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RNS INSTITUTE OF TECHNOLOGY
Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi
Approved by AICTE, New Delhi, Accredited by NAAC with 'A+' Grade
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Department of Computer Science & Engineering

Department of Computer Science & Engineering



AI TOOLS AND APPLICATIONS

(BCIL358C)

Compiled by

Department of Computer Science & Engineering
RNS Institute of Technology
Bengaluru-98

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Department of Computer Science & Engineering

VISION AND MISSION OF INSTITUTION

Vision

Building RNSIT into a World Class Institution

Mission

To impart high quality education in Engineering, Technology and Management with a Difference, Enabling Students to Excel in their Career by

1. Attracting quality Students and preparing them with a strong foundation in fundamentals so as to achieve distinctions in various walks of life leading to outstanding contributions
2. Imparting value based, need based, choice based and skill based professional education to the aspiring youth and carving them into disciplined, World class Professionals with social responsibility
3. Promoting excellence in Teaching, Research and Consultancy that galvanizes academic consciousness among Faculty and Students
4. Exposing Students to emerging frontiers of knowledge in various domains and make them suitable for Industry, Entrepreneurship, Higher studies, and Research & Development
5. Providing freedom of action and choice for all the Stake holders with better visibility

VISION AND MISSION OF CSE DEPARTMENT

Vision

Preparing better computer professionals for a real world

Mission

The Department of Computer Science and Engineering will make every effort to promote an intellectual and an ethical environment in which the strengths and skills of Computer Professionals will flourish by

1. Imparting Solid foundations and Applied aspects in both Computer Science Theory and Programming practices
2. Providing Training and encouraging R&D and Consultancy Services in frontier areas of Computer Science with a Global outlook
3. Fostering the highest ideals of Ethics, Values and creating Awareness on the role of Computing in Global Environment
4. Educating and preparing the graduates, highly Sought-after, Productive, and Well-respected for their work culture
5. Supporting and inducing Lifelong Learning practice

ACKNOWLEDGMENT

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Department of CSE

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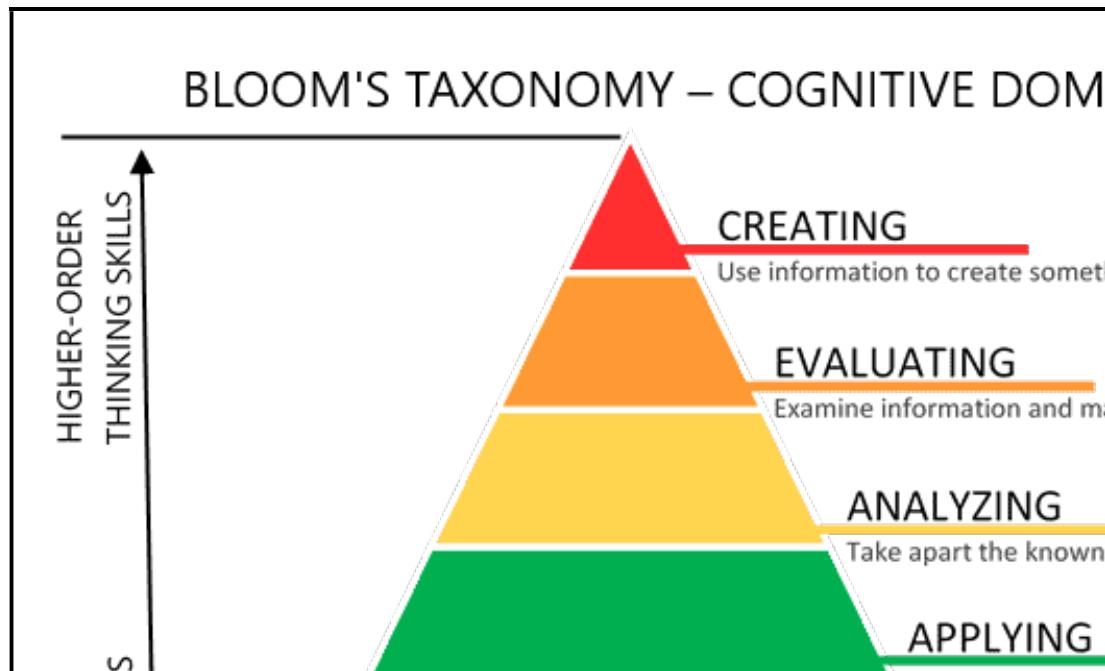
COURSE OUTCOMES

Course Outcomes: At the end of this course, students are able to:

- CO1.** Apply Generative AI tools such as ChatGPT, Canva, and Gamma.app to create structured content, simulations, and assessments.
- CO2.** Transform raw information into well-structured academic or professional outputs using AI tools like Canva Docs and Gamma.app.
- CO3.** Design precision prompts to generate reliable scholarly content and evaluation questions using advanced prompting strategies.
- CO4.** Utilize AI-powered platforms (e.g., Elicit, Consensus, Litmaps) to enhance productivity in research ideation, literature review, and visualization.
- CO5.** Create adaptive and personalized learning pathways using AI tools to support differentiated instruction and learner engagement.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	1	3	1	3	—	—	—	2	3	1	3	3	2
CO2	2	2	3	2	3	—	—	—	3	3	1	3	3	3
CO3	2	3	3	2	3	—	—	—	2	2	—	3	3	3
CO4	2	2	2	3	3	—	—	—	2	3	—	3	3	3
CO5	1	2	3	2	3	1	2	1	3	3	2	3	3	3

REVISED BLOOMS TAXONOMY (RBT)



