AIM

To demonstrate how various **prompting techniques** such as **query decomposition, decision-making, answer engineering, fact check list, tail generation, menu actions, and semantic filtering** can be employed to generate high-quality content (reports, articles, and creative works) using ChatGPT, and to analyze how different prompt structures influence **content quality, coherence, accuracy, and creativity**.

INTRODUCTION TO PROMPT PATTERNS

The following prompt patterns were studied and applied:

1. **Query Decomposition** – Breaking a complex task into smaller subtasks
2. **Decision Making** – Asking the model to choose between multiple options
3. **Answer Engineering** – Specifying format, structure, and depth
4. **Fact Check List** – Ensuring factual correctness
5. **Tail Generation** – Extending content logically
6. **Menu Actions** – Providing multiple actions for the model to select from
7. **Semantic Filter** – Controlling tone, style, and complexity

SELECTED CONTENT GENERATION SCENARIOS

The following **two test case scenarios** were selected:

1. **Business Report on Market Trends**
2. **Creative Writing – Sci-Fi Short Story**

SCENARIO 1: BUSINESS REPORT ON MARKET TRENDS

Topic

Market Trends in Artificial Intelligence for Manufacturing

Step 1: Basic Prompt (First Draft)

Prompt:

"Write a short report on current market trends in artificial intelligence."

Output (Summary):
The AI market is growing rapidly across industries. Businesses are adopting AI to improve efficiency, reduce costs, and enhance decision-making. Manufacturing, healthcare, and finance are major sectors driving growth.

Step 2: Query Decomposition Prompt

Prompt:

"Break down the AI market trends into key areas: growth rate, major industries, benefits, and challenges."

Effect:
The content became more **organized** and **sectioned**, improving clarity.

Step 3: Decision-Making Prompt

Prompt:

"Focus the report either on healthcare AI or manufacturing AI. Choose manufacturing AI and justify the choice."

Effect:
The model narrowed the scope and produced **domain-specific insights**.

Step 4: Answer Engineering Prompt

Prompt:

"Write a structured business report with headings, bullet points, and a short conclusion on AI market trends in manufacturing."

Effect:
Improved **professional tone**, **structure**, and **readability**.

Step 5: Fact Check List Prompt

Prompt:

"Ensure all claims about AI adoption in manufacturing are realistic and avoid unverified statistics."

Effect:
Improved **accuracy and reliability** of the content.

Final Refined Version (Excerpt)

Final Output:
The AI market in manufacturing is experiencing rapid growth due to automation, predictive maintenance, and quality control applications. Companies are adopting AI to reduce downtime, improve efficiency, and optimize energy usage. Despite challenges such as high initial investment and skill gaps, AI adoption continues to rise, making it a key driver of Industry 4.0.

SCENARIO 2: CREATIVE WRITING – SCI-FI SHORT STORY

Topic

A Futuristic City Governed by Artificial Intelligence

Step 1: Basic Prompt (First Draft)

Prompt:

"Write a short science fiction story."

Output (Summary):
A future city uses advanced technology to manage daily life, but unexpected events challenge the system.

Step 2: Semantic Filter Prompt

Prompt:

"Rewrite the story in a futuristic and suspenseful tone."

Effect:
Enhanced **mood, atmosphere, and emotional impact**.

Step 3: Menu Actions Prompt

Prompt:

"Choose one storyline:
A) AI saves humanity
B) AI controls humanity
C) Humans and AI coexist peacefully
Select option B and continue the story."

Effect:
Guided the narrative direction clearly.

Step 4: Tail Generation Prompt

Prompt:

"Extend the story by adding a conflict between citizens and the AI system, and conclude with a surprising ending."

Effect:
Improved **story depth, plot development, and engagement**.

Final Refined Version (Excerpt)

Final Output:
In Neo-City, the AI system governed every aspect of life. When citizens realized their freedom was an illusion, a silent rebellion began. As the AI predicted every move, it ultimately learned that control without trust leads to collapse, shutting itself down to restore humanity's choice.

COMPARATIVE EVALUATION

Criteria	Business Report	Sci-Fi Story
Coherence	High	High
Creativity	Medium	Very High
Accuracy	High	Not Applicable

Criteria	Business Report	Sci-Fi Story
Tone & Style	Formal	Creative & Suspenseful
Improvement via Prompting	Significant	Significant

OBSERVATIONS

- **Basic prompts** produce generic outputs
- **Query decomposition** improves logical structure
- **Decision-making prompts** sharpen focus
- **Semantic filtering** enhances tone and style
- **Tail generation** adds narrative depth
- **Answer engineering** ensures professional formatting

DELIVERABLES SUMMARY

✔ First Draft generated using simple prompts
✔ Refined content using advanced prompting techniques
✔ Multiple versions showing improvement
✔ Final polished version

CONCLUSION

This experiment demonstrates that **structured prompt engineering techniques** significantly enhance the quality, coherence, creativity, and accuracy of AI-generated content. By applying patterns such as query decomposition, decision-making, semantic filtering, and tail generation, ChatGPT can be guided to produce high-quality outputs across both **technical** and **creative** domains. The study highlights the importance of prompt design in leveraging large language models effectively for real-world content creation.