

Prompt Engineering

Top AI Models

Before diving into the fascinating world of prompt engineering, let's take a moment to explore some of the leading AI models that are shaping the landscape of Information and Communication Technology (ICT) today. Selecting the right model is not merely a matter of personal preference; it's a pivotal decision that can significantly impact the effectiveness of your tasks, from automation to coding and beyond. Each model brings unique strengths and capabilities, making some particularly well-suited for specific applications. By understanding these top-tier AI models, you can harness their potential to streamline processes, enhance productivity, and drive innovation in your projects. Let's embark on this journey to discover how these cutting-edge technologies can empower you to achieve remarkable results!

These AI models are transforming the ICT field by automating complex tasks, improving communication systems, and enabling smarter, data-driven decision-making processes. They represent the cutting edge of AI innovation, driving efficiency and scalability in ICT infrastructure and services.

- **OpenAI:** OpenAI's **GPT-4o** is one of ICT's most advanced language models for tasks like automated customer support, IT documentation, and natural language processing (NLP). OpenAI's **Codex** is also widely used for automating coding tasks, debugging, and software development, making it a critical tool in ICT systems.
- **Anthropic:** Anthropic's **Claude 3.7** is designed to focus on ethical AI and is used in ICT for secure and responsible automation of communication systems, data analysis, and troubleshooting. Its emphasis on safety and alignment makes it a preferred choice for sensitive ICT applications.
- **Google:** Google's **Gemini 2.5 Pro** is its most advanced AI model, optimized for enhanced reasoning, allowing it to tackle complex problems effectively. This multimodal model can seamlessly process and generate text, images, audio, and video, showcasing its versatility. It also includes advanced security features that improve its resistance to indirect prompt injection attacks, making it a robust choice for secure applications.
- **Meta:** Meta's **LLaMA 4** (Large Language Model Meta AI) is a scalable and efficient model used for language understanding and generation. It supports ICT applications such as multilingual communication, content moderation, and real-time translation, making it a valuable tool for global ICT operations.
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Top AI Coding Models

In the realm of coding and software development, several advanced AI models are making significant strides in automating tasks, enhancing productivity, and assisting developers. These coding models represent the forefront of AI innovation in software development, empowering developers to write code more efficiently, reduce errors, and focus on higher-level problem-solving and creativity. As AI evolves, these tools will likely become even more integral to the coding process, transforming how software is developed across industries.

Here are some of the top coding models currently in use:

- **WizardCoder** has emerged as a strong contender, demonstrating exceptional performance on coding benchmarks like HumanEval, where it achieved a pass rate of 73.2%. This model is specifically fine-tuned for coding tasks and outperforms many other models, including ChatGPT 3.5 and Gemini Pro, in generating and completing Python code.
- **OpenAI Codex**: Building on GPT-3 and GPT-4 capabilities, OpenAI Codex is designed explicitly for programming tasks. It can understand and generate code in multiple programming languages, assist with code completion, and even debug existing code. Codex powers tools like GitHub Copilot, which provides real-time suggestions and helps developers write code more efficiently.
- **GitHub Copilot**: Powered by OpenAI Codex, GitHub Copilot acts as an AI pair programmer, offering contextual code suggestions directly in code editors like Visual Studio Code. It helps developers by generating function definitions, completing code snippets, and suggesting entire algorithms, making the coding process faster and more intuitive.
- **Google's PaLM 2**: While primarily a language model, PaLM 2 has demonstrated strong code generation and understanding capabilities, particularly in natural language to code translation. It can assist in explaining code snippets, generating documentation, and providing code-related insights, making it a versatile tool for developers.
- **DeepMind's AlphaCode**: This model aims to generate code at a competitive programming level by interpreting problem statements and producing functional code solutions. AlphaCode has shown promise in tackling complex coding challenges, demonstrating the potential for AI to excel in competitive programming environments.
- **Facebook's Aroma**: Aroma is a code-to-code search and recommendation tool that utilizes machine learning to provide code snippets in response to partial queries. It helps developers find relevant code patterns and examples efficiently, enhancing code reuse and speeding up development.
- **Tabnine**: Tabnine is an AI-powered code completion tool that integrates into various IDEs. It uses deep learning to predict the following lines of code and offers contextual suggestions based on the current coding environment, significantly improving coding speed and accuracy.
- **Kite**: Kite is another AI coding assistant that provides code completions, function signatures, and documentation in real-time as developers write code. It supports multiple programming languages and integrates seamlessly with various development environments, enhancing productivity.
- For those seeking open-source alternatives, **Code Llama** and **Phind-CodeLlama** are also noteworthy, with strong Python code generation and completion capabilities. Ultimately, the choice of model may depend on specific needs, such as the complexity of tasks or the preference for open-source solutions.

Top Automation Tools

Network automation tools stand at the forefront of innovation in an era where networks are the backbone of digital transformation, empowering organizations to navigate complexity with unprecedented agility and efficiency. These tools leverage advanced technologies, including artificial intelligence and machine learning, to automate repetitive tasks, optimize performance, and enhance security. By streamlining operations, reducing human error, and providing real-time insights, network automation tools enable IT teams to focus on strategic initiatives that drive business growth. Embracing these solutions transforms how networks are managed and paves the way for a future where connectivity is seamless and organizations can thrive in an ever-evolving digital landscape.

Below are some of the top network automation tools:

- **Cisco DNA Center**

Cisco DNA (Digital Network Architecture) Center is an intent-based network automation platform designed for enterprise networks. It uses AI and machine learning to manage and optimize network performance, automate provisioning, and ensure security compliance.

The key features of this network automation model include automated network configuration and deployment, which streamline the setup and management of network infrastructure. It also provides AI-driven insights that enhance network performance and enable effective anomaly detection, ensuring potential issues are identified and addressed promptly. Additionally, the model incorporates security automation, facilitating threat detection and mitigation to safeguard the network against vulnerabilities. Furthermore, it leverages AI-powered network analytics to support proactive maintenance, allowing organizations to anticipate and resolve potential problems before they impact operations.

This network automation model is particularly valuable in several use cases, including enterprise network management, where it simplifies the oversight and operation of complex network infrastructures. It also excels in automated provisioning, enabling organizations to quickly and efficiently deploy new network resources without requiring extensive manual intervention. Additionally, the model enhances troubleshooting capabilities, allowing for swift identification and resolution of network issues, ultimately leading to improved performance and reduced downtime.

- **Ansible**

Ansible is a widely recognized open-source automation platform that significantly supports network automation through its specially designed modules and playbooks tailored for various network devices.

One of its key features is declarative playbooks, which facilitate the straightforward automation of network configurations. Ansible also seamlessly integrates with major network vendors like Cisco, allowing users to manage diverse environments effectively. Its scalability enables automation across multi-vendor setups, ensuring that organizations can easily expand their automation efforts as needed. Additionally, Ansible offers the flexibility to customize and adapt workflows, enabling users to create solutions that meet their specific operational requirements.

This versatility makes it ideal for use cases such as multi-vendor network automation, configuration management, and deployment, empowering organizations to streamline their network operations and enhance efficiency.

- **Terraform**

Terraform is an open-source infrastructure as code (IaC) tool that enables users to define and provision data center infrastructure through a declarative configuration language. This powerful platform automates the deployment and management of network resources across various cloud providers and on-premises environments, simplifying the infrastructure management process.

One of the standout features of Terraform is its ability to create and manage infrastructure consistently, allowing users to version control their infrastructure changes. This capability not only enhances collaboration among teams but also improves the reliability of deployments. Terraform's provider ecosystem supports a wide array of services, enabling users to integrate network automation with other cloud resources seamlessly.

Additionally, Terraform's state management ensures that infrastructure is maintained in a predictable state, providing visibility into changes and facilitating rollbacks if necessary. These features make Terraform particularly effective for use cases such as multi-cloud deployments, infrastructure provisioning, and network resource management, empowering organizations to automate and optimize their network infrastructure efficiently.

- **Nornir**

Nornir is a Python-based automation framework specifically designed for network automation, offering a flexible and extensible platform for managing network devices. Unlike traditional automation tools, Nornir provides a robust foundation for users to write custom automation scripts and workflows tailored to their unique requirements.

One of Nornir's key features is its inventory management system, allowing users to effectively define and organize their network devices. This capability, combined with its support for parallel execution, enables users to automate tasks across large-scale network environments efficiently. Nornir also integrates well with various libraries and tools, enhancing its functionality and allowing users to leverage additional capabilities as needed.

Furthermore, Nornir's use of Python makes it highly customizable, enabling users to write scripts that align with their specific automation goals. This versatility makes Nornir ideal for use cases such as network configuration management, device monitoring, and tailored automation workflows, empowering organizations to enhance their network operations and improve efficiency.