PROGRAM LIST

Sl. No.	EXPERIMENTS
1	Create high quality, structured course content Using Generative AI tools (Use ChatGPT). Example: Create a lecture on looping statements in Python, World War II, etc. Demonstrate the Canvas mode in ChatGPT
2	Example 1: Show the Interactive Editing of Documents using prompt-based modifications. Apply a prompt like: “Make this shorter”, “Add an analogy here”, “Convert this into bullet points”. Example 2: Write a paragraph on if-else statements, select it, and prompt: “Explain this with a real-life analogy for beginners
3	Demonstrate the usage of Notion (knowledge management platform) which is a smart, flexible Google Doc with extra features such as Nested pages, Toggle sections, Visual blocks (tables, images, embeds), Easy rearrangement. Example: Create or demonstrate how to: <ul style="list-style-type: none"> • Paste GPT-generated content into Notion • Break it into pages or collapsible sections • Repare content for sharing or lesson delivery
4	Demonstrate the use of Canva Docs and Canva Magic Tools. Example: Demonstrate how to take the AI-generated lesson (on looping Statements in Python) and copy it directly into Canva Docs, which is Canva’s version of a dynamic document editor. Paste GPT/Notion Content into Canva Docs using Canva Magic Tools. Create a visually enhanced handout or lesson packet that students can download, read on mobile, or print. After generating the topic breakdown with ChatGPT: <ul style="list-style-type: none"> • Use Canva Docs to format each cause as a section • Add relevant photos from Canva Elements • Include a “Key Takeaway” block after each section • Attach a short 2-question quiz at the end
5	Demonstrate the use of Magic Suite-Magic Eraser/Replace, Magic transform, etc. Example: <ol style="list-style-type: none"> a. Demonstrate the Magic Write feature. Say, Right-click on a paragraph, then choose actions like: “Rewrite this”, “Make it more concise”, “Fix grammar”, “Expand this with an example”, “Custom prompt” (e.g., “Explain this in simple language”) b. Demonstrate the Magic Eraser / Replace feature which is Primarily used in images. Say, Erase unwanted objects (e.g., a watermark or irrelevant icon), Replace an item in an image (e.g., change a laptop to a chalkboard) c. Demonstrate the Magic Transform feature which can be used to instantly convert the above created document into multiple formats.
6	Demonstrate the use of Gamma.app-AI-Powered presentation builder. Show the following Customizations for the document created in above examples.

	Feature	Example	
	Slide Title/Text	Edit headings or simplify slide copy	
	Image Replacement	Use AI to regenerate more suitable visuals	
	Content Rewrite	Prompt: "Make this slide simpler for high school students"	
	Layout Editing	Rearrange card structure or duplicate/delete cards	
7	Generate Questions from Content (CTRL Method). CTRL is a powerful method for precision prompting. Example: Python Conditional Statements	<ul style="list-style-type: none"> ➤ Prompt Example 1: Create 3 Multiple Choice Questions (MCQs) on Conditional Statements in Python for college students who are beginners. Keep the tone formal and straightforward. ➤ Prompt Example 2: Generate 2 Match-the-columns questions on Python Conditional Statements. Keep the questions beginner-friendly and formal. <p>Demo Examples:</p> <ul style="list-style-type: none"> ➤ Using PDF as Content Source: <ul style="list-style-type: none"> ✓ I've uploaded a PDF on "Introduction to Sociology" (provide link). Generate 5 MCQs for undergraduate students. Maintain academic tone, moderate complexity. • Using Web Link: <ul style="list-style-type: none"> ✓ Use the content from the following web link (provide actual URL here) and create 3 MCQs on Photosynthesis suitable for high-school biology students. 	
8	Demonstrate the Parsons Method for Interactive Problem Statements. Parson's Method enhances problem-solving skills by giving students code fragments or sentences they must put in the correct logical order, proven to improve conceptual understanding. Live Demonstration Prompt: Generate a Parson's Problem using Python conditional statements for beginner-level students. Provide shuffled code blocks for a simple "if-else" structure.		
9	Demonstrate the usage of AI Tools for Creating and Delivering Tests. Tools available are: Quizzes' AI, Class Marker, Formative, Google Forms + AI (Form Presenter) Demonstrate a Use case of AI Tools for Creating and Delivering Tests. Once questions are created (Q7), automate their conversion into online tests for ease of deployment and analysis. Use Quizzes' AI for Automated MCQs, grading and analytics.		
10	Demonstrate the use of AI-Driven Research Ideation (ChatGPT + Search) Live Demonstration Example:	<ul style="list-style-type: none"> • Example Prompt given to ChatGPT: <ul style="list-style-type: none"> ➤ Suggest 3 novel research angles on the topic: ➤ 'Impact of Social Media on Mental Health' relevant to Psychology researchers. 	
11	Deploy Elicit (elicit.com) for Rapid Literature Discovery. To overcome manual search limitations, use Elicit, an AI-driven tool specialized in academic literature discovery. Example: Topic provided: "What is the impact of mindfulness techniques on anxiety among university students?"	<ul style="list-style-type: none"> • The student should Customize Table Columns: say, <ul style="list-style-type: none"> ➤ Click "Columns" →Select additional details to view: ➤ Population studied, Intervention details, Outcomes measured, Research methods • Show the Advanced Filtering techniques: Say <ul style="list-style-type: none"> ➤ Filter results by: Publication date, Study type (e.g., randomized control trials, observational studies), Citations count (to identify influential papers) 	

	<ul style="list-style-type: none"> • Analyzing Search Results: <ul style="list-style-type: none"> ➢ Elicit automatically generates a structured table of scholarly papers directly related to your query. It quickly provides: Paper titles, Abstracts (automatically summarized), Methodologies, Participants/sample sizes, Year published, citations count, and study types.
12	<p>Using Consensus for Quick Expert Insights (consensus.app). The Consensus AI tool summarizes academic research consensus clearly and visually.</p> <ul style="list-style-type: none"> • Example: Enter your research query.: <ul style="list-style-type: none"> ➢ "Does social media use negatively impact teenagers' mental health?" • Understand the Results: <ul style="list-style-type: none"> ➢ "Consensus Meter" summarizing expert agreement, Conduct In-depth Exploration of each summarized statement, do Advanced Filtering (Narrow down by year, relevance, study type, or agreement level.
13	<p>Visualizing Research Connections with Litmaps (app.litmaps.com) Litmaps, a visualization tool that simplifies understanding complex academic citation networks visually</p> <ul style="list-style-type: none"> • Example: <ul style="list-style-type: none"> ➢ Enter your core research paper or DOI (Digital Object Identifier). Explore the Visual Citation Map (Connected papers represented visually, indicating citation relationships clearly. Papers connected via arrows showing who cites whom). ➢ Interactivity and Exploration: Click on any paper node to: Quickly see its abstract, authors, citations. Explore further connections expanding research context. ➢ Refine the Map: Filter the visualizations by: Year, Citations, Keywords, Publication type
14	<p>Explore how Generative AI can be applied in education to enable personalised learning experiences and support learners across various tasks. Use AI Tools such as Khanmigo, Question Well (For generating questions aligned to standards) or Diffit (For creating differentiated instructional materials).</p> <ul style="list-style-type: none"> • Example Prompt 1: <ul style="list-style-type: none"> ➢ "Act as a backend software development interviewer. Ask questions about JavaScript, React, Node.js, SQL, AWS, and System Design. Provide feedback based on a rubric." • Example Prompt 2: <ul style="list-style-type: none"> ➢ "Act as a Python Developer. Create a learning plan for someone transitioning from another programming language. Ask clarification questions before proceeding." • Example Prompt 3: <ul style="list-style-type: none"> ➢ "Provide constructive feedback on the student's answer based on the rubric. Mention 2 strengths, 2 areas for improvement, and suggestions. Use a positive tone." Tools You Can Explore: Brisk (Chrome extension for Google Docs), MagicSchool.ai (AI assistant for teachers).

Program 1

Create high quality, structured course content Using Generative AI tools (Use ChatGPT). Example: Create a lecture on looping statements in Python, World War II, etc. Demonstrate the Canvas mode in ChatGPT.

Output Steps: Program: Creating Structured Course Content using ChatGPT

What is ChatGPT?

ChatGPT is a Generative AI tool that helps you create structured course content, lesson plans, and lecture material quickly. It can generate explanations, examples, activities, and even visual aids.

Step-by-Step Procedure to Create Course Content

Step 1: Open ChatGPT

- Go to <https://chat.openai.com>
- Log in with your email, Google, or Microsoft account.

Step 2: Define Your Topic

- Decide what subject or lecture you want to create.
- Example: “Looping statements in Python” or “Causes of World War II.”

Step 3: Give a Prompt to ChatGPT

- In the chat box, type a clear instruction:
- “Generate a high-quality lecture outline with explanations, examples, and activities on Looping Statements in Python.”

Step 4: Review the Output

- ChatGPT will provide:
 - o Learning objectives
 - o Structured outline
 - o Explanations with examples
 - o Activities or exercises

Step 5: Use Canvas Mode (Demonstration)

- Click the “Use Canvas” option when ChatGPT suggests content editing.
- In Canvas, you can:
 - o View the AI-generated content in a document-like layout.
 - o Edit, refine, and reorganize sections.

- o Add headings, images, or diagrams.

Step 6: Customize & Finalize

- Add your own teaching style, notes, or local context.
- Export the content as PDF, DOCX, or presentation slides.

Step 7: Save & Reuse

- Save your Canvas documents for future lectures.
- Update or adapt them for new topics easily.

Example

- Prompt: “Create a lecture on Looping Statements in Python for diploma students, with examples and a short quiz.”
- Output from ChatGPT (Canvas mode):
 - Introduction to loops
 - Types of loops (for, while, do-while)
 - Code examples in Python
 - Real-life analogy (e.g., repeating daily routines)
 - Quiz: 5 MCQs + 2 coding exercises

Additional prompts for program 1

Create high quality, structured course content Using Generative AI tools (Use ChatGPT).

Example: Create a lecture on looping statements in Python, World War II, etc.

Prompt:

Create a detailed and structured lecture for a course topic.

The lecture should include:

- Title of the topic
- Duration and prerequisites
- Learning objectives
- Detailed explanation with examples
- Tables, diagrams (described in text), or code samples if relevant
- Key terms and their definitions
- Real-world applications or historical relevance
- Hands-on exercises or student activities
- Assessment questions (MCQs and short answers)
- Example Topics:

Looping Statements in Python

- World War II and Its Global Impact
- Evolution of Artificial Intelligence
- Cloud Computing Fundamentals
- Internet of Things (IoT) Applications

Program 2

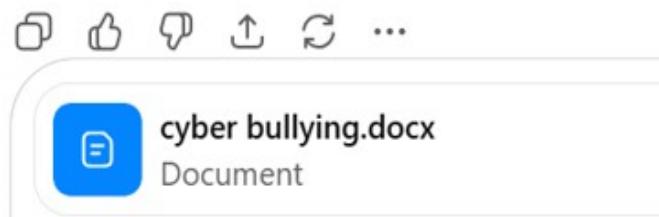
Example 1: Show the Interactive Editing of Documents using prompt-based modifications. Apply a prompt like: “Make this shorter”, “Add an analogy here”, “Convert this into bullet points”.

Example 2: Write a paragraph on if-else statements, select it, and prompt: “Explain this with a real-life analogy for beginners

Example 1:

Step 1: Create a word document of one or two paragraphs.

Step 2: Attach the Document to any AI tool and Prompt to “make the document shorter and brief”



Step 3: Cyberbullying is bullying that occurs through digital platforms such as social media, messaging apps, or online forums. It involves using technology to harass, threaten, or embarrass others, often through abusive messages, spreading false information, or sharing private content without consent. The anonymity of the internet makes it easier for perpetrators to act.

Its causes include jealousy, revenge, peer pressure, lack of empathy, or even the bully's own past experiences. Easy access to technology and weak consequences also encourage it. Cyberbullying can severely affect victims, leading to stress, depression, low self-esteem, and even self-harm. Preventing it requires awareness, responsible online behavior, digital literacy, and strong support from families, schools, and communities.

Step 4: Prompt: “Add an Analogy here”

Analogy: Cyberbullying is like graffiti on a public wall. Once hurtful words or images are posted online, they can be seen by many people, spread quickly, and remain visible long after the bully has walked away—making the harm harder to erase.

Step 5: Prompt: “Convert this into bullet form”

Analogy:

- Cyberbullying is like graffiti on a public wall.
- Once hurtful words or images are posted online, they can be seen by many people.
- They spread quickly and remain visible for a long time.
- The bully may walk away, but the damage stays, making it harder to erase.

Example 2:

Step1: Write a paragraph on if-else statements

If-else statements are fundamental decision-making structures in programming that help in controlling the logical flow of a program. They allow the computer to evaluate a condition and decide which block of code to execute based on whether the condition is true or false. If the condition is true, one set of instructions runs; else, a different set of instructions is executed.

If-else statements can also be extended into if-elif-else chains, which allow programmers to check multiple conditions in sequence. This makes them very versatile for solving real-world problems, such as deciding discounts in online shopping, suggesting routes in GPS systems, or controlling devices in automation.

Overall, if-else statements act as the backbone of decision-making in programming, ensuring that programs can respond dynamically to different situations.

Step 2: select a content on if else and prompt: “Explain this with a real-life analogy for beginners.”

Output: Imagine you are deciding what to wear based on the weather. If it's raining, you take an umbrella. Else, if it's sunny, you wear sunglasses. That's exactly how if-else statements work in programming — they help you choose one action if a condition is true, and a different action if it's false.

Additional prompts on Program 2

Demonstrate the Canvas mode in ChatGPT Example 1: Show the Interactive Editing of Documents using prompt-based modifications. Apply a prompt like: “Make this shorter”, “Add an analogy here”, “Convert this into bullet points”. Example 2: Write a paragraph on if-else statements, select it, and prompt: “Explain this with a real-life analogy for beginner Additional Suggested Prompts for Canvas Mode

Below are more interactive prompts that can be used for deeper experimentation with Canvas Mode:

Content Enhancement Prompts

- Expand this explanation with more details
- Add a real-world example to clarify the concept
- Simplify this for high school students
- Include a comparison table
- Add an interesting fact at the end

Clarity & Structure Prompts

- Rephrase this paragraph for better flow
- Break this into two smaller paragraphs
- Add headings and subheadings
- Convert this section into step-by-step instructions
- Highlight key terms with definitions

Style & Tone Prompts

- Make this more formal and academic
- Turn this into a motivational paragraph
- Rewrite this as if explaining to a child
- Add humor or a light tone to engage readers

Program 3

Demonstrate the usage of Notion (knowledge management platform) which is a smart, flexible Google Doc with extra features such as Nested pages, Toggle sections, Visual blocks (tables, images, embeds), Easy rearrangement. Example: Create or demonstrate how to: • Paste GPT-generated content into Notion • Break it into pages or collapsible sections • Prepare content for sharing or lesson delivery.

What is Notion?

Notion is an all-in-one digital workspace where you can do so many things. It's like your digital notebook + planner + organizer, all in one app. It helps you write things down, keep track of tasks, and organize information in a way that suits you.

💡 What Can You Do With It?

- Notes 📝 → Write class notes, meeting notes, or personal ideas.
 - To-Do Lists ✅ → Track daily tasks or shopping lists.
 - Databases 📁 → Store things like books you've read, expenses, or contacts.
 - Calendars & Boards 🗓 → Plan projects, deadlines, or schedules.
 - Collaboration 🤝 → Share pages with friends, classmates, or teammates and work together.
-

🌐 How It Works

- Everything in Notion is built from blocks (like Lego pieces).
 - A block can be text, an image, a checklist, a table, or even a video.
 - You arrange these blocks however you like to build your own workspace.
-

👶 Example for Beginners

Imagine you're a student:

- You make a page called "Math Class".
 - Inside, you add:
 - Notes from lectures
 - A to-do list for homework
 - A calendar for exam dates
 - All in one place, neat and searchable.
-

✓ In short: Notion is like a super flexible notebook on your computer or phone. You can make it as simple as a to-do list or as powerful as a project management system.

Let's do a step-by-step beginner setup in Notion so you can start using it right away.

Step 1: Create Your First Page

1. Open Notion (on web, desktop, or mobile).
 2. On the left sidebar, click “+ New Page”.
 3. Give it a title, like “My First Workspace”.
 4. You can also add an icon (emoji) and a cover image to make it fun.
-

Step 2: Add a To-Do List

1. Inside your page, type /todo.
 2. Select To-do list from the menu.
 3. Start writing tasks, for example:
 - o Finish homework
 - o Buy groceries
 - o Call a friend
-

Step 3: Add Notes

1. Just start typing below your to-do list.
 2. You can format text with bold, *italic*, or code.
 3. Use /heading to create section titles like Notes, Ideas, or Reminders.
-

Step 4: Add a Calendar (Optional)

1. Type /calendar.
 2. Choose Calendar – Full Page or Calendar – Inline.
 3. Add events like *Exam on Oct 10* or *Meeting at 5 PM*.
-

Step 5: Organize

- Drag and drop blocks to rearrange them.
 - Create multiple pages inside your workspace (like Work, Personal, Study).
 - Link pages together for quick navigation.
-

Example Beginner Setup

- Main Page: “My Life”
 - o  Calendar for deadlines
 - o To-do list for daily tasks
 - o  Notes section for ideas
 - o  Sub-page: “Study”
 - o  Sub-page: “Work”

Additional prompts on program 3

Demonstrate the usage of Notion (knowledge management platform) which is a smart, flexible Google Doc with extra features such as Nested pages, Toggle sections, Visual blocks (tables, images, embeds), Easy rearrangement. Example: Create or demonstrate how to:

- Paste GPT-generated content into Notion
- Break it into pages or collapsible sections
- Prepare content for sharing or lesson delivery

Additional Prompts for Program 3: Demonstrate the Usage of Notion

1. Content Creation & Structuring Prompts

Use these to generate and organize content before pasting it into Notion:

- Create a detailed lesson outline on *Machine Learning Basics* suitable for organizing in Notion.”
- Break this text into logical Notion pages with headings and subtopics
- Convert this ChatGPT-generated content into collapsible sections for easy reading in Notion
- Add callout boxes (Tip, Warning, Note) to make this content Notion-ready
- Summarize this document into 3 main sections and 2 sub-sections for Notion layout

2. Visual and Interactive Enhancements

- Prompts to make Notion content engaging and visually rich:
- Suggest how to visualize this topic using Notion blocks (tables, images, or checklists)
- Create a table that lists *AI tools* and their *educational applications* for inclusion in Notion
- Add icons, color tags, and visual dividers to make this Notion page more interactive
- Generate a step-by-step checklist for creating a Notion lesson page
- Provide embed links or media ideas (YouTube, charts, or diagrams) to include in this Notion lesson.

3. Educational & Collaborative Usage

Prompts to guide teachers, trainers, and students:

- Design a collaborative classroom activity using Notion where students contribute ideas under nested pages
- Write instructions for teachers on how to use Notion as a course management system.

- Explain how to share Notion pages with students while maintaining content security
- List 5 ways to track student progress using Notion's features
- Generate reflection questions for learners to add as toggle blocks in Notion

4. Lesson Delivery & Sharing Prompts

Prompts for preparing Notion lessons for presentation or sharing:

- Generate a brief introduction for sharing this Notion lesson link with students
- Write short instructions for learners on how to navigate a Notion-based digital classroom
- Summarize the Notion workspace in 5 sentences for a course handbook
- Draft a social media post or email inviting students to access the Notion lesson
- Create a feedback form template to embed at the end of a Notion lesson

Program 4

Demonstrate the use of Canva Docs and Canva Magic Tools.

Example: Demonstrate how to take the AI-generated lesson (on looping Statements in Python) and copy it directly into Canva Docs, which is Canva's version of a dynamic document editor. Paste GPT/Notion Content into Canva Docs using Canva Magic Tools. Create a visually enhanced handout or lesson packet that students can download, read on mobile, or print. After generating the topic breakdown with ChatGPT:

- Use Canva Docs to format each cause as a section
- Add relevant photos from Canva Elements
- Include a “Key Takeaway” block after each section
- Attach a short 2-question quiz at the end

Output steps:

Demonstrating Canva Docs and Canva Magic Tools

What is Canva Docs?

Canva Docs is Canva's dynamic, online document editor. It allows you to create, collaborate, and design visually enhanced documents. When combined with Canva Magic Tools (AI-powered features), you can quickly turn plain AI-generated text (from ChatGPT/Notion) into polished lesson packets with visuals, quizzes, and interactive elements.

Step-by-Step Procedure to Demonstrate Canva Docs + Magic Tools

Step 1: Open Canva Docs

- Go to <https://www.canva.com>
- Log in with your Canva account (Google, Microsoft, or Email).
- From the homepage, click Docs → Create a New Doc.

Step 2: Import AI-Generated Lesson

- Copy the lesson or topic breakdown generated by ChatGPT (e.g., “Looping Statements in Python”).
- Paste the content directly into Canva Docs.

Step 3: Use Canva Magic Tools

- Highlight the pasted text → Click Magic Write to reformat, refine, or expand explanations.

- Use Magic Edit or Magic Design to quickly style the content with professional layouts.
- Example: Convert each heading into a section title with consistent formatting.

Step 4: Add Visual Enhancements

- Use Canva Elements to search for relevant photos, diagrams, or icons.
- Example: For a Python loop lesson → Add flowcharts, code icons, or a looping arrow graphic.
- Insert visuals beside each section to make it student-friendly.

Step 5: Structure the Document

- Format each concept/cause as a separate section.
- After each section, insert a Key Takeaway block (Canva has block styles).
- Example: “Key Takeaway: A ‘for loop’ is best used when the number of iterations is known.”

Step 6: Add a Short Quiz

- At the end of the document, create a 2-question quiz using text boxes or Canva’s pre-built templates.
- Example:
 - Write a Python for-loop to print numbers 1–5.
 - Which loop is best for indefinite repetition?

Step 7: Finalize & Share

- Save the Canva Doc.
- Export it as:
 - PDF (for print distribution),
 - Mobile-friendly Doc link (for phones/tablets), or
 - Presentation handout (using Canva’s slide export).

Example Flow (Python Loops Lesson)

- Section 1: For Loop → Explanation + Visual + Key Takeaway
- Section 2: While Loop → Explanation + Visual + Key Takeaway
- Section 3: Do-While Loop (conceptual in Python) → Example + Key Takeaway
- Quiz Section: 2 questions to check understanding

Additional prompts on program 4

Demonstrate the use of Canva Docs and Canva Magic Tools. Example: Demonstrate how to take the AI-generated lesson (on looping Statements in Python) and copy it directly into Canva Docs, which is Canva's version of a dynamic document editor. Paste GPT/Notion Content into Canva Docs using Canva Magic Tools. Create a visually enhanced handout or lesson packet that students can download, read on mobile, or print. After generating the topic breakdown with ChatGPT:

- Use Canva Docs to format each cause as a section
- Add relevant photos from Canva Elements
- Include a “Key Takeaway” block after each section
- Attach a short 2-question quiz at the end

Additional Prompts for Canva Docs & Magic Tool

1. Content Expansion Prompts

- Explain the difference between `for` and `while` loops with real-life analogies
- Provide 5 additional examples of nested loops in Python
- Summarize this lesson into a one-paragraph overview for beginners
- Convert this content into a story-based Python lesson for students

2. Quiz & Assessment Prompts

- Generate 5 multiple-choice questions from this lesson
- Create a fill-in-the-blank exercise for the `break` and `continue` statements
- Make a true/false quiz to test understanding of loops in Python
- Provide answers and short explanations for each quiz question

3. Visual & Design Prompts

- Suggest 3 diagrams or flowcharts to illustrate Python loops
- Generate icons or visuals representing `for` and `while` loops
- Create a step-by-step code execution illustration for this loop example
- Design a banner header for this lesson page in Canva Docs style

4. Interactivity & Engagement Prompts

- Convert this lesson into toggle sections with headings and examples hidden
- Suggest interactive questions to add after each section
- Generate a mini coding challenge for students after this lesson
- Make a checklist of tasks for students to practice loops in Python

Program 5

Demonstrate the use of Magic Suite-Magic Eraser/Replace, Magic transform, etc.

Example:

- a. Demonstrate the Magic Write feature. Say, Right-click on a paragraph, then choose actions like: “Rewrite this”, “Make it more concise”, “Fix grammar”, “Expand this with an example”, “Custom prompt” (e.g., “Explain this in simple language”)
- b. Demonstrate the Magic Eraser / Replace feature which is Primarily used in images. Say, Erase unwanted objects (e.g., a watermark or irrelevant icon), Replace an item in an image (e.g., change a laptop to a chalkboard)
- c. Demonstrate the Magic Transform feature which can be used to instantly convert the above created document into multiple formats.

Output Steps:

Program: Demonstrating Canva Magic Suite (Magic Write, Magic Eraser/Replace, Magic Transform)

What is Canva Magic Suite?

The Canva Magic Suite is a collection of AI-powered creative tools built into Canva. It helps you write, edit, erase, replace, and transform content and designs instantly—saving time and enhancing creativity.

Step-by-Step Procedure to Demonstrate Magic Suite

Step 1: Open Canva Project

- Go to <https://www.canva.com>
- Log in and open an existing Doc, Design, or Image file.
- Example: Use a Canva Doc with AI-generated content (Python Loops lesson) or an image with multiple elements.

(a) Demonstrate Magic Write

- Highlight or right-click on a paragraph in Canva Docs.
- Select “Magic Write” options such as:
 - Rewrite this → Rephrases the text.
 - Make it concise → Shortens the paragraph.
 - Fix grammar → Corrects grammar/spelling issues.
 - Expand with an example → Adds illustrations or examples.
 - Custom prompt → e.g., “Explain this in simple language for 10th-grade students.”

(b) Demonstrate Magic Eraser / Magic Replace (For Images)

- Open an image in Canva's editor.
- From the toolbar, select Magic Eraser.
- Brush over an unwanted object (e.g., a watermark, background clutter, or irrelevant icon).
- The object is erased and replaced with a clean background.
- Use Magic Replace to substitute an item:
- Example: Select a laptop in the picture → Replace with a chalkboard to suit a classroom theme.

(c) Demonstrate Magic Transform

- Open your Canva Doc or Design (e.g., Python Loops lesson packet).
- Click Magic Transform to instantly convert the content into other formats, such as:
 - Presentation slides (for classroom teaching).
 - Social media posts (for quick sharing).
 - Infographic (for visual summaries).
 - Blog post format (for online publishing).
 - Step 4: Finalize & Share
- Review the transformed or edited version.
- Save/export in different formats (PDF, PPT, PNG, or mobile-friendly Doc).
- Share via Canva link or download for offline use.

Example Demonstration Flow (Python Loops Lesson)

1. Magic Write: Expand the While Loop explanation with an additional example.
2. Magic Eraser/Replace: Remove an irrelevant stock photo watermark; replace a laptop with a chalkboard.
3. Magic Transform: Convert the lesson packet into a presentation slideshow.

Additional prompts on program 5

Demonstrate the use of Magic Suite-Magic Eraser/Replace, Magic transform, etc.

Example: a. Demonstrate the Magic Write feature. Say, Right-click on a paragraph, then choose actions like: “Rewrite this”, “Make it more concise”, “Fix grammar”, “Expand this with an example”, “Custom prompt” (e.g., “Explain this in simple language”) b. Demonstrate the Magic Eraser / Replace feature which is Primarily used in images. Say, Erase unwanted objects (e.g., a watermark or irrelevant icon), Replace an item in an image (e.g., change a laptop to a chalkboard) c. Demonstrate the Magic Transform feature which can be used to instantly convert the above created document into multiple formats.

Additional Prompts for Canva Magic Suite

1. Magic Write Prompts (Text AI Enhancements)

- Rewrite this paragraph in simpler language for beginners
- Make this explanation more engaging using a storytelling style
- Expand this section with a practical example of a `while` loop
- Summarize this lesson into 3 bullet points
- Fix all grammatical errors and improve clarity
- Convert this paragraph into a step-by-step tutorial.”
- Create a short quiz based on this paragraph.”

2. Magic Eraser / Replace Prompts (Image Editing)

- Erase the background of this image to make it transparent
- Remove the watermark from this image
- Replace this laptop with a whiteboard showing code
- Erase any distracting objects from this classroom image
- Replace this character in the image with a teacher explaining Python
- Remove unnecessary icons or labels from this infographic
- Change the color of this object to match the theme of the lesson

3. Magic Transform Prompts (Document / Design Conversion)

- Convert this lesson into a presentation with one slide per loop type
- Transform this document into an infographic highlighting key points
- Create a poster summarizing the differences between `for` and `while` loops.
- Convert this Canva Doc into a one-page handout for students
- Generate a slide deck with visuals for each code example
- Create a mini e-book from this document

Program 6

Demonstrate the use of Gamma.app-AI-Powered presentation builder.
Show the following Customizations for the document created in above examples.

Feature	Example
Slide Title/Text	Edit headings or simplify slide copy
Image Replacement	Use AI to regenerate more suitable visuals
Content Rewrite	Prompt: "Make this slide simpler for high school students"
Layout Editing	Rearrange card structure or duplicate/delete cards

STEPS 1: Experiment: Demonstration of Gamma.app – AI-Powered Presentation Builder
Objective:

To demonstrate the use of Gamma.app for creating and customizing AI-powered presentations.

Procedure:

Step 1: Open Gamma.app and Import/Start a Presentation

- Go to <https://gamma.app>.
- Sign in using your email or Google account.
- Choose one of the following options:
- Import Document (Word/PDF/Notes).
- Start with AI → type a prompt such as “Create a presentation on AI in Education”.
- Gamma will generate a draft presentation with slides.

Step 2: Slide Title/Text Customization

Goal: Edit slide headings or simplify text.

- Select a slide with a long heading or detailed text.
- Hover over or right-click → choose Edit with AI.
- Options will appear such as:
 - Rewrite heading
 - Summarize text
 - Make it simpler
 - Example:

Original heading: “Applications of Artificial Intelligence in the Educational Sector”

AI Suggestion: “AI in Education” or “How AI Helps Students”.

Confirm the edit to update the slide.

The screenshot shows a digital workspace interface. On the left, there's a sidebar with a list of cards under sections like "What is Artificial Intelligence (AI)", "Why AI Matters in Education Now", and "Real-World AI Applications in Classrooms". The main area displays a slide with the title "What is Artificial Intelligence (AI)". The slide content includes a large, colorful illustration of a classroom scene with students and a teacher interacting with a large digital screen showing data. To the right of the slide, there's a "Get started" section with a progress bar and several options: "Create your first gamma", "Add a card", "Drag to reorder cards", "Add charts, diagrams, and embeds", "Change the theme", "Edit with AI", "Try presenting", and "Share and export". A "Chat with AI" button is also visible.

Step 3: Image Replacement

Goal: Replace images with more suitable visuals using AI.

Click the existing image in the slide.

Select Replace Image → Generate with AI.

Enter a prompt (e.g., “Show a cartoon-style teacher using AI tools in a classroom”).

Gamma generates multiple options → choose the most relevant one.

The new AI-generated image will replace the old image.

The screenshot shows a slide titled "Why AI Matters in Education Now". The slide is divided into three main sections: "Personalized Learning", "Operational Efficiency", and "Addressing Equity". Each section contains a brief text description. To the right of the slide, there's a large image of a teacher and two students looking at a tablet together. A context menu is open over this image, with the "Delete" option highlighted. The menu also includes "Horizontal alignment", "Click action", and an "Expand" button.

Why AI Matters in Education

Personalized Learning

AI tailors educational content to each student's unique pace and learning style, dramatically improving engagement and outcomes. It creates a truly individualized learning journey.

Operational Efficiency

AI automates repetitive administrative tasks, freeing up valuable time for educators to focus on direct teaching, mentorship, and creative lesson planning.

Addressing Equity

Without thoughtful action, the rapid advancement of AI risks exacerbating existing educational inequalities and digital divides. Proactive integration is crucial.

Prompt
Show a cartoon-style teacher using AI tools in a classroom

Enhance prompt

Art style
 Illustration, Photorealistic, Abstract, 3D, Line Art, Custom

Use theme style View theme

Aspect ratio Square, Model Flux Fast 1.1

Generate 10

Reset to default

Step 4: Content Rewrite

Goal: Rewrite slide content for a target audience.

- Highlight the slide text.
- Select AI Rephrase Options (e.g., Condense, Expand, or More Engaging).
- Enter a prompt (e.g., “Make this slide simpler for high school students”).
- Example Transformation:
- Before: “Natural Language Processing enables semantic analysis of large datasets to improve decision-making processes.”
- After: “AI can read lots of text and help teachers make better choices for students.”
- Choose the version best suited for your audience.

The screenshot shows a slide titled "Why AI Matters in Education Now" with three main sections: "Personalized Learning", "Operational Efficiency", and "Advancing Equity". The "Personalized Learning" section contains the text: "AI adapts content to each student's unique pace and learning style, dramatically improving engagement and outcomes through individualized learning journeys." A callout bubble from the top right says: "Adapts content to each student's unique pace and learning style, dramatically improving engagement..."

A blue callout bubble on the right side says: "Make this slide simpler for high school students". Below it, a message says: "Okay, I'll try simplifying the content for high school students...".

The "Operational Efficiency" section contains the text: "AI automates repetitive administrative tasks, freeing up educators to focus on direct teaching, mentorship, and creative lesson planning." A callout bubble from the top right says: "Adapts content to each student's unique pace and learning style, dramatically improving engagement..."

The "Advancing Equity" section contains the text: "Proactive and thoughtful integration of AI can help bridge existing educational inequalities and digital divides, ensuring access to quality learning for all." A callout bubble from the top right says: "Adapts content to each student's unique pace and learning style, dramatically improving engagement..."

On the right side, there is a sidebar with a "Suggested" section showing a simplified version of the slide and an "Original" section showing the original version. A progress bar at the bottom indicates "77%".

Step 5: Layout Editing

Goal: Rearrange or restructure slide content.

- Open the Layout tab on the right side.
- Select a new layout style (grid, cards, image-focused, text-focused).
- Example Transformation:
 - Before: One slide with a long paragraph.
 - After: Split into 3 card-style sections:
 - Card 1: “What is AI?”
 - Card 2: “How AI Helps in Classrooms”
 - Card 3: “Examples: Tutoring, Assessments, Content”
 - Additional options:
 - Duplicate a card to retain variations.
 - Delete a card to remove unnecessary details.

The screenshot shows a presentation slide titled "Why AI Matters in Education Now". The "Layout" tab is active, displaying a dropdown menu for "Sequence" layout styles. The menu includes options like Solid boxes, Solid boxes with icons, Outline boxes, Side line boxes, Top circle boxes, Joined boxes, Joined boxes with icons, Leaf boxes, Labeled boxes, and Alternating boxes. The slide content includes two cards: one for AI automating education and creating learning journeys, and another for advancing equity by bridging educational inequalities.

Step 6: Review and Export

- Preview the final presentation.
- Select Share/Export.
- Choose from:
 - Web link (interactive presentation).
 - Export as PDF/PPTX (for offline use).

Share AI in Education: Transforming Learning for the Future

Collaborate Share Export Embed Publish to site...

Add emails or people

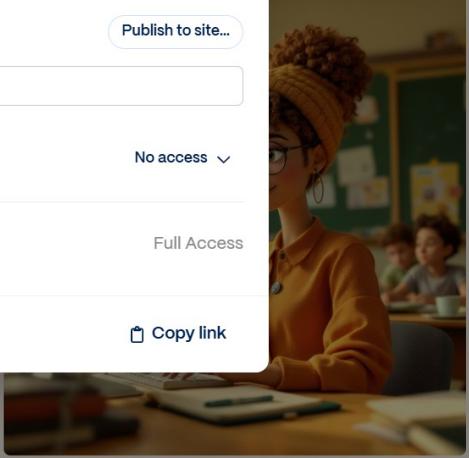
Workspace members No access

MG Meghana G (You) Full Access

View analytics Copy link

Advancing Equity

Proactive and thoughtful integration of AI can help bridge existing educational inequalities and digital divides, ensuring access to quality learning for all.



Additional prompts on program 6

Demonstrate the use of Gamma.app-AI-Powered presentation builder. Show the following Customizations for the document created in above examples.

Feature	Example
Slide Title/Text	Edit headings or simplify slide copy
Image Replacement	Use AI to regenerate more suitable visuals
Content Rewrite	Prompt: "Make this slide simpler for high school students"
Layout Editing	Rearrange card structure or duplicate/delete cards

1. Slide Title / Text Editing

- Simplify this slide text for beginner students
- Rewrite this heading to make it more engaging
- Convert this paragraph into 3 concise bullet points
- Turn technical terms into simple language
- Summarize this slide into a single sentence for quick understanding
- Make this slide suitable for a 5-minute teaching segment
- Highlight the key concept in bold or colored text

2. Image Replacement / AI-Generated Visuals

- Replace this image with a cartoon of a student coding
- Generate a visual showing the flow of a for loop
- Replace the laptop image with a whiteboard displaying Python code
- Add icons or symbols for break and continue statements
- Use AI to create a high-contrast, colorful image suitable for classroom display
- Replace irrelevant images with ones matching the lesson topic

3. Content Rewrite / AI-Powered Enhancement

- Make this slide simpler for high school students
- Expand this explanation with a real-world analogy
- Add an example showing nested loops
- Convert this paragraph into a short story or scenario

- Rewrite this content as a multiple-choice quiz question
- Summarize this section in one sentence for a recap slide

4. Layout Editing / Slide Flow

- Duplicate this slide and add an interactive coding exercise
- Rearrange slides so examples follow explanations immediately
- Combine multiple slides into one for brevity
- Highlight code snippets in a separate card
- Add a summary slide at the end of each loop section
- Split complex slides into simpler, step-by-step slides

5. Interactivity & Engagement

- Add toggle cards for quiz answers
- Create a mini coding challenge slide
- Add a slide with a comparison table: For Loop vs While Loop
- Include a recap slide with 3 key points per loop type
- Add a mnemonic or tip slide to help remember loop concepts
- Insert interactive buttons for next/previous sections

Program 7

Generate Questions from Content (CTRL Method). CTRL is a powerful method for precision prompting.

Example: Python Conditional Statements

Prompt Example 1: Create 3 Multiple Choice Questions (MCQs) on Conditional Statements in Python for college students who are beginners. Keep the tone formal and straightforward.

Prompt Example 2: Generate 2 Match-the-columns questions on Python Conditional Statements. Keep the questions beginner-friendly and formal.

Demo Examples:

Using PDF as Content Source:

I've uploaded a PDF on "Introduction to Sociology" (provide link). Generate 5 MCQs for undergraduate students. Maintain academic tone, moderate complexity.

Using Web Link:

Use the content from the following web link (provide actual URL here) and create 3 MCQs on Photosynthesis suitable for high-school biology students.

Steps / Procedure:

Step 1: Understand the CTRL Method

- C (Context): Give the source material (e.g., notes, PDF, web link).
- T (Task): Specify what kind of questions you want (MCQs, short answers, match-the-columns, etc.).
- R (Role): Define who the questions are for (beginners, high school students, undergraduates, professionals).
- L (Limitations): Add constraints (number of questions, tone, difficulty level, academic style).

Step 2: Prepare the Content Source

- Option A: Copy-paste text notes directly into the prompt.
- Option B: Upload a PDF/Word document and refer to it (e.g., "I've uploaded a PDF on Introduction to Sociology").
- Option C: Provide a web link (e.g., "Use this URL: <https://example.com/photosynthesis-content>").

Create 3 Multiple Choice Questions (MCQs) on Conditional Statements in Python for college students who are beginners. Keep the tone formal and straightforward.

Here are 3 formal and beginner-friendly MCQs on Conditional Statements in Python:

Q1.

Which of the following keywords is used in Python to check an alternative condition when the initial `if` condition is False?

- a) switch
- b) elif
- c) else if
- d) case

Answer: b) elif



Step 3: Frame the Prompt

Follow the CTRL structure when writing your prompt.

Examples:

- MCQs from Notes
- “Create 3 Multiple Choice Questions (MCQs) on Conditional Statements in Python for college students who are beginners. Keep the tone formal and straightforward.”
- Match-the-columns from Notes
- “Generate 2 Match-the-columns questions on Python Conditional Statements. Keep the questions beginner-friendly and formal.”
- MCQs from a PDF
- “I’ve uploaded a PDF on ‘Introduction to Sociology’. Generate 5 MCQs for undergraduate students. Maintain academic tone, moderate complexity.”
- MCQs from a Web Link
- “Use the content from the following link: <https://example.com/photosynthesis>. Create 3 MCQs suitable for high-school biology students.”

AI Tools and Applications (BCIL358C)

Here are 2 Match-the-Columns questions on Python Conditional Statements, kept beginner-friendly and formal:

Q1. Match the Python keywords with their correct purpose:

Column A	Column B
a) <code>if</code>	1. Executes a block when the condition is False
b) <code>elif</code>	2. Checks the initial condition
c) <code>else</code>	3. Provides additional condition checks

Answer:

a → 2, b → 3, c → 1

Q2. Match the code snippets with their correct outcomes:

Column A (Code)	Column B (Output)
a) <code>if 10 > 5: print("Yes")</code>	1. No output
b) <code>if 2 > 5: print("True") else: print("False")</code>	2. Prints "Yes"

Context: Basics of Operating Systems (from uploaded PDF).
Task: Generate 5 True/False questions.
Role: First-year engineering students.
Limitations: Keep the difficulty easy-to-moderate and maintain an academic tone.

Here are 5 True/False questions based on the uploaded *Basics of Operating Systems – Process Concept* slides, kept simple for first-year engineering students:

Q1. A process is the same as a program stored on disk.

Answer: False (A program is a passive entity, while a process is an active program in execution)

[Unit 1 Lecture 5 _ 6 - Process ...](#)

Q2. The Process Control Block (PCB) stores information such as process state, program counter, CPU registers, and scheduling information.

Answer: True [Unit 1 Lecture 5 _ 6 - Process ...](#)



Step 4: Run the Prompt

- Paste your prompt into the AI tool (e.g., ChatGPT).
- Ensure you include all four CTRL elements in the request.

Step 5: Review the Output

- Check whether the AI-generated questions are:
- Accurate (based on the source).
- Aligned with the difficulty level specified.
- Formatted as requested (MCQ, match-the-columns, etc.).

Step 6: Refine (If Needed)

- If the questions are too difficult or too easy → adjust the Limitations.
- If the questions don't cover enough topics → provide more Context (paste additional material).

Additional prompts on program 7

Generate Questions from Content (CTRL Method). CTRL is a powerful method for precision prompting.

Example: Python Conditional Statements

Prompt Example 1: Create 3 Multiple Choice Questions (MCQs) on Conditional Statements in Python for college students who are beginners. Keep the tone formal and straightforward.

- Prompt Example 2: Generate 2 Match-the-columns questions on Python Conditional Statements. Keep the questions beginner-friendly and formal.

Demo Examples:

- Using PDF as Content Source:
- I've uploaded a PDF on "Introduction to Sociology" (provide link). Generate 5 MCQs for undergraduate students. Maintain academic tone, moderate complexity. Using Web Link:
- Use the content from the following web link (provide actual URL here) and create 3 MCQs on Photosynthesis suitable for high-school biology students

Additional CTRL Prompts for Question Generation

1. Multiple Choice Questions (MCQs)

- Create 5 MCQs on Python loops for college beginners. Keep the tone formal and straightforward
- Generate 3 MCQs on Photosynthesis for high-school students with moderate complexity
- Make 4 MCQs on Basic Algebra for undergraduates, keeping the language simple.
- Create 5 MCQs on World War II for history students at a college level, maintaining academic tone
- Generate 3 scenario-based MCQs on decision-making in Python functions

2. Match-the-Columns Questions

- Generate 2 match-the-columns questions on Python data types. Keep them beginner-friendly and formal
- Create 3 match-the-columns questions linking chemical elements with their symbols for high school chemistry students
- Make 2 match-the-columns questions on famous historical events and their years for college students

3. True/False Questions

- Generate 5 true/false questions on conditional statements in Python for beginners
- Create 4 true/false questions on photosynthesis for high-school biology students
- Make 3 true/false questions on the French Revolution for undergraduate history students.

4. Fill-in-the-Blank Questions

- Create 5 fill-in-the-blank questions on Python loops for beginner programmer
- Generate 3 fill-in-the-blank questions on the human digestive system for high-school biology students
- Make 4 fill-in-the-blank questions on World War I events for undergraduate history students

5. Scenario-Based / Application Questions

- Generate 3 scenario-based MCQs on using if-else statements in Python for beginner students.
- Create 2 case-study questions on ecological conservation for high-school biology students
- Make 2 application-based questions on solving quadratic equations for college students

6. From PDFs or Web Links

- Use the uploaded PDF on 'Introduction to Sociology' and generate 5 MCQs for undergraduate students. Keep tone academic and moderate complexity
- Use the content from [insert URL] to create 3 match-the-columns questions on Photosynthesis suitable for high-school students
- From the PDF on 'Computer Networks', generate 4 true/false questions for beginner college students

7. Mixed Question Sets

- Generate a set of 5 questions: 2 MCQs, 2 true/false, and 1 fill-in-the-blank on Python conditional statements
- Create a beginner-friendly question set on loops in Python with 3 MCQs and 2 scenario-based questions
- Generate a mixed-format quiz on the American Civil War for high-school students: 2 MCQs, 2 match-the-columns, 1 short-answer question.

Program 8

Demonstrate the Parsons Method for Interactive Problem Statements. Parson's Method enhances problem-solving skills by giving students code fragments or sentences they must put in the correct logical order, proven to improve conceptual understanding. **Live Demonstration Prompt:** Generate a Parson's Problem using Python conditional statements for beginner-level students. Provide shuffled code blocks for a simple "if-else" structure.

Parsons Method: Interactive Problem Statements

Parsons Method is a powerful teaching approach that helps students improve their problem-solving skills, especially in programming and logic-based subