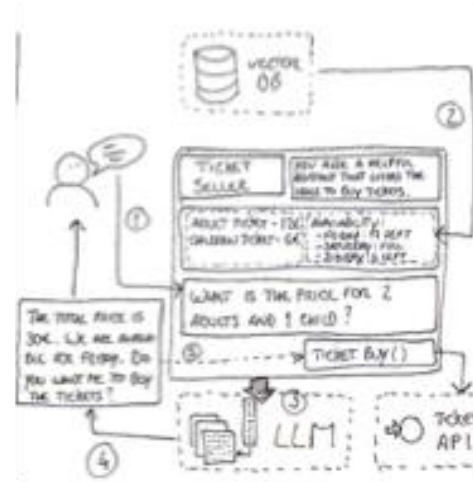
Nishita



Georges



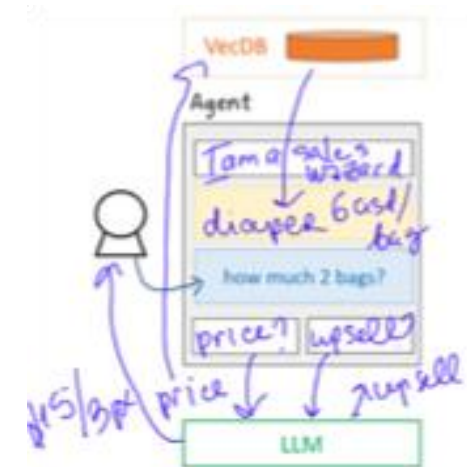
Kedar



Tiago

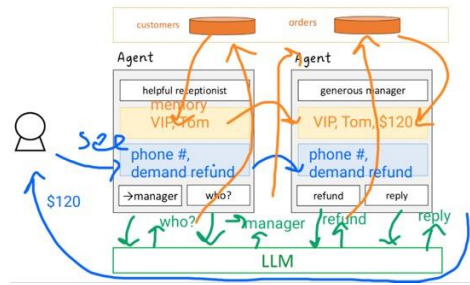


Mayer

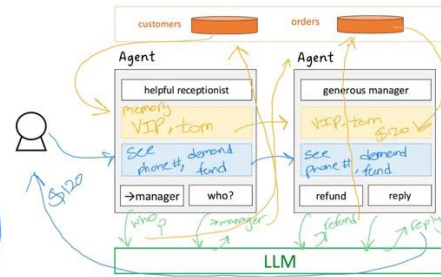


Maria

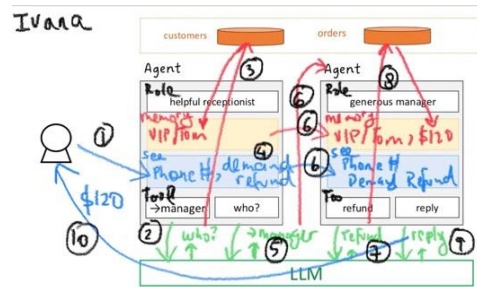
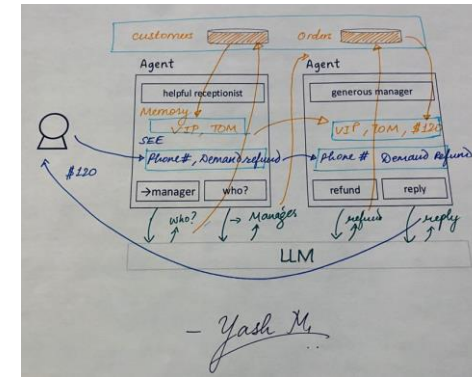
Lesson 2: Multi-Agents