AI can be seamlessly incorporated into network automation tools like **Cisco DNA Center**, **Ansible**, **Terraform**, and **Nornir** to enhance their capabilities and transform how networks are managed. By integrating AI and machine learning, these tools can analyze vast amounts of telemetry data in real time, providing valuable insights into network performance, detecting anomalies, and predicting potential issues before they occur. For instance, AI can enable **Cisco DNA Center** to deliver predictive analytics, automate complex troubleshooting, and optimize network configurations dynamically. Similarly, AI-powered extensions can enhance **Ansible**, **Terraform**, and **Nornir** by enabling intelligent decision-making for tasks like dynamic provisioning, configuration tuning, and automated scaling based on usage patterns. AI can also improve anomaly detection, root cause analysis, and proactive security measures across automation workflows. By embedding AI into these tools, organizations can move from reactive to proactive network management, reducing downtime, improving efficiency, and enabling more intelligent, more adaptive infrastructures.

What is Prompt Engineering?

Prompt engineering is the practice of carefully designing and structuring instructions, or "prompts," to guide AI models like GPT-4 or Claude in generating accurate, relevant, and high-quality responses. It involves crafting clear, specific, and goal-oriented inputs that provide the AI with the necessary context, constraints, and expectations to perform a given task effectively. At its core, prompt engineering bridges the gap between human intent and machine understanding by translating complex objectives into concise, actionable directives that the AI can process. Key elements of prompt engineering include defining the AI's role or perspective (e.g., "act as a software developer"), providing relevant context or background information, specifying the desired output format or style (e.g., a bulleted list, formal tone, or detailed explanation), and sometimes including examples to clarify expectations. This process is critical for minimizing ambiguity, ensuring alignment with user goals, and maximizing the value of AI systems across diverse applications, from automating workflows and analyzing data to creative writing and decision-making. As a dynamic and rapidly evolving field, prompt engineering is not only about technical precision but also creativity and experimentation, empowering users to unlock the full potential of AI by tailoring its outputs to their specific needs.

Writing a Great Prompt

A **prompt formula** is a structured guideline used to create effective prompts for language models, ensuring that the generated responses meet specific requirements and contexts. It typically includes elements such as the desired output type, context, and specific instructions that guide the model to produce relevant and coherent results. The importance of prompt formulas lies in their ability to enhance the quality of interactions with AI by minimizing ambiguity and focusing the model's attention, ultimately leading to more accurate and contextually appropriate answers. By using prompt formulas, users can harness the full potential of language models, making them more efficient and effective in various applications.

Parts of a Well-Defined Prompt

A well-defined prompt is a carefully constructed instruction ensuring AI systems generate precise, relevant, high-quality responses. It consists of critical components that guide the AI's focus, provide necessary context, and set clear expectations for the output. These components include:

1. **Define a Role:** Assign a specific identity or role to the AI to shape its perspective and approach to the task.
2. **Provide Context:** Provide background information and a clear purpose to help the AI understand the scope and relevance of the request.
3. **Give Instructions:** Clearly define the task or goal, ensuring the AI knows exactly what is required.
4. **Include Details:** The AI should consider relevant information or data to produce accurate outputs.
5. **Provide Examples:** Provide sample responses to illustrate the desired format, style, or content.
6. **Use Delimiters:** Use triple single quotes (") or clear labels like **"Scenario:"**, **"Question:"**, or **"Answer:"** to separate instructions, examples, or configs.
7. **Style and Format:** Specify clarity, tone, structure, and engagement to align the response with user preferences and the intended audience.
8. **Output Indicators:** Specify the desired format or structure of the AI's response, such as a list, table, or paragraph.
9. **Provide Feedback:** Enable iterative improvement by guiding the AI on how to refine responses based on prior interactions.

C.R.E.A.T.E. Formula

C.R.E.A.T.E. is an acronym representing key principles or steps for developing high-quality prompts: **Clarity**, **Relevance**, **Explicitness**, **Auto Awareness**, **Task Orientation**, and **Evaluation**. This structured approach to prompt engineering assists users in crafting precise and effective prompts for AI models like ChatGPT, Claude, or LLaMA, emphasizing clarity, context, and goal-oriented design to maximize the quality of AI-generated outputs. Although the exact details of the formula are not fully outlined in available resources, its purpose and general structure can be inferred from established principles of prompt engineering. The C.R.E.A.T.E. Formula enables users to interact effectively with AI models by ensuring prompts are clear, specific, and aligned with the desired outcomes.

Key Elements of the C.R.E.A.T.E. Formula

While the exact breakdown of the acronym is not explicitly provided in the search results, we can hypothesize its components based on standard prompt engineering practices:

1. **C - Clarity:** Ensure the prompt is clear and unambiguous. Avoid vague language or overly complex phrasing.
Example: Instead of asking, "What do you know about history?" ask, *"Summarize the key events of World War II in chronological order."*
2. **R - Relevance:** Focus on the specific topic or task at hand. Provide enough context to guide the AI.
Example: *"Explain the benefits of cloud computing for small businesses, focusing on cost savings and scalability."*
3. **E - Explicitness:** Be explicit about the desired format or structure of the response.
Example: *"List the top five programming languages for web development in bullet points."*
4. **A - Audience Awareness:** Tailor the prompt to the intended audience or use case.
Example: *"Explain the concept of machine learning to a beginner with no technical background,"* or *"Act as a Cisco Routing and Switching expert."*
5. **T - Task Orientation:** Clearly define the task or goal the AI should accomplish.
Example: *"Write a professional email to a client apologizing for a delayed shipment."*
6. **E - Evaluation:** Include criteria for evaluating the response or specify the desired level of detail.
Example: *"Provide a detailed comparison of Python and Java, including their use cases, performance, and community support."*

How the C.R.E.A.T.E. Formula Enhances Prompt Engineering

The formula helps users:

- **Improve Output Quality:** The AI can generate more accurate and relevant responses by providing clear instructions.
- **Save Time:** Well-crafted prompts reduce the need for follow-up clarifications.
- **Achieve Specific Goals:** The formula ensures that prompts are aligned with the user's objectives, whether it's generating creative content, solving technical problems, or summarizing information.

Example Prompt Using the C.R.E.A.T.E. Formula

Scenario: A user wants to learn about cybersecurity best practices for small businesses.

Prompt: *"Explain five essential cybersecurity best practices for small businesses. Provide actionable steps for each practice, and ensure the explanation is suitable for non-technical business owners."*

- **Clarity:** The task is clearly defined (cybersecurity best practices).
- **Relevance:** Focuses on small businesses, a specific audience.
- **Explicitness:** Requests actionable steps and a non-technical explanation.
- **Audience Awareness:** Tailored for business owners without technical expertise.
- **Task Orientation:** The goal is to educate and provide practical advice.
- **Evaluation:** Specifies the number of practices (five) and the format (actionable steps).

COAST Formula

The **C.O.A.S.T. Formula** is a structured approach to prompt engineering designed to help users create effective and precise prompts for AI language models. **C.O.A.S.T.** is an acronym that represents five essential components for creating effective prompts: **Context, Objective, Actions, Scenario, and Task**, which enhance the clarity and effectiveness of instructions given to AI systems. By incorporating these components, the C.O.A.S.T. Formula maximizes the potential of AI interactions, ensuring that generated responses align with specific requirements and contexts.

Key Elements of the C.O.A.S.T. Formula

The formula consists of five distinct components, each serving a specific purpose in prompt engineering:

1. **C - Context:** Sets the background and environment for the task. It provides necessary background information and establishes the situation or conditions. It helps AI understand the broader environment
2. **O - Objective:** Defines the desired outcome. Clarifies the goal or purpose and guides the AI towards specific results. It ensures alignment with user expectations
3. **A - Actions:** Outlines the process steps. It details the necessary steps or procedures and provides a clear roadmap. It guides the AI through the execution
4. **S - Scenario:** Illustrates with specific examples. It provides real-world context and helps visualize the application. It makes the task more concrete
5. **T - Task:** Specifies the core assignment. It details the exact requirements and defines what needs to be accomplished. It forms the central focus of the prompt

How the C.O.A.S.T. Formula Enhances Prompt Engineering

The formula contributes to prompt engineering effectiveness in several ways:

- **Quality Assurance:** By following established best practices and maintaining documentation, the formula ensures reliable and accurate outputs
- **Systematic Approach:** Provides a structured method for creating prompts that can be integrated with existing systems
- **Iterative Improvement:** Enables testing and feedback gathering for continuous optimization
- **Enhanced Clarity:** Ensures all necessary aspects of a task are considered and communicated clearly

Best Practices for Implementation

To maximize the effectiveness of the C.O.A.S.T. formula:

- **Align with Established Standards:** Ensure the formula implementation follows recognized best practices in the field
- **Maintain Documentation:** Keep thorough records of prompt structures and outcomes
- **Use Quality Data:** Base prompts on reliable and up-to-date information
- **Regular Review:** Continuously evaluate and adjust the formula's effectiveness
- **Proper Training:** Ensure users understand the principles and application of the formula

Example Prompt Using the C.O.A.S.T. Formula

This example demonstrates how each component of the C.O.A.S.T. formula contributes to creating a clear, actionable prompt to guide the AI in generating relevant and helpful responses.

