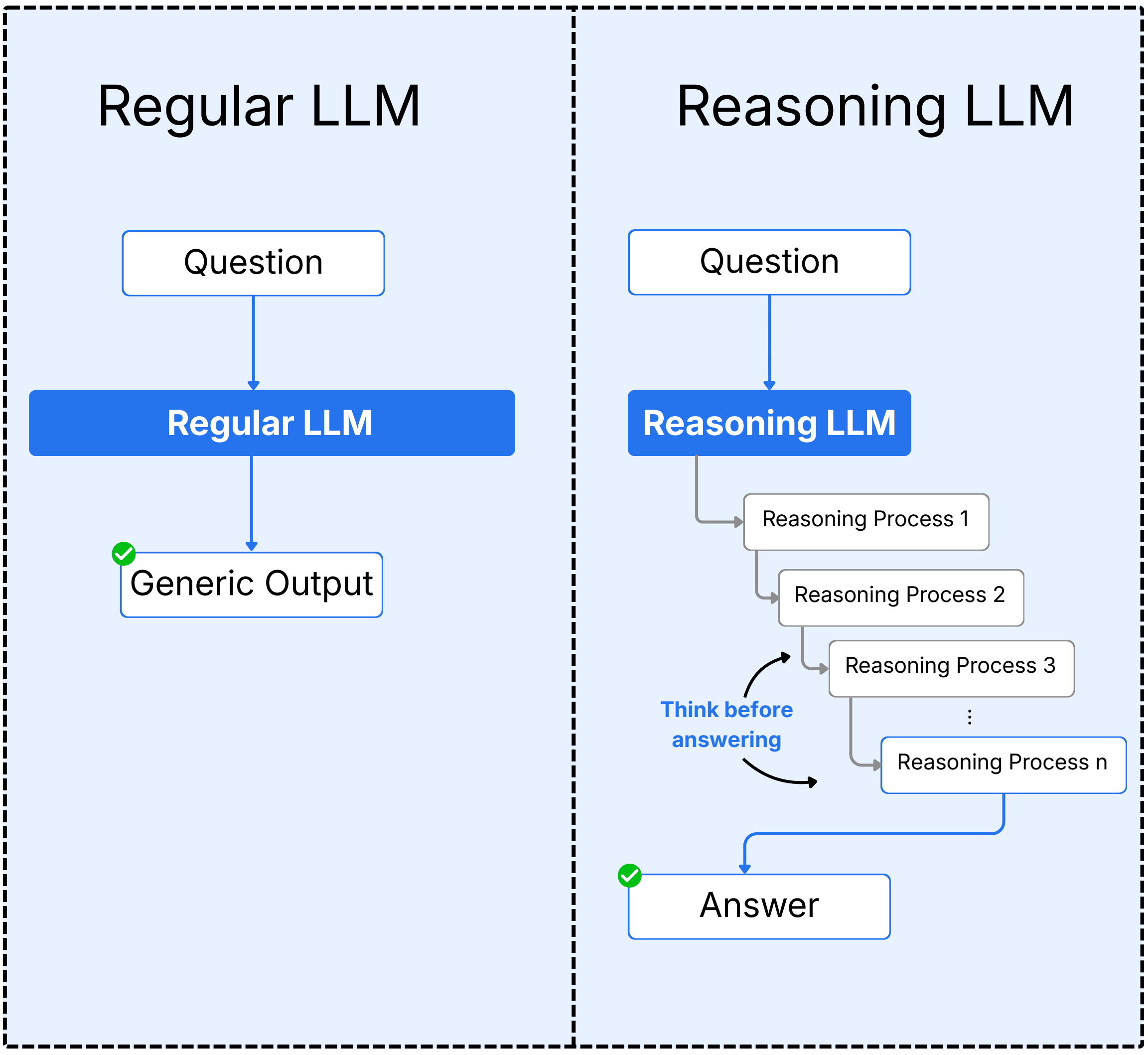
AI Accelerator Program

Analytics Vidhya

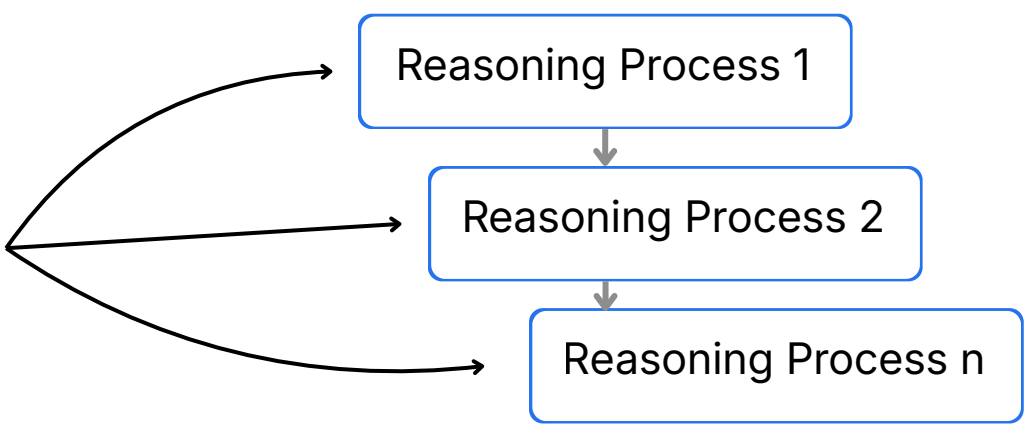
A Guide to **Reasoning LLMs** vs **Regular LLMs**



What is Reasoning?