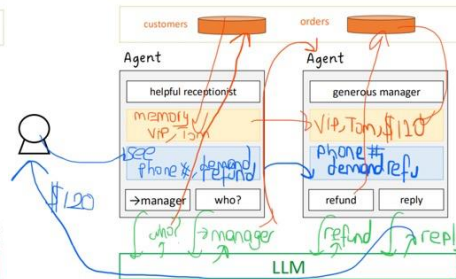
Maria



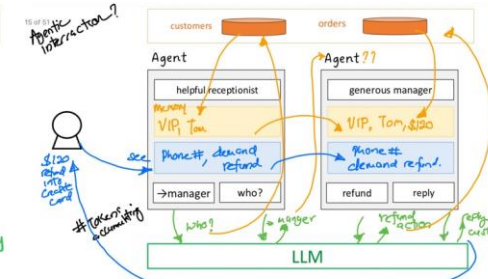
Muhammad



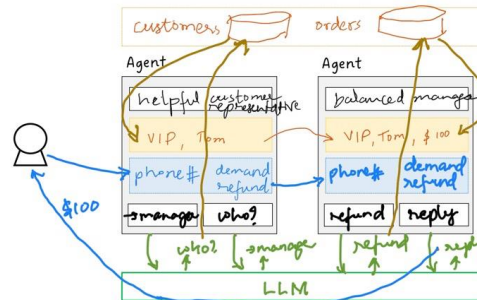
Ivana



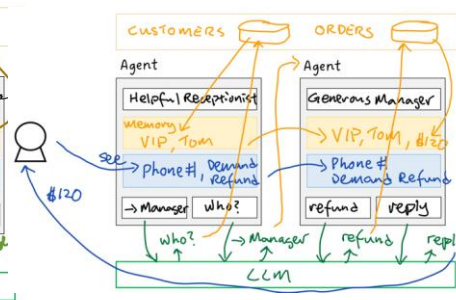
Asligul



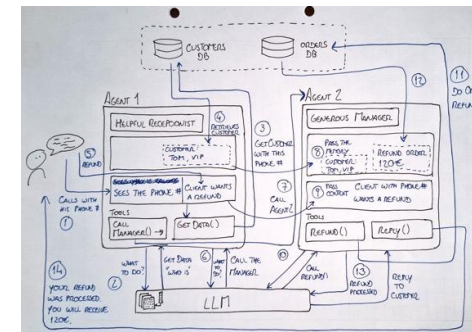
Jide



Vinod



Vincent



Tiago

How to Study AI Agents

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Agent **thinks**, **sees**, **remembers**, **can**

```
writer = Agent(  
    role='Writer',  
    goal='Narrate compelling tech stories about {topic}',  
    memory=True,  
    backstory=(  
        "You craft engaging narratives to educate"  
    ),  
    tools=[search_tool],  
    allow_delegation=True  
)
```