Prompt: *"You are a marketing strategist working for a tech startup launching a new smartphone app. You are a marketing strategist working for a tech startup launching a new smartphone app. You must analyze target market demographics, identify key marketing channels, create a messaging framework, design a promotional campaign, and set up tracking metrics."*

Similar apps in the market have succeeded through social media marketing and influencer partnerships. Create a detailed marketing plan including budget allocation, timeline, and success metrics for the app launch."

- **Context:** You are a marketing strategist working for a tech startup launching a new smartphone app.
- **Objective:** You are a marketing strategist working for a tech startup launching a new smartphone app.
- **Actions:**
 - Analyze target market demographics
 - Identify key marketing channels
 - Create a messaging framework
 - Design a promotional campaign
 - Set up tracking metrics
- **Scenario:** Similar market apps have succeeded through social media marketing and influencer partnerships.
- **Task:** Create a detailed marketing plan including budget allocation, timeline, and success metrics for the app launch.

Why COAST is Best for the IT Industry

For the IT industry, the **COAST** formula is particularly effective. It allows for precise, context-rich prompts that lead to actionable and relevant AI-generated responses. This structured approach is particularly beneficial in a field where clarity and specificity are crucial for effective communication and problem-solving.

Here's why it stands out for crafting prompts in this field:

1. **Context:** IT is a rapidly evolving field with various subdomains (e.g., cybersecurity, software development, network management). Providing context helps the AI understand the specific area of IT being addressed, leading to more relevant responses.
2. **Objective:** Clearly defining the objective allows users to specify what they want to achieve with the prompt, whether it's troubleshooting, learning about new technologies, or seeking best practices.
3. **Audience:** The IT audience can vary widely, from technical professionals to non-technical stakeholders. Tailoring the prompt to the audience ensures appropriate language and depth of information.
4. **Scenario:** Including a scenario helps ground the prompt in a real-world situation, making it easier for the AI to generate practical and applicable advice.
5. **Task:** Clearly stating the task guides the AI on what specific action or information is needed, enhancing the quality of the output.

Other Popular Formulas

In addition to the C.R.E.A.T.E. and C.O.A.S.T. Formulas, several other formulas and structures are commonly used in prompt engineering to enhance the effectiveness of interactions with AI models. Here are some notable ones:

- **RTF (Request, Task, Format):** This simple structure is designed for beginners. It focuses on clearly stating what is being requested, the specific task to be performed, and the desired response format.
Example Prompt:
"Request a summary (Request) of the latest trends in artificial intelligence (Task) in bullet points (Format)."
- **APE (Audience, Purpose, Example):** This formula emphasizes understanding the audience and the purpose of the prompt, along with providing an example to guide the AI's response.
Example Prompt:
"For a group of high school students (Audience), explain the concept of renewable energy (Purpose) using a simple analogy (Example)."
- **STAR (Situation, Task, Action, Result):** Often used in behavioral interviews, this structure can also be applied to prompt engineering. It helps in framing prompts that require the AI to describe a process or outcome based on a given situation.
Example Prompt:
"Describe a situation (Situation) where a company needed to improve its customer service (Task), the actions taken (Action), and the results achieved (Result)."
- **PAST (Problem, Action, Solution, Takeaway):** This formula is helpful for problem-solving prompts. It guides the AI to identify a problem, describe actions taken, propose solutions, and summarize key takeaways.
Example Prompt:
"Identify a common issue in remote team management (Problem), discuss actions that can be taken to address it (Action), propose a solution (Solution), and summarize the key takeaway for managers (Takeaway)."
- **FAB (Features, Advantages, Benefits):** This structure is often used in marketing but can be adapted for prompt engineering to highlight the features of a product or service, their advantages, and the benefits to the user.
Example Prompt:
"List the features (Features) of the latest smartphone model, explain the advantages (Advantages) of these features, and describe the benefits (Benefits) to the user."
- **5W1H (Who, What, When, Where, Why, How):** This classic journalistic approach can be used to create comprehensive prompts that cover all aspects of a topic.
Example Prompt:
"Who are the key stakeholders (Who) in the renewable energy sector (What), when did the industry start gaining traction (When), where are the major markets (Where), why is it important (Why), and how can individuals contribute (How)?"

These formulas provide structured approaches to prompt engineering, allowing users to craft effective prompts that yield high-quality responses from AI models. By understanding and applying these frameworks, users can enhance their interactions and achieve more precise outcomes tailored to their specific needs.

Crafting the Perfect Prompt

We will harness the power of the **C.O.A.S.T. (Context, Objective, Audience, Scenario, Task)** formula. Each prompt is intricately crafted to encompass all facets of this formula, ensuring that our communication is clear, relevant, and specific. To kick things off, I encourage students to outline each formula component meticulously and then thoughtfully construct their responses. This structured approach aims to deepen their understanding and enhance their writing skills.

When writing a prompt, I prefer to structure it by putting the Audience first, followed by the Context, Objective, Scenario, and finally the Task. I encourage my students to focus on using proper grammar and sentence structure, as I find that consistency makes writing easier over time.

I also emphasize the importance of using descriptive keywords for the best results. Examples of these keywords include detailed, comprehensive, complete, simplified, or summarized, among others.

Examples of Well-Formatted Prompts

Here's a rewrite of the **computer maintenance prompts** using the **C.O.A.S.T. (Context, Objective, Audience, Scenario, Task)** formula. Each prompt is organized to include all elements of the formula to ensure clarity, relevance, and specificity.

1. Preventive Computer Maintenance

Original Prompt: *"What are the key steps to perform routine preventive maintenance on a Windows 11 computer to keep it running efficiently?"*

C.O.A.S.T. Formula:

- **Context:** A personal laptop running Windows 11.
- **Objective:** Identify steps to improve system efficiency and longevity.
- **Audience:** General computer users with basic technical skills.
- **Scenario:** A user wants to perform routine preventive maintenance to prevent performance issues.
- **Task:** Provide a detailed checklist of preventive maintenance activities.

Final version: *"Act as an experienced computer repairman. I am a general computer user with basic technical skills. I have a personal computer running Windows 11 and I want to perform routine preventive maintenance to prevent performance issues. Identify steps to improve system efficiency and longevity. Then provide a detailed checklist of preventive maintenance activities I can use and how often I should use them."*

2. Hardware Maintenance

Original Prompt: *"What are the best practices for cleaning a laptop keyboard and screen without causing damage?"*

C.O.A.S.T. Formula:

- **Context:** A laptop that's used daily and has accumulated dirt and smudges.
- **Objective:** Learn how to clean the keyboard and screen safely.
- **Audience:** Laptop owners without advanced technical knowledge.
- **Scenario:** A user wants to clean their device without damaging its components.
- **Task:** Provide step-by-step instructions for cleaning the keyboard and screen.

Final Version: *"Act as an experienced A+ technician. My laptop is used daily and it shows signs of dirt and smudges. I want to ensure it remains in good condition. I need clear, step-by-step instructions to safely clean the keyboard and screen without causing any damage. Please tailor these instructions for someone with basic technical knowledge."*

3. Software Maintenance

Original Prompt: *"How can I optimize the startup programs on my computer to improve boot times in Windows?"*

C.O.A.S.T. Formula:

- **Context:** A personal computer running Windows 11 with slow startup times.
- **Objective:** Optimize the startup process to improve boot performance.
- **Audience:** Non-technical users seeking simple solutions.
- **Scenario:** The computer takes too long to boot due to unnecessary startup programs.
- **Task:** List easy-to-follow steps to manage and optimize startup programs.

Final Version: *"You are an experienced A+ technician. I am a non-technical user with a personal computer running Windows 11 and am experiencing slow startup times. I want to optimize the startup programs to improve boot performance. Please provide a list of simple steps I can follow to effectively reduce the startup delay."*

4. Troubleshooting Common Issues

Original Prompt: *"What should I do if my computer frequently freezes or crashes without showing error messages?"*

C.O.A.S.T. Formula:

- **Context:** A desktop computer that frequently freezes or crashes during use.
- **Objective:** Identify and resolve the root cause of the issue.
- **Audience:** General users with limited troubleshooting experience.
- **Scenario:** The computer crashes without showing error messages or warnings.
- **Task:** Provide a troubleshooting guide to identify and fix common causes.

Final Version: *"I am a general user with limited technical experience, and my desktop computer frequently freezes or crashes without showing any error messages. I want to identify and fix the root cause of this issue. Please provide a clear troubleshooting guide with detailed step-by-step instructions tailored for someone with basic technical knowledge."*

5. Data Backup and Recovery

Original Prompt: *"What are the best practices for setting up an automatic backup system for personal files on a laptop?"*

C.O.A.S.T. Formula:

- **Context:** A laptop containing important personal files.
- **Objective:** Set up an automated backup system to protect data.
- **Audience:** Laptop owners who want a simple and reliable backup solution.
- **Scenario:** A user wants to ensure their files are safe in case of hardware failure or accidental deletion.
- **Task:** Provide step-by-step instructions for configuring an automated backup system.

Final Version: *"I am a user with a laptop that contains important personal files, and I want to ensure my data is protected in case of hardware failure or file loss. I am looking for a simple and reliable way to set up an automated backup system. Please provide detailed step-by-step instructions tailored for someone with basic technical knowledge."*

6. Virus and Malware Protection

Original Prompt: *"How can I identify and remove malware from my computer using free tools?"*

C.O.A.S.T. Formula:

- **Context:** A computer suspected of being infected with malware.
- **Objective:** Identify and remove malware using free, reliable tools.
- **Audience:** General users with no access to premium antivirus software.
- **Scenario:** A user notices unusual computer behavior and suspects a malware infection.
- **Task:** Recommend free tools and explain how to use them to detect and remove malware.

Final Version: *"I am a general user without access to premium antivirus software, and my computer is showing unusual behavior that makes me suspect a malware infection. I need recommendations for free tools that can help identify and remove malware. Please explain how to use these tools with clear, detailed step-by-step instructions tailored for someone with basic technical knowledge."*

7. Performance Optimization

Original Prompt: *"What are the best tools for defragmenting a hard drive, and when should I perform this task?"*

C.O.A.S.T. Formula:

- **Context:** A desktop computer with a traditional hard drive (HDD) is experiencing slower file access speeds.
- **Objective:** Optimize hard drive performance through defragmentation.
- **Audience:** Users with HDDs who want to improve performance without advanced technical skills.
- **Scenario:** The hard drive has become fragmented, leading to slower performance.
- **Task:** Recommend the best defragmentation tools and explain when to use them.

Final Version: *"I am a user with minimal technical expertise, and my desktop computer, which has a traditional hard drive (HDD), is experiencing slower file access speeds. I want to optimize its performance through defragmentation. Please recommend the best tools for defragmentation, such as user-friendly options like Windows' built-in Disk Defragmenter or third-party tools like Defraggler. Additionally, explain when and how often this task should be performed, ensuring the instructions are simple and easy to follow for someone with basic technical knowledge."*

8. Maintenance Scheduling

Original Prompt: *"What weekly and monthly tasks should I include in a maintenance checklist for my computer?"*

C.O.A.S.T. Formula:

- **Context:** A personal computer used regularly for work and entertainment.
- **Objective:** Develop a comprehensive maintenance schedule for routine upkeep.
- **Audience:** General users who want to keep their computers running smoothly.
- **Scenario:** A user wants to ensure their computer remains functional and efficient over time.
- **Task:** Provide a detailed weekly and monthly maintenance checklist.

Final Version: *"I am a general user who regularly uses a personal computer for work and entertainment. I want to ensure my device remains functional and efficient over the long term. I am looking for a detailed weekly and monthly maintenance checklist that is simple to follow and helps me proactively care for my computer. Please provide clear, detailed step-by-step instructions tailored for someone with basic technical knowledge."*

Prompts for Computer Maintenance

1. Preventive Maintenance Objective: Educate users on proactive measures to prevent issues before they occur.

Example Prompts:

- *"Act as a CompTIA A+ expert. I am a general computer user with a Windows 11 computer seeking to maintain its performance. I want to ensure optimal functionality through routine preventive maintenance. Please identify the key steps for maintenance and list the essential tasks I should perform regularly to achieve this."*
- *"Act as a computer repair technician. I am a desktop computer user looking to establish a maintenance routine. I want to understand how often I should clean physical components like fans and ports to keep my computer running efficiently. Additionally, please specify the tools I should use for this cleaning task."*
- *"Act as a Linux expert. I am an Ubuntu computer user interested in automating maintenance tasks on my PC to enhance its performance. To simplify this process, I would like to know what software tools I can utilize for disk cleanup and antivirus scans. Please provide recommendations and explain how they can help automate these tasks."*

2. Hardware Maintenance Objective: Help users troubleshoot and maintain the physical components of their computers.

Example Prompts:

- *"Act as a CompTIA A+ expert. I am a laptop user looking to maintain my device in good condition. I want to know the best practices for cleaning the keyboard and screen without causing any damage. Please provide clear instructions and tips to help me clean my laptop safely."*
- *"Act as a CompTIA A+ expert. I am a computer user troubleshooting issues with my device. I want to check if the power supply unit (PSU) is functioning properly. Please explain the steps I can take to perform this check and the signs I should look for that indicate the PSU might need replacement."*
- *"Act as a CompTIA A+ expert. I am a desktop computer user considering an upgrade to improve my device's performance. I would like to know how to upgrade components like RAM or storage drives safely. Please provide detailed steps and precautions to ensure a successful upgrade."*

3. Software Maintenance Objective: Focus on maintaining and optimizing software for performance and security.

Example Prompts:

- *"Act as a software engineer. I am a computer user looking to improve the boot times of my Windows 11 system. I want to optimize the startup programs on my computer to enhance performance. Please explain how I can manage these startup programs effectively to achieve faster boot times."*
- *"Act as a computer programmer. I am a computer user interested in maintaining my system's performance. I want to know the steps I should take to keep all drivers and firmware updated on my computer. Please provide a clear guide on how to ensure my system remains up-to-date."*
- *"Act as a MacOS expert. I am a macOS user seeking to understand the significance of software updates for my system. I want to learn how to manage these updates effectively to ensure my Mac runs smoothly and securely. Please explain the importance of software updates and provide guidance on how to manage them."*

4. Troubleshooting Common Issues Objective: Offer guidance for diagnosing and fixing common problems.

Example Prompts:

- *"Act as an A+ repair technician. I am a computer user experiencing frequent freezes and crashes on my device without any error messages. I want to understand what steps I should take to diagnose and resolve these issues. Please provide a clear guide on how to address this problem effectively."*
- *"Act as an A+ repair technician. I am a computer user looking to troubleshoot performance issues on my device. I have noticed high CPU or memory usage in Task Manager, and I want to identify the potential causes and solutions. Please outline the steps I can take to resolve these performance issues."*
- *"Act as a computer repair technician. I am a Windows 11 user encountering a 'blue screen of death' (BSOD) error on my computer. I want to know the steps I can take to resolve this error and prevent it from recurring. Please provide a detailed guide on how to troubleshoot and fix BSOD issues effectively."*

5. Data Backup and Recovery Objective: Teach users how to safeguard and recover their data.

Example Prompts:

- *"Act as an A+ repair technician. I am a laptop user looking to safeguard my personal files through an automatic backup system. I want to know the best practices for setting up this system to ensure my data is protected. Please provide clear steps and recommendations for creating an effective automatic backup solution."*
- *"Act as an A+ repair technician. I am a Windows PC user interested in preparing for potential system failures. I want to learn how to create a bootable recovery drive and understand when it should be used. Please explain the steps involved in creating this recovery drive and its importance in system recovery."*
- *"Act as an A+ repair technician. I am a computer user who has accidentally deleted important files and needs to recover them. I want to know what tools and methods I can use to successfully recover these files. Please provide a detailed guide on the options available for file recovery on my computer."*

6. Virus and Malware Protection Objective: Guide users on protecting their systems from threats.

Example Prompts:

- *"Act as a cybersecurity expert. I am a computer user concerned about potential malware infections on my device. I want to identify and remove malware using free tools to ensure my system remains secure. Please provide a clear guide on how to detect and remove malware effectively."*
- *"Act as a cybersecurity expert. I am a Windows user looking to enhance the security of my computer. I want to enable and configure built-in security features like Windows Defender Antivirus to protect my system from threats. Please provide step-by-step instructions to help me set up and manage these features."*
- *"Act as a cybersecurity expert. I am a computer user seeking to protect my system from ransomware attacks. I want to understand how to prevent these attacks and what steps to take if my system becomes infected. Please explain the best practices for prevention and provide guidance on how to respond to a ransomware infection."*

7. Performance Optimization Objective: Help users improve their computer's speed and efficiency.

Example Prompts:

- *"Act as a computer hardware engineer. I am a new computer user looking to optimize the performance of my hard drive. I want to know the best tools for defragmenting my hard drive and understand when I should perform this task to maintain efficiency. Please provide recommendations for effective defragmentation tools and guidance on the appropriate frequency for this maintenance."*
- *"Act as a Windows OS developer. I am a Windows 11 user seeking to improve my computer's performance. I want to learn how to reduce background processes to free up system resources effectively. Please outline the steps I can take to identify and manage these processes for better overall performance."*
- *"Act as a computer game engineer. I am a computer gamer interested in enhancing my gaming or rendering experience. I want to understand how to monitor and improve GPU performance for these tasks. Please explain the methods and tools I can use to effectively track and optimize my GPU's performance."*