It is a process of answering questions that involve

- complex
- multi-step reasoning



with intermediate stages.

Reasoning question will look something like this

Reasoning Question

A farmer has chickens and cows. There are 30 heads and 100 legs in total. How many chickens and how many cows are there?

These are not reasoning questions

Non - Reasoning Question

What is the capital of France

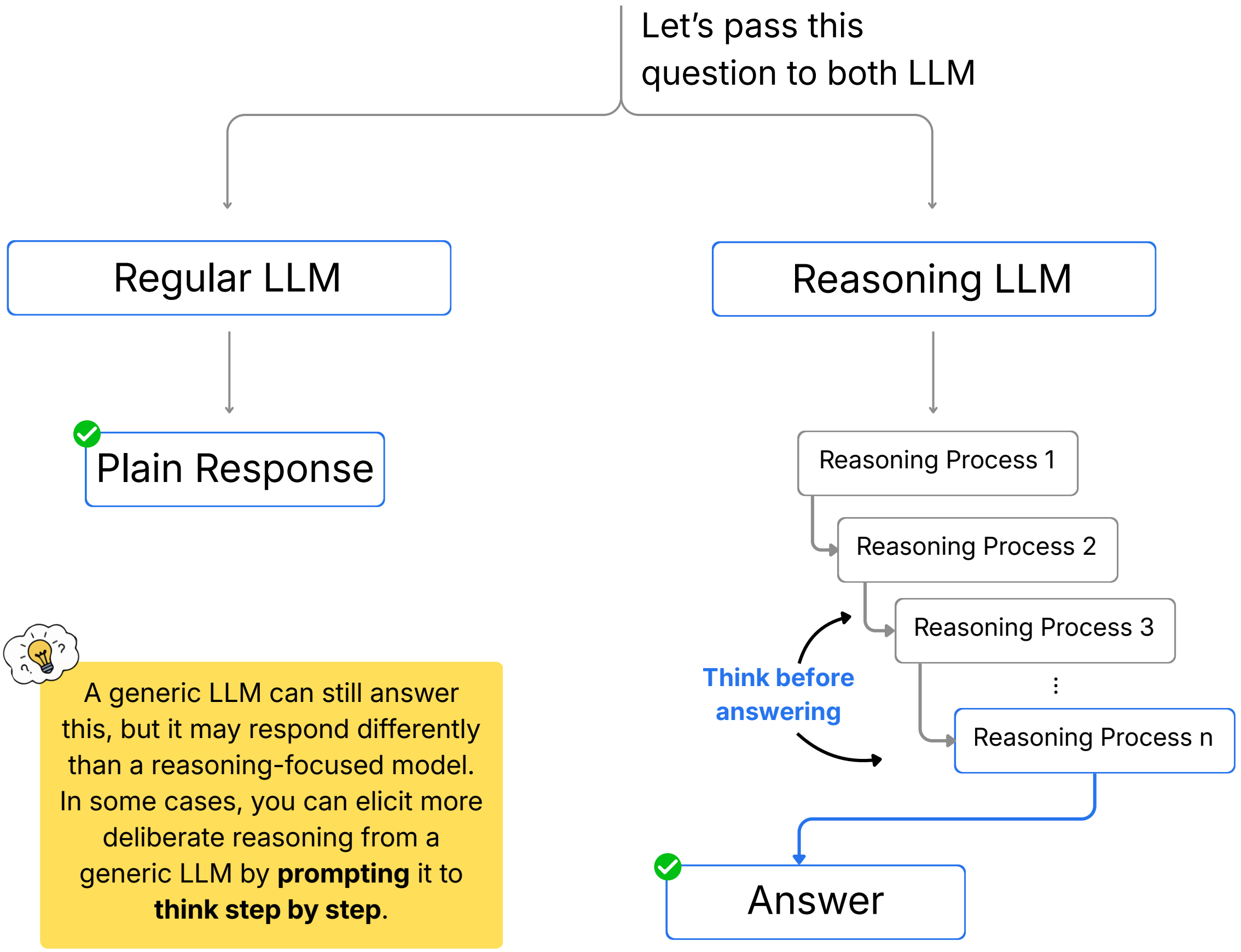
Non - Reasoning Question

What does CPU stand for?