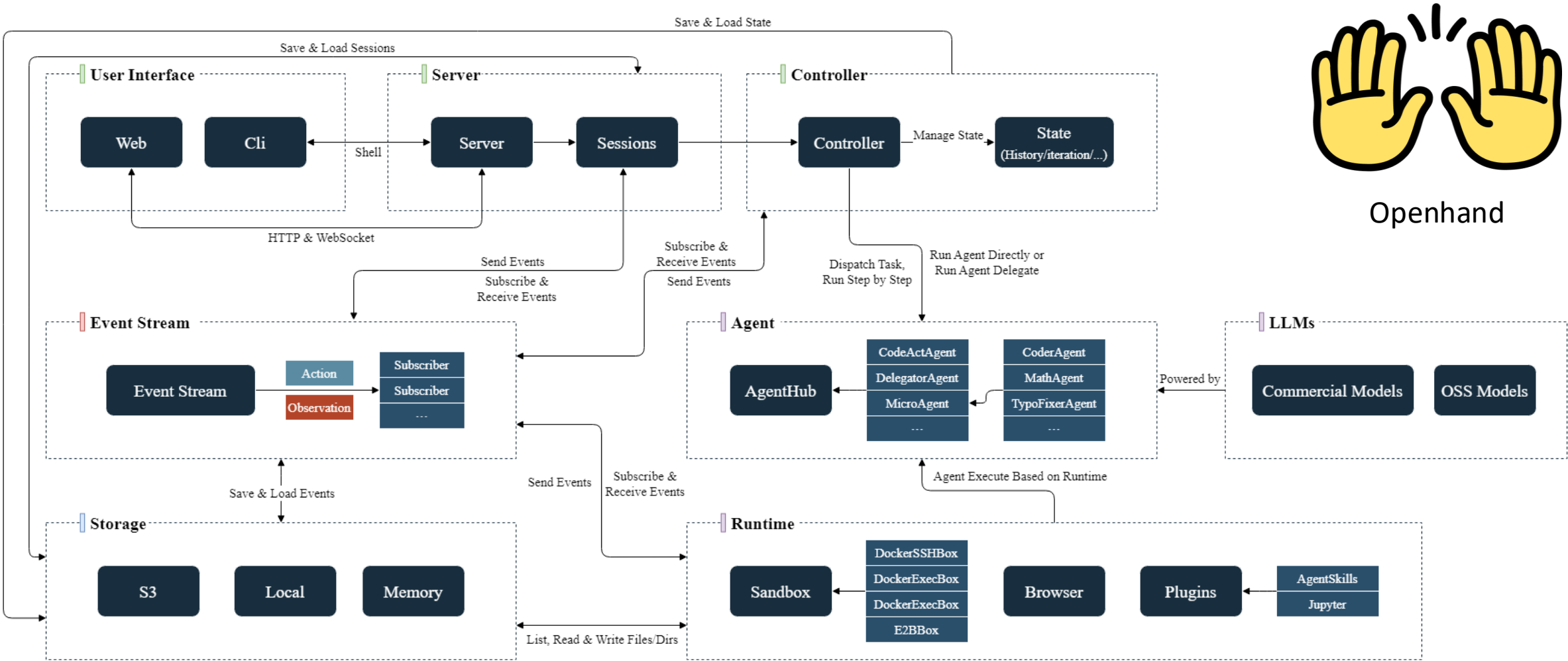
Multi-Agents

Process

Communication

Memory

LLM



What is AI by Hand ?

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Name: Rustam
Country: Egypt

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Egypt

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Viet Nam

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

- India

2
1
3

inputs

1	-1	1	-5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

Problem:-

2
1
3

inputs

1	-1	1	5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

inputs

1
0
2

Relu

3
1
0
1

Rim Missaoui

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Viet Nam

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

INDIA

2
1
3

inputs

1	-1	1	-5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

Country: Egypt

2
1
3

inputs

1	-1	1	5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

Honor Roll

AI by Hand 🙌
27 people from 19 countries

Name -> Abhinav Shukla
Country -> India

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Egypt

2
1
3

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Viet Nam

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Egypt

2
1
3

inputs

1	-1	1	-5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

Country: Egypt

2
1
3

inputs

1	-1	1	-5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

Country: Egypt

2
1
3

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Viet Nam

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

Country: Viet Nam

1
0
2

inputs

1	0	1	0
-1	0	1	0
0	1	1	-3
1	1	0	0

W

3
1
-1
1

b

Relu

3
1
0
1

CHALLENGE:

2
1
3

inputs

1	-1	1	-5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

Country: Egypt

2
1
3

inputs

1	-1	1	-5
1	1	0	0
0	1	1	1
1	0	1	-2

W

-1
3
5
3

b

Relu

0
3
5
3

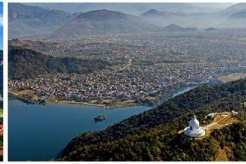
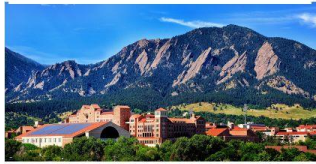
Neural Network

AI by Hand 🖍️

Tom

Sudhin

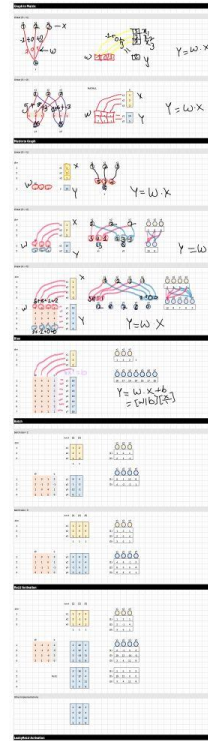
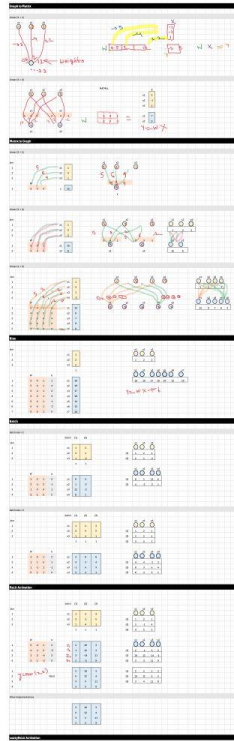
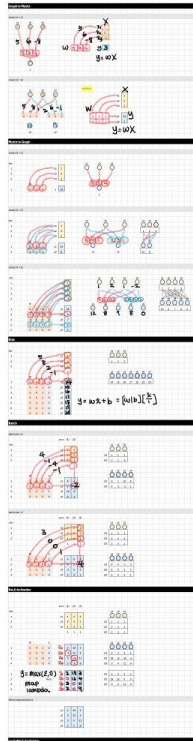
Bhishan



Boulder
USA

Pokhar
Nepal

Kathmandu
Nepal



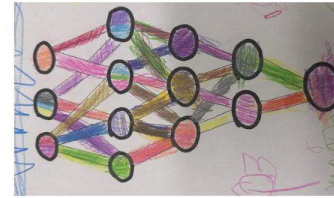
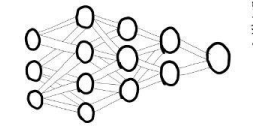
Watch my lecture videos at
byhand.ai/youtube



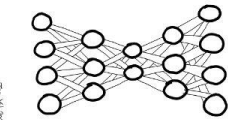
Color AI by Hand 🖍️ Together

see my post to participate in the
group art project

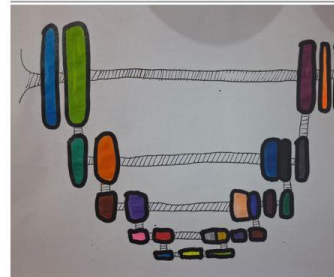
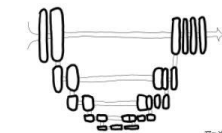
Neural Net



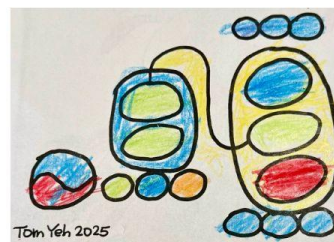
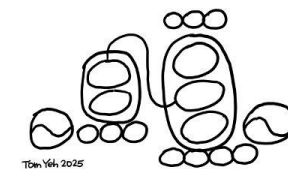
Auto-Encoder



U-Net



Transformer



AL BY HAND

Anish Pahilajani

To: Anish

AI by Hand

Deep Learning Math Workbook

Prof. Tom Yeh Mohseni Ashraf

1. Dot Product 2. Matrix Multiplication 3. Linear Layer

4. Activation 5. Artificial Neuron 6. Batch

7. Connection 8. Hidden Layer 9. Deep

10. Slide 11. Softmax 12. Gradient

Mixture of Experts

Yue Shen

To: 沈越

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Mixture of Experts

Yash Sakhuja

To: Yash

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Mixture of Experts

To: Anish

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Mixture of Experts

To: 沈越

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Mixture of Experts

To: Yash

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10. Slide 11. Softmax 12. Gradient

Mixture of Experts

Alex Wang Tom Yeh

Let's Draw

Multi-head Latent Attention

Mixture of Experts

GOA Grouped Query

AI by Hand 2025 © Tom Yeh

Sindhujha, India Anand, USA Phil, Australia

Let's Draw

Multi-head Latent Attention

Mixture of Experts

GOA Grouped Query

AI by Hand 2025 © Tom Yeh

Let's Draw

Multi-head Latent Attention

Mixture of Experts

GOA Grouped Query

AI by Hand 2025 © Tom Yeh

Let's Draw

Multi-head Latent Attention

Mixture of Experts

GOA Grouped Query

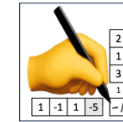
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Certificate

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Certificate of Achievement

I certify that

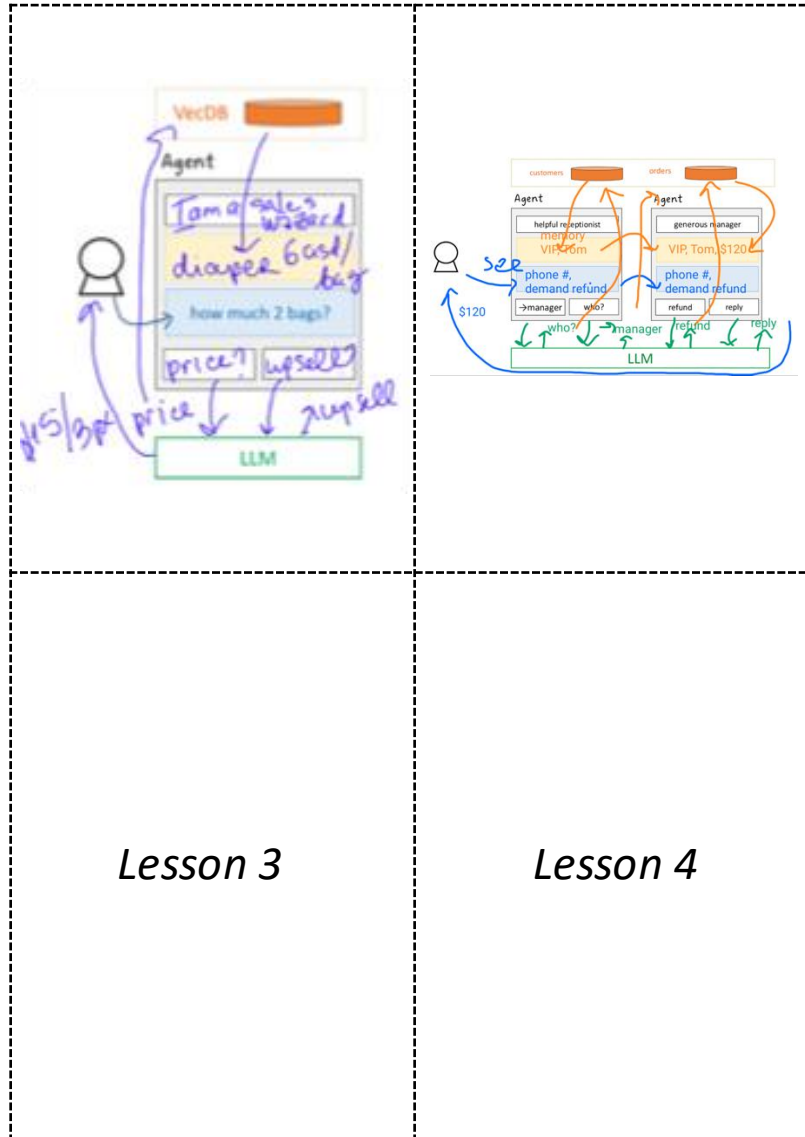
Maria Petrenko

Completed

Introduction to Agentive AI

by hand 🖋️

Prof. Tom Yeh



Lesson 3

Lesson 4

Prizes

Lesson 3: Best Practices - by Hand 🖍️

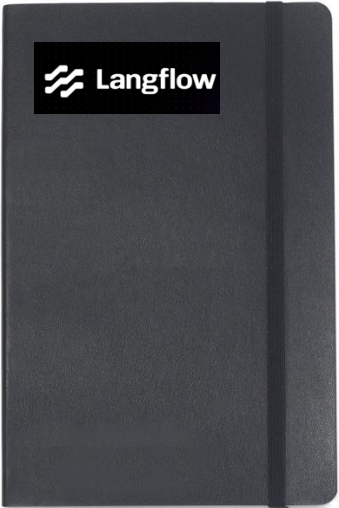


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AI by Hand
Deep Learning
Math Workbook