8. Maintenance Scheduling Objective: Guide users on setting up regular maintenance schedules.

Example Prompts:

- *"Act as a Windows 11 expert. I am a computer user looking to establish a routine for maintaining my device. I want to know what weekly and monthly tasks I should include in a maintenance checklist to ensure my computer runs smoothly. Please provide a detailed list of these tasks and their recommended frequency."*
- *"Act as an A+ computer technician. I am a computer user interested in streamlining my maintenance routine. I want to learn how to set up reminders or automation for essential maintenance tasks, such as updating software or deleting temporary files. Please explain the methods I can use to manage these tasks effectively."*
- *"Act as an expert Apple user. I am a computer user seeking to understand the significance of regular maintenance. I want to learn about the importance of conducting an annual hardware inspection and performance review of my computer. Please explain why this practice is essential and what it entails."*

Prompts for Cisco CCNA Networking (Routing and Switching)

The C.O.A.S.T. formula is perfect for CCNA-related prompts because:

- **Context:** Networking environments vary widely, and context specifies the devices, topology, or setup.
 - **Objective:** CCNA covers specific goals like configuring, troubleshooting, or understanding protocols.
 - **Audience:** Tailored to CCNA students or IT professionals, ensures the content is at the right technical level.
 - **Scenario:** Real-world or lab-based scenarios make learning relevant and practical.
 - **Task:** Clear, actionable tasks help students build hands-on networking skills.
1. Understanding Basic Networking Concepts Prompt: *"Act as a CCNA expert. I am a student studying for the Cisco CCNA certification and I am new to networking concepts. I want to understand the OSI model and its significance in networking. Please explain the OSI model in simple terms, outlining the role of each layer so that beginners can easily grasp the concepts."*
 2. Configuring a Basic Router Prompt: *"Act as a Cisco routing and switching expert with wireless experience. I am an IT technician with entry-level experience setting up a small business network. The network includes a single Cisco router, and I need to configure basic routing to enable communication between the two subnets. Please provide step-by-step instructions that are clear and easy to follow for someone with foundational networking knowledge."*
 3. Subnetting Practice Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA candidate preparing for the exam and have foundational knowledge of subnetting. I need to learn how to create five subnets from the IP address block 192.168.1.0/24. Please explain the purpose of subnetting and provide a clear, step-by-step guide to help me understand the process."*
 4. VLAN Configuration Prompt: *"Act as a CCNP instructor. I am a CCNA learner working on a lab scenario. I need to configure VLANs on a Cisco switch to separate network traffic for two departments: Sales and IT. Please provide a beginner-friendly, step-by-step guide to help me complete this configuration."*
 5. Troubleshooting Routing Issues Prompt: *"Act as a CCIE routing and switching expert. I am an IT professional with entry-level networking knowledge working in a small office network that uses multiple routers. Devices on one subnet cannot reach devices on another subnet, and static routes are configured in the network. Please provide a troubleshooting process to identify and resolve this issue."*
 6. Configuring Static Routes Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA student practicing routing concepts in a small office network with two connected Cisco routers. I need to configure static routes to enable communication between the two LANs. Please provide a clear, step-by-step guide to help me complete this task."*
 7. Dynamic Routing with OSPF Prompt: *"Act as a Cisco CCNA certified technician. I am an entry-level CCNA learner working on a company network with three branches connected via Cisco routers. I need to configure OSPF to dynamically share routing information between the branches. Please provide a step-by-step guide to help me complete this configuration."*
 8. Access Control Lists (ACLs) Prompt: *"Act as a Cisco CCNA instructor. I am preparing for the CCNA certification and working in a lab environment with a small network that includes a Cisco router. I need to configure an ACL to block access to a specific IP address while allowing all other traffic. Please provide clear, step-by-step instructions to help me complete this task."*
 9. Switching Concepts: STP Prompt: *"Act as a Cisco Networking Academy Instructor. I am a CCNA student preparing for the exam and want to understand the purpose of Spanning Tree*

Protocol (STP). Please explain how STP prevents network loops and use a simple network example to make the concept easy to understand for beginners."

10. Configuring Inter-VLAN Routing Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA student working on a lab scenario with a network that includes multiple VLANs on a Cisco switch. I need to configure inter-VLAN routing using a Layer 3 switch to enable communication between three VLANs. Please provide a step-by-step guide to help me complete this configuration."*
11. NAT Configuration Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA learner practicing NAT in a simulated home lab setup with a Cisco router and multiple devices. I need to configure Network Address Translation (NAT) to allow private IPs to access the internet. Please provide a clear, step-by-step guide to help me complete this task."*
12. Configuring DHCP Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA student working on a home lab setup with a small network that includes a single Cisco router. I need to configure the router to act as a DHCP server and dynamically assign IP addresses to connected devices. Please provide step-by-step instructions to help me complete this configuration."*
13. Understanding IP Routing Protocols Prompt: *"Act as a Cisco CCNP instructor. I am a CCNA candidate preparing for the exam and new to routing protocols. I need a clear and concise comparison of RIP, EIGRP, and OSPF in terms of their metrics, scalability, and use cases. Please explain these differences in a way that helps me prepare for my certification exam."*
14. Configuring Port Security Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA candidate working on a lab scenario to secure a small business network using Cisco switches. I need to configure port security to allow only authorized devices to connect to the network. Please provide a step-by-step guide to help me complete this task."*
15. WAN Concepts: Frame Relay Prompt: *"Act as a Cisco ENSA expert. I am a CCNA student learning about WAN concepts. I want to understand the concept of Frame Relay and its use in WAN connections. Please explain its purpose and provide an example topology to help me understand its configuration."*
16. Configuring Syslog for Network Monitoring Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA candidate learning network monitoring techniques in a simulated environment. I need to configure a router in a small business network with Cisco devices to send syslog messages to a centralized syslog server. Please provide step-by-step instructions to help me complete this configuration."*
17. Understanding IPv6 Basics Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA student learning about IPv6. I want to understand the differences between IPv4 and IPv6 and why IPv6 is important for modern networks. Please include examples of IPv6 addressing and explain how it solves the limitations of IPv4."*
18. WAN Protocols: PPP and PPPoE Prompt: *"Act as a Cisco CCNA routing instructor. I am a network engineer preparing for the CCNA exam and have basic knowledge of WAN concepts. I want to understand how to configure PPP and PPPoE on a Cisco router and learn about their use in WAN connections. Please provide clear explanations and examples of configurations to help me practice and apply these concepts."*
19. Switching Concepts: VTP Prompt: *"Act as a Cisco CCNA switching expert. I am a CCNA student working on a lab scenario with a network that includes three interconnected Cisco switches. I want to understand the purpose of VLAN Trunking Protocol (VTP) and how it simplifies VLAN management. Please provide a clear explanation and an example to help me apply this concept in my lab."*

20. Configuring EtherChannel Prompt: *"Act as a Cisco CCNA instructor. I am a CCNA learner working on a lab scenario with a small network topology that includes two Cisco switches. I need to configure EtherChannel to aggregate bandwidth between the switches. Please provide step-by-step instructions to help me complete this configuration."*

Prompts for Python Programming

1. Learning Python Basics Prompt: *"Act as an expert Python programmer. For a beginner learning Python, explain the purpose of variables and how to declare them in simple terms. Provide examples that are easy to understand for someone with no prior programming experience ."*
2. Writing Functions Prompt: *"Act as an expert Python programmer. For a Python developer working on a small project, provide a step-by-step guide to write a Python function that calculates the factorial of a number. Include an example of how to call the function for someone with basic Python knowledge ."*
3. Debugging Python Code Prompt: *"Act as an expert Python programmer. For a Python programmer encountering syntax errors in their code, explain a systematic approach to debugging and fixing common Python errors. Provide examples suitable for intermediate-level developers ."*
4. Using Python Libraries Prompt: *"Act as an expert Python programmer. For a data analyst using Python, explain how to use the Pandas library to load, clean, and analyze a CSV file. Provide a practical example for someone familiar with basic Python syntax ."*
5. Object-Oriented Programming (OOP) Prompt: *Act as an expert Python programmer. For a Python learner transitioning to object-oriented programming, explain the concept of classes and objects and how they are used in Python. Provide a simple example for beginners ."*
6. Writing Python Scripts Prompt: *"Act as a DevOps expert. For a system administrator automating tasks, provide a guide to write a Python script that renames multiple files in a directory. Include an example for someone with basic scripting knowledge ."*
7. Working with APIs Prompt: *"Act as an expert Python programmer. For a Python developer building a web application, explain how to use the requests library to interact with a REST API. Provide an example of fetching data from a public API for intermediate-level programmers ."*
8. Writing Unit Tests Prompt: *"Act as an expert Python DevNet programmer. For a Python developer working on a project, explain how to write unit tests using the unittest module. Provide an example of testing a simple function for developers with intermediate Python skills ."*
9. File Handling Prompt: *"Act as an expert Python programmer. For a Python programmer managing data files, explain how to read from and write to text files in Python. Provide examples for someone with basic Python knowledge ."*
10. Python for Data Visualization Prompt: *"For a data scientist using Python, explain how to use the Matplotlib library to create a bar chart. Provide an example for someone familiar with Python but new to data visualization ."*
11. Python for Web Development Prompt: *" Act as a Python Web programmer. For a beginner learning web development with Python, explain how to set up a basic Flask application to display a simple webpage. Provide a step-by-step example for someone new to web frameworks ."*

12. Python for Machine Learning Prompt: *"Act as an expert Python AI programmer. For a Python programmer exploring machine learning, explain how to use the Scikit-learn library to build a simple linear regression model. Provide an example for someone with basic Python and statistics knowledge ."*
13. Python for Automation Prompt: *"Act as an expert Python programmer. For an office worker automating repetitive tasks, explain how to use Python to automate sending emails with attachments. Provide a practical example for someone with minimal programming experience ."*
14. Python Error Handling Prompt: *"Act as an expert Python programmer. For a Python developer writing robust code, explain how to use try, except, and finally blocks for error handling. Provide examples for intermediate-level programmers ."*
15. Python for Game Development Prompt: *"Act as a Python game programmer. For a beginner interested in game development, explain how to use the Pygame library to create a simple game where a player moves a character on the screen. Provide a step-by-step example for someone new to game programming ."*
16. Python for Database Management Prompt: *"Act as an expert Python programmer. For a Python developer managing a database, explain how to use the SQLite library to create a database, insert data, and query it. Provide an example for someone with basic Python knowledge ."*
17. Python for Web Scraping Prompt: *"Act as an expert Python web developer. For a Python programmer gathering data from websites, explain how to use the BeautifulSoup library to scrape data from a webpage. Provide an example for someone with intermediate Python skills ."*
18. Python for Multithreading Prompt: *"Act as an expert Python programmer. For a Python developer optimizing performance, explain how to use the threading module to run multiple tasks concurrently. Provide an example for someone with intermediate Python knowledge ."*
19. Python for Encryption Prompt: *"Act as an expert Python security programmer. For a Python programmer working on secure applications, explain how to use the cryptography library to encrypt and decrypt data. Provide an example for someone with intermediate Python skills ."*
20. Python for Refactoring Code Prompt: *"Act as an expert Python programmer. For a Python developer improving code quality, explain how to refactor a function to make it more efficient and readable . Provide an example for someone with intermediate programming experience ."*

Prompts for DevNet

1. Understanding Cisco DevNet Prompt: *"Act as a Cisco CCNP Automation expert. For a newcomer to Cisco DevNet, explain the purpose and benefits of the DevNet platform in supporting network automation and programmability. Provide examples of how developers can leverage DevNet resources for someone with basic networking knowledge ."*
2. Using Cisco APIs Prompt: *"Act as a Cisco DevNet instructor. For a developer working on network automation, provide a step-by-step guide on how to use Cisco APIs to retrieve device information from a Cisco router. The guide should be aimed at developers familiar with RESTful APIs ."*
3. Building a Network Automation Script Prompt: *"Act a a DevOps expert. For a network engineer looking to automate tasks, explain how to write a Python script that uses the Cisco Netmiko library to configure multiple devices. Provide a practical example for someone with intermediate Python skills ."*
4. Integrating Cisco DNA Center Prompt: *"Act as a Cisco CCNP expert. For a developer integrating applications with Cisco DNA Center, explain how to use the DNA Center API to manage network devices. Provide an example of a use case for someone with basic programming experience ."*
5. Working with Cisco DevNet Learning Labs Prompt: *"Act as a Cisco DevNet instructor. For a student preparing for the Cisco DevNet Associate certification, outline how to utilize the DevNet Learning Labs to gain hands-on experience. Include specific labs to focus on for learners new to network programmability ."*
6. Creating Custom Prompts for Cisco Catalyst Center Prompt: *"Act as a CCIE Expert. For a developer using the Cisco Catalyst Center, explain how to create and customize prompts to manage customer contact points effectively. Provide a step-by-step example for someone with basic knowledge of the Catalyst Center platform ."*
7. Automating Network Configuration with Ansible Prompt: *"Act as a Cisco DevNet instructor. For a network administrator looking to streamline configurations, provide a guide on how to use Ansible with Cisco devices to automate network configurations. The guide should be suitable for users with basic Ansible knowledge ."*
8. Understanding Cisco DevNet APIs Prompt: *"Act as a Cisco DevNet instructor. For a developer exploring Cisco DevNet, explain the different types of APIs available and their use cases in network automation. Provide examples for someone with a foundational understanding of APIs ."*
9. Troubleshooting with Cisco DevNet Tools Prompt: *"Act as a Cisco DevNet instructor. For a network engineer facing issues with device connectivity, explain how to use Cisco DevNet tools to troubleshoot network problems. Provide a practical example for someone with intermediate networking skills ."*
10. Developing Applications for Cisco Collaboration Prompt: *"Act as a Cisco DevNet expert. For a developer interested in Cisco collaboration tools, explain how to use the Cisco Webex API to create a simple application that schedules meetings. Provide a step-by-step example for someone with basic programming experience ."*
11. Implementing Security Best Practices Prompt: *" Act as a Cisco cybersecurity instructor. For a network engineer responsible for security, outline best practices for securing APIs in Cisco environments. Provide examples of common vulnerabilities and mitigation strategies for someone with a basic understanding of network security ."*

12. Using Cisco DevNet Sandbox Prompt: *"Act as a Cisco DevNet instructor. For a developer wanting to test applications, explain how to use the Cisco DevNet Sandbox to create a testing environment. Provide a practical example for someone new to the DevNet ecosystem ."*
13. Exploring Cisco Meraki APIs Prompt: *"Act as a Cisco DevNet instructor. For a network administrator managing a Cisco Meraki network, explain how to use the Meraki Dashboard API to retrieve network statistics. Provide an example for someone with basic API knowledge ."*
14. Building a Chatbot with Cisco Technologies Prompt: *"Act as a Cisco DevNet expert. For a developer interested in AI and automation, explain how to build a chatbot using Cisco technologies that can assist with network troubleshooting. Provide a step-by-step example for someone with intermediate programming skills ."*
15. Understanding Network Programmability Concepts Prompt: *"Act as a CCIE Automation expert. For a student new to network programmability, explain the key concepts such as SDN, APIs, and automation. Provide real-world examples for learners with no prior experience in network programmability ."*
16. Using Cisco DevNet for IoT Solutions Prompt: *"Act as an IoT Expert. For a developer working on IoT projects, explain how to leverage Cisco DevNet resources to build IoT solutions. Provide examples of IoT applications for someone with basic IoT knowledge ."*
17. Creating a REST API with Flask Prompt: *"Act as a Cisco DevNet instructor. For a developer looking to create a REST API, provide a step-by-step guide on how to use Flask to build a simple API for managing network devices. Include an example for someone with basic Python skills ."*
18. Understanding Cisco ACI Prompt: *"Act as a CCNP expert. For a network engineer learning about Cisco ACI, explain the architecture and key components of ACI. Provide a practical example for someone with intermediate networking knowledge ."*
19. Automating Testing with Cisco DevNet Prompt: *"Act as a Cisco DevNet instructor. For a developer focused on quality assurance, explain how to automate testing of network applications using Cisco DevNet tools. Provide an example for someone with basic testing knowledge ."*
20. Exploring Cisco Cloud Solutions Prompt: *"Act as a Cisco Cloud Architect. For a cloud engineer working with Cisco solutions, explain how to integrate Cisco cloud services into existing network architectures. Provide a practical example for someone with intermediate cloud knowledge ."*

Prompts for IoT

1. Understanding IoT Basics Prompt: *"Act as an IoT programmer. For a beginner learning about IoT, explain the concept of the Internet of Things and its importance in modern technology. Provide examples of common IoT applications for someone with no prior knowledge of IoT ."*
2. IoT Architecture Prompt: *"Act as a Cisco DevNet instructor. For a student studying IoT systems, explain the layers of IoT architecture and their roles in enabling IoT functionality. Use a smart home system as an example to help beginners understand the concept ."*
3. IoT Device Security Prompt: *"Act as a cybersecurity expert. For a network administrator managing IoT devices, outline best practices for securing IoT devices against cyber threats. Provide examples of common vulnerabilities and how to mitigate them for someone with basic networking knowledge ."*
4. IoT Protocols Prompt: *"Act as a Cisco IoT instructor. For a developer working on IoT applications, explain the differences between MQTT and CoAP protocols and their use cases. Provide examples of when to use each protocol for someone with intermediate programming knowledge ."*
5. IoT in Smart Cities Prompt: *"Act as a Cisco IoT instructor. For a city planner exploring IoT solutions, explain how IoT can be used to improve traffic management and energy efficiency. Provide examples of smart city implementations for someone with no technical background ."*
6. IoT Data Analytics Prompt: *"Act as a Data Analyst. For a data scientist working with IoT data, explain how to process and analyze data collected from IoT devices. Provide an example of analyzing temperature sensor data for someone with basic data analysis skills ."*
7. IoT Device Development Prompt: *"Act as a Cisco IoT instructor. For a hardware engineer designing IoT devices, explain the steps to build a prototype IoT device. Use an example of a smart thermostat for someone with basic hardware development experience ."*
8. IoT and Cloud Integration Prompt: *"Act as a Cisco IoT instructor. For a developer integrating IoT devices with cloud platforms, explain how to connect IoT devices to AWS IoT Core. Provide a step-by-step example for someone with intermediate cloud and IoT knowledge ."*
9. IoT in Healthcare Prompt: *"Act as a Cisco IoT instructor. For a healthcare professional exploring IoT solutions, explain how IoT devices can be used to monitor patient health remotely. Provide examples of wearable health devices for someone with no technical expertise ."*
10. IoT Edge Computing Prompt: *"Act as a Cisco IoT instructor. For a developer working on IoT edge solutions, explain the concept of edge computing and its benefits for IoT systems. Provide an example of processing data locally on an IoT gateway for someone with intermediate IoT knowledge ."*
11. IoT Energy Efficiency Prompt: *"Act as a Cisco IoT instructor. For an environmental engineer designing IoT systems, explain how IoT devices can be optimized for energy efficiency. Provide examples of low-power IoT devices for someone with basic knowledge of IoT hardware ."*
12. IoT and AI Integration Prompt: *"Act as a Cisco IoT instructor. For a developer combining IoT with AI, explain how AI can be used to analyze data from IoT devices. Provide an example of using AI to predict equipment failures in an industrial IoT setup for someone with intermediate programming skills ."*
13. IoT in Agriculture Prompt: *"Act as a AG-STEM instructor. For a farmer exploring IoT solutions, explain how IoT devices can be used to monitor soil moisture and optimize irrigation. Provide examples of smart farming technologies for someone with no technical background ."*

14. IoT Device Communication Prompt: *"Act as a Cisco IoT instructor. Act as a Cisco IoT instructor. For a developer working on IoT systems, explain how IoT devices communicate using wireless technologies like Zigbee, LoRa, and Wi-Fi. Provide examples of when to use each communication method for someone with intermediate IoT knowledge ."*
15. IoT in Industrial Automation Prompt: *"Act as a Cisco IoT instructor. For a factory manager exploring IoT solutions, explain how IoT devices can be used to automate production lines. Provide examples of industrial IoT applications for someone with no technical expertise ."*
16. IoT Device Management Prompt: *"Act as a Cisco IoT instructor. For a network administrator managing IoT devices, explain how to monitor and update IoT devices using a centralized management platform. Provide an example of managing firmware updates for someone with basic networking knowledge ."*
17. IoT and Blockchain Prompt: *Act as a expert Python instructor. For a developer exploring IoT security, explain how blockchain technology can be used to secure IoT device communication. Provide an example of using blockchain for device authentication for someone with intermediate programming skills ."*
18. IoT in Retail Prompt: *"Act as an IoT expert. For a retail manager exploring IoT solutions, explain how IoT devices can be used to track inventory and improve customer experience. Provide examples of smart shelves and beacons for someone with no technical background ."*
19. IoT Testing and Debugging Prompt: *"Act as an IoT expert. For a developer testing IoT devices, explain how to debug connectivity issues in an IoT system. Provide an example of troubleshooting a smart home device for someone with intermediate IoT knowledge ."*
20. IoT Scalability Prompt: *"Act as an IoT expert. For a developer designing large-scale IoT systems, explain how to ensure scalability in an IoT network. Provide an example of scaling a smart city IoT deployment for someone with advanced IoT knowledge ."*

Prompts for Cybersecurity

1. Cybersecurity Threat Detection Prompt: *"Act as a cybersecurity expert. For a cybersecurity analyst monitoring a corporate network, explain how to identify and respond to phishing attacks using automated tools. Provide examples of common phishing indicators for someone with intermediate cybersecurity knowledge ."*
2. Cloud Security Optimization Prompt: *"Act as a cybersecurity expert. For a cloud administrator managing sensitive data in the cloud, suggest ways to optimize cloud security to protect data and applications. Provide examples of best practices for securing cloud environments for someone with basic cloud security knowledge ."*
3. Cybersecurity Compliance Audit Prompt: *"Act as a cybersecurity expert. For a compliance officer conducting a cybersecurity audit, create a comprehensive checklist covering data protection, network security, employee training, and risk management. The checklist should be suitable for organizations preparing for regulatory compliance and tailored for professionals with basic compliance knowledge ."*
4. Incident Response Planning Prompt: *"Act as a cybersecurity expert. For an IT manager responsible for incident response, outline the steps to create an effective incident response plan. Provide examples of how to handle ransomware attacks for someone with intermediate cybersecurity experience ."*
5. Cybersecurity Policy Creation Prompt: *"Act as a cybersecurity expert. For a small business owner implementing cybersecurity measures, provide a step-by-step guide to create a cybersecurity policy. Include examples of policies for password management and employee training for someone with no technical background ."*
6. Risk Management in Cybersecurity Prompt: *"Act as a cybersecurity expert. For a risk manager in a financial institution, explain how to conduct a risk assessment to identify and mitigate cybersecurity risks. Provide examples of common risks in the financial sector for someone with intermediate risk management knowledge ."*
7. Cybersecurity Awareness Training Prompt: *"Act as a cybersecurity expert. For an HR manager organizing employee training, create a cybersecurity awareness program to educate employees about social engineering attacks. Provide examples of training activities for non-technical staff ."*
8. Proactive Threat Mitigation Prompt: *"Act as a cybersecurity expert. For a security operations center (SOC) team, explain how to implement proactive threat mitigation strategies to prevent data breaches. Provide examples of tools and techniques for professionals with advanced cybersecurity knowledge ."*
9. IoT Security Prompt: *"Act as a cybersecurity expert. For a network administrator managing IoT devices, explain how to secure IoT devices against common vulnerabilities. Provide examples of best practices for securing IoT networks for someone with basic networking knowledge ."*
10. Cybersecurity in Healthcare Prompt: *"Act as a cybersecurity expert. For a healthcare IT manager, explain how to protect patient data in compliance with HIPAA regulations. Provide examples of cybersecurity measures for electronic health records for someone with intermediate knowledge of healthcare IT ."*
11. Penetration Testing Prompt: *"Act as a cybersecurity expert. For a penetration tester assessing a corporate network, outline the steps to conduct a penetration test. Provide examples of tools and techniques used during the process for someone with advanced cybersecurity skills ."*
12. Cybersecurity for Small Businesses Prompt: *"For a small business owner with limited resources, explain how to implement basic cybersecurity measures to protect against common"*

threats. Provide examples of affordable tools and practices for someone with no technical expertise ."

13. AI in Cybersecurity Prompt: *"Act as a cybersecurity expert. For a cybersecurity professional exploring AI solutions, explain how AI can be used to enhance threat detection and response. Provide examples of AI-powered tools for someone with intermediate knowledge of cybersecurity and AI ."*
14. Cybersecurity Regulations Prompt: *"Act as a cybersecurity expert. For a compliance officer in a multinational organization, explain the key differences between GDPR and CCPA regulations. Provide examples of how these regulations impact data protection policies for someone with basic compliance knowledge ."*
15. Social Engineering Prevention Prompt: *"Act as a cybersecurity expert. For an IT manager training employees, explain how to prevent social engineering attacks through awareness and training programs. Provide examples of common social engineering tactics for non-technical staff ."*
16. Cybersecurity in Education Prompt: *"Act as a cybersecurity expert. For an IT administrator in a school, explain how to secure student and staff data against cyber threats. Provide examples of cybersecurity measures for educational institutions for someone with basic IT knowledge ."*
17. Cybersecurity for Remote Work Prompt: *"Act as a cybersecurity expert. For a company transitioning to remote work, explain how to secure remote work environments to protect sensitive company data. Provide examples of tools and policies for remote work security for IT managers with intermediate cybersecurity knowledge ."*
18. Cybersecurity Incident Reporting Prompt: *"Act as a cybersecurity expert. For a security team responding to a data breach, explain how to create an incident report that includes key details about the breach. Provide an example of a well-structured incident report for someone with intermediate cybersecurity experience ."*
19. Cybersecurity in Financial Services Prompt: *"Act as a cybersecurity expert. For a financial institution's IT team, explain how to secure online banking systems against cyber threats. Provide examples of common attack vectors and mitigation strategies for professionals with advanced cybersecurity knowledge ."*
20. Cybersecurity for Critical Infrastructure Prompt: *"Act as a cybersecurity expert. For a government agency managing critical infrastructure, explain how to protect systems against cyberattacks. Provide examples of cybersecurity measures for power grids and water systems for someone with advanced knowledge of critical infrastructure security ."*

Prompts for Creativity and Critical Thinking Skills

As a Cisco Networking Academy instructor, encouraging students to write AI prompts can enhance their creativity and critical thinking skills. Here are some engaging ideas to help students practice writing effective AI prompts:

1. Real-World Networking Scenarios: Ask students to create prompts that describe a real-world networking problem they might encounter, such as network congestion or security breaches. For example:

- "Generate a list of troubleshooting steps for resolving network congestion in a corporate environment."