Response Differences

Reasoning Question

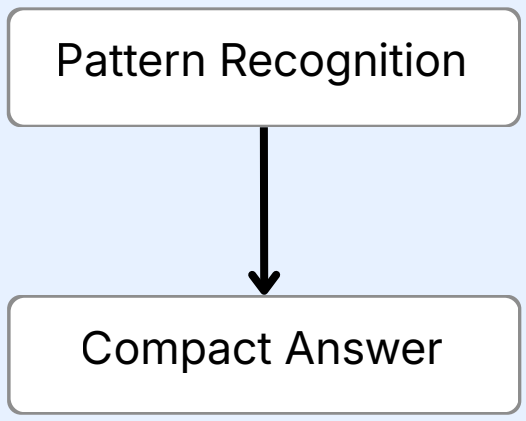
A farmer has chickens and cows. There are 30 heads and 100 legs in total. How many chickens and how many cows are there?



A generic LLM can still answer this, but it may respond differently than a reasoning-focused model. In some cases, you can elicit more deliberate reasoning from a generic LLM by **prompting** it to **think step by step**.

Regular LLM style response

Let c be chickens and w be cows.
c+w=30 and 2c+4w=100
Solving gives w=20 and c=10.
So there are 10 chickens and 20 cows.



What's happening here:

- It recognizes a **familiar algebra pattern**
- It compresses the **reasoning into a short answer**
- Intermediate **thinking is implicit** or skipped
- It prioritizes **speed** and **conciseness**

Sometimes a generic model may even guess or shortcut if the pattern is slightly unusual.

Reasoning LLM style response

A reasoning LLM tends to unpack the logic step by step:

Each animal has one head, so the total number of animals is 30.
If all 30 were chickens, there would be 30×2=60 legs.

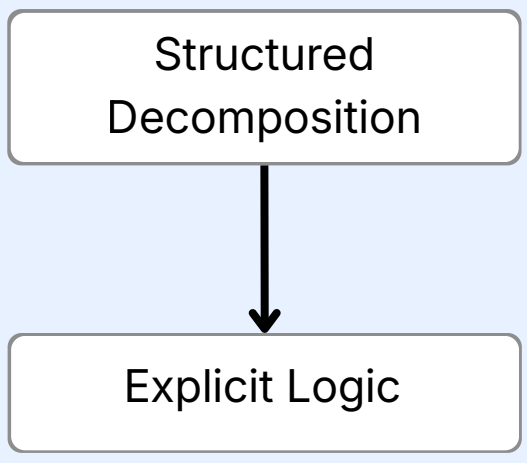
But there are actually 100 legs, which is 40 more legs than that.

Each cow contributes 2 extra legs compared to a chicken.

So 40÷2=20 cows.

The remaining 30−20=10 are chickens.

Therefore, there are 10 chickens and 20 cows.



What's happening here:

- It builds a **chain of logical steps**
- It explains why **each step makes sense**
- It checks **internal consistency**
- The reasoning is **transparent** and **traceable**

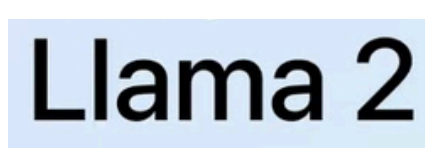
The reasoning model is simply optimized to show its work and stay reliable on harder, multi-step problems.

Analytics Vidhya

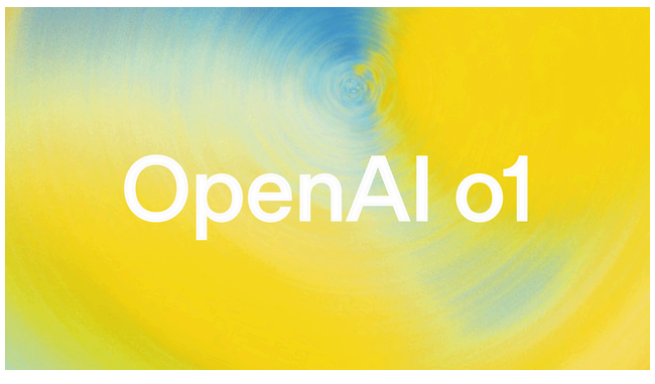
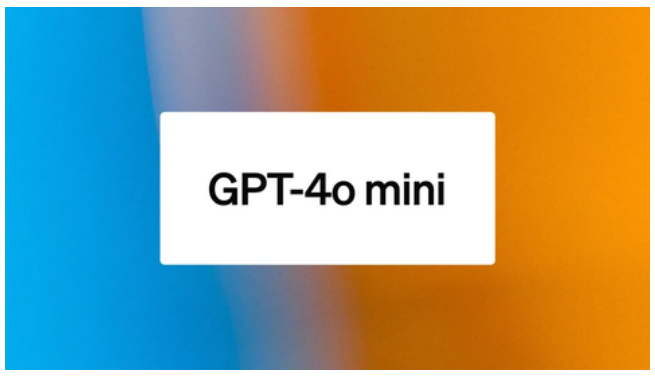
Regular Large Language Model

Regular LLMs are trained with **supervised fine-tuning(SFT)** to learn how to respond to instructions directly.

Examples of Regular LLMs



Reasoning Large Language Model

Reasoning LLMs are trained with supervised fine-tuning and reinforcement learning methods (such as **GRPO**) to respond to instructions by performing step-by-step reasoning before generating an answer.

Examples of Reasoning LLMs