Langflow
Notebook



AI Agents
50 Best Practices



GenAI.Works
Agent T-Shirt
Limited Edition



Best Practices

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1. AI Agents ----- Your Employees

Are

Are Not

20. Agents Need to be Adaptable Based on Feedback

Agent **thinks**, **sees**, **remembers**, **can**

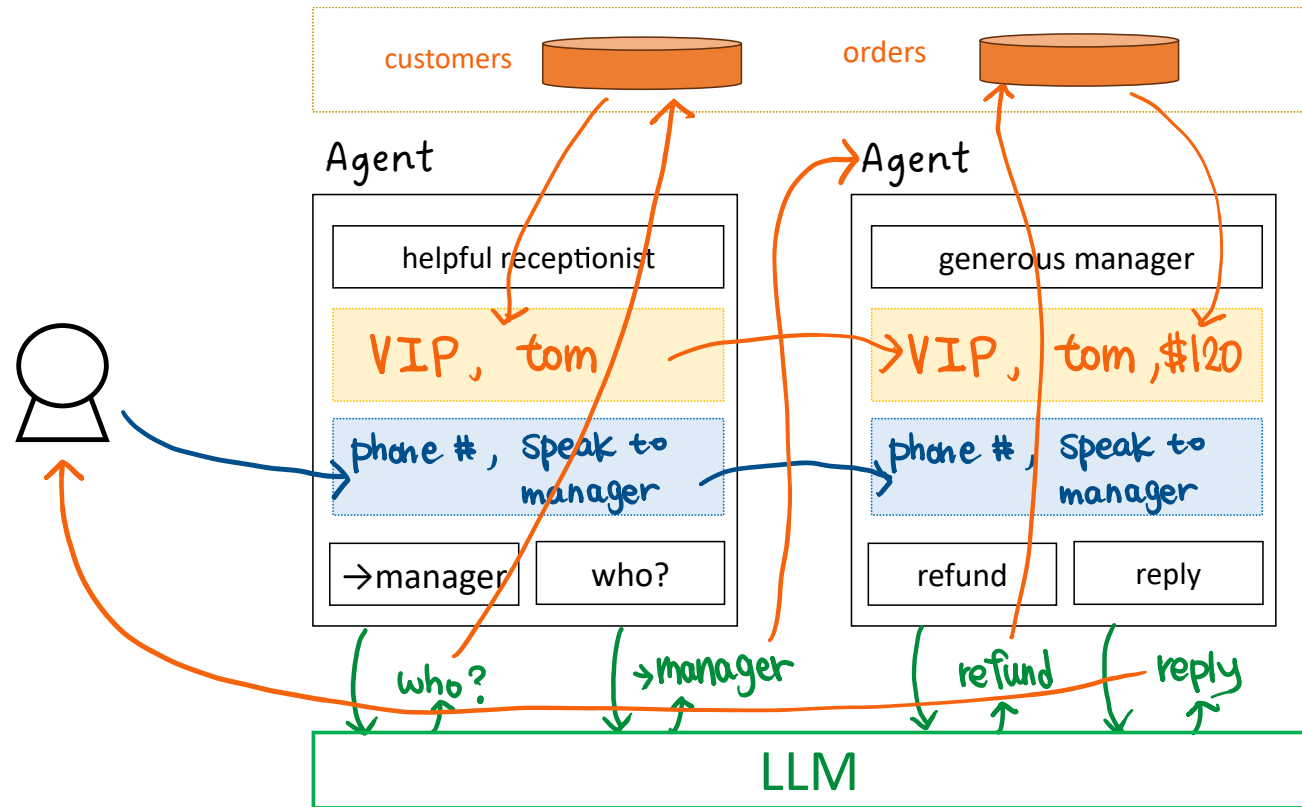
```
writer = Agent(  
    role='Writer',  
    goal='Narrate compelling tech stories about {topic}',  
    memory=True,  
    backstory=(  
        "You craft engaging narratives to educate"  
    ),  
    tools=[search_tool],  
    allow_delegation=True  
)
```