2. Networking Concepts Exploration: Encourage students to write prompts that explore specific networking concepts. For instance:

- "Explain the differences between TCP and UDP in a way that a beginner can understand, including examples of when to use each."

3. Design a Network: Have students create prompts that ask for network design suggestions based on specific requirements. For example:

- "Design a small office network for a team of 10 people, including recommendations for hardware, IP addressing, and security measures."

4. Security Best Practices: Students can write prompts focused on cybersecurity. For example:

- "List the top 10 best practices for securing a small business network against cyber threats."

5. Future of Networking: Encourage students to think creatively about the future of networking. For example:

- "Imagine a future where quantum computing is mainstream. Describe how this technology could change networking protocols and security measures."

6. Case Studies: Students can create prompts based on hypothetical case studies. For example:

- "Given a scenario where a company has experienced a data breach, outline a response plan that includes immediate actions and long-term strategies."

7. Networking Tools and Technologies: Ask students to write prompts that explore various networking tools. For example:

- "Compare and contrast three different network monitoring tools, highlighting their features, advantages, and disadvantages."

8. Troubleshooting Scenarios: Encourage students to write prompts that simulate troubleshooting scenarios. For example:

- "You receive a call from a user who cannot connect to the Wi-Fi. Outline the steps you would take to diagnose and resolve the issue."

9. Networking Protocols: Students can create prompts that delve into specific networking protocols. For example:

- "Explain how the DHCP protocol works, including its role in IP address assignment and the process of lease renewal."

10. Networking Innovations: Encourage students to think about innovations in networking. For example:

- "Discuss the impact of Software-Defined Networking (SDN) on traditional networking practices and its potential benefits for businesses."

Implementation in Class

To implement these ideas in class, consider the following approaches:

- **Group Activities:** Have students work in groups to brainstorm and write prompts, then share them with the class for discussion.
- **Prompt Challenges:** Organize a challenge where students submit their best prompts, and the class votes on the most effective ones.
- **AI Interaction:** Use AI tools in class to generate responses to the prompts students create, allowing them to see the practical application of their writing.

By engaging students in writing AI prompts related to networking, you can foster a deeper understanding of the subject matter while enhancing their creativity and problem-solving skills.

Prompts for Creating Labs

Here are some creative ideas for getting students to write AI prompts that can be used to create labs in a Cisco Networking Academy setting. These activities will help students think critically about networking concepts while practicing their prompt-writing skills. All prompts start with “*Act as a Cisco CCNA instructor...*”

1. Scenario-Based Prompts: Encourage students to write prompts based on specific networking scenarios. Students can brainstorm different scenarios and write prompts that guide the AI to generate lab exercises based on those scenarios. For example: “

- "Create a lab that simulates a network outage due to a misconfigured router. Include steps for troubleshooting and restoring connectivity."

2. Concept Exploration: Students can research various networking concepts and create prompts that lead to lab designs that illustrate those concepts. For example:

- "Design a lab that demonstrates the differences between static and dynamic routing protocols."

3. Real-World Applications: Students can discuss current networking trends and write prompts that reflect real-world applications, encouraging practical learning. For example:

- "Generate a lab that shows how to implement VLANs in a corporate environment to improve network segmentation."

4. Troubleshooting Labs: Students can identify common issues they've encountered and write prompts that guide the AI to create troubleshooting labs. For example:

- "Create a lab that simulates a network performance issue and outlines the steps to diagnose and resolve it."

5. Security Focus: Students can explore various security measures and write prompts that lead to labs focused on implementing those measures. For example:

- "Design a lab that demonstrates how to configure firewall rules to protect a network from unauthorized access."

6. Collaborative Projects: Students can work in teams to brainstorm and refine prompts, fostering collaboration and teamwork, for a comprehensive lab project. For example:

- "Develop a multi-site network lab that includes VPN configuration for secure remote access."

7. Simulation Tools: Students can experiment with different simulation tools and write prompts that guide the AI to create labs tailored to those tools. For example:

- "Generate a lab using Cisco Packet Tracer to simulate a basic network with multiple devices and configurations."

8. Performance Metrics: Students can research performance metrics and write prompts that lead to labs designed to analyze those metrics. For example:

- "Create a lab that measures the impact of different routing protocols on network latency and throughput."

9. Future Technologies: Students can investigate future trends and write prompts that guide the AI to create labs that incorporate these technologies. For example:

- "Design a lab that explores the implementation of Software-Defined Networking (SDN) in a virtualized environment."

10. Reflection and Feedback: Students can create prompts that help them articulate their learning outcomes and provide feedback on the lab experience. For example:

- "Generate a lab report template that includes sections for objectives, findings, and lessons learned from the lab."

Implementation in Class

To implement these ideas effectively:

- **Workshops:** Conduct workshops where students can practice writing prompts in real-time, providing guidance and feedback.
- **Peer Review:** Have students share their prompts with peers for review and suggestions, fostering a collaborative learning environment.
- **AI Interaction:** Use AI tools in class to generate responses to the prompts students create, allowing them to see the practical application of their writing.

By engaging students in writing AI prompts for lab creation, you can enhance their understanding of networking concepts while developing their creativity and problem-solving skills.

Prompts for Certification Prep

Here are **brainstormed ideas** for activities that a teacher can use to get students writing AI prompts to study for the CCNA certification exam. These ideas focus on engaging students in active learning, helping them develop effective prompts, and leveraging AI tools to reinforce CCNA concepts. All prompts start with “Act as a CCNA student.”

1. **Create a Personalized Study Plan:** Ask students to write a prompt that generates a personalized study plan for the CCNA exam.

"Create a 4-week study plan for the CCNA certification exam. Include daily topics, practical lab exercises, and review sessions. Focus on Network Fundamentals, IP Connectivity, and Security Fundamentals."

2. **Generate Mock Exam Questions:** Have students write prompts to create mock exam questions for specific CCNA topics.

"Generate 10 multiple-choice questions on VLAN configuration and troubleshooting. Include correct answers and explanations for each question."

3. **Simplify Complex Networking Concepts** Help students break down complex topics into simpler terms, improving their ability to explain and understand networking concepts.

"Explain the concept of Spanning Tree Protocol (STP) as if you were teaching it to a beginner. Use simple analogies and avoid technical jargon."

4. **Design Lab Scenarios:** Ask students to write prompts that create hands-on lab scenarios for CCNA topics.

"Create a lab exercise to configure and verify OSPF on three routers in a small network. Include step-by-step instructions and expected outputs."

5. **Troubleshooting Practice:** Teach students to think critically about diagnosing and resolving network issues.

"Generate a troubleshooting scenario where a user cannot access the internet. Include possible causes related to IP addressing, DNS, and routing, and provide step-by-step solutions."

6. **Flashcard Creation:** Get students to write prompts that create flashcards for CCNA topics. Help students memorize key terms, acronyms, and concepts in a fun and interactive way.

"Create 20 flashcards for CCNA Network Fundamentals. Each card should have a question on one side and a detailed answer on the other."

7. **Compare Networking Protocols:** Ask students to write prompts that compare different networking protocols.

"Compare and contrast RIP, OSPF, and EIGRP routing protocols. Include their advantages, disadvantages, and use cases."

8. **Quiz Me on Subnetting:** Have students write prompts to generate subnetting quizzes and reinforce subnetting skills.

"Create a subnetting quiz with 5 questions. Include scenarios where I need to calculate subnet masks, network IDs, and broadcast addresses."

9. **Explain Real-World Applications:** Encourage students to write prompts that connect CCNA topics to real-world scenarios.

"Explain how VLANs are used in a corporate network to improve security and reduce broadcast traffic. Provide practical examples."

10. AI-Powered Study Group: Organize a group activity where students collaboratively write prompts to quiz each other. Foster collaboration and peer learning while using AI to guide the study process.

"Generate 5 questions on IP addressing and subnetting. Ask me one question at a time, and provide detailed explanations for correct and incorrect answers."

Implementation Tips

- **Start with Examples:** Provide students with example prompts to help them understand how to structure their own.
- **Use AI Tools in Class:** Demonstrate how to use AI tools like ChatGPT to respond to prompts, showing students the value of their work.
- **Encourage Iteration:** Have students refine their prompts based on the quality of the AI-generated responses.
- **Incorporate Feedback:** Allow students to share their prompts with peers and provide constructive feedback.

By engaging students in writing AI prompts, you can help them actively engage with CCNA topics, improve their understanding, and develop skills that will be valuable both for the exam and in their future networking careers.