3. Business Owners _____ Build Their Own Agents

Will

Will Never

8. Integrations Are Just as Important as Functionality

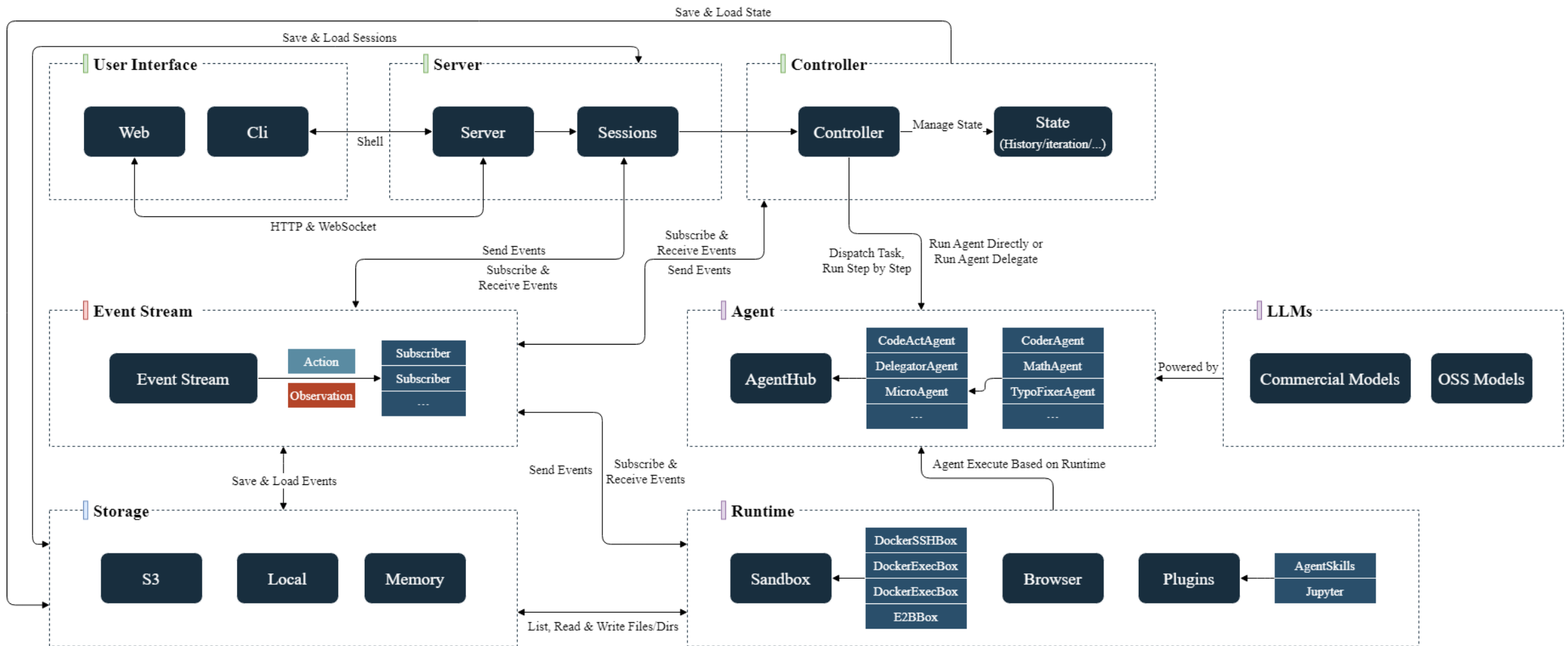


12. Model Costs _____ Matter

Do

Don't

24. Include Humans in the Loop for Mission-Critical Agents



25. _____ AI Agents Define the Future

Vertical

General

Q/A

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Assignment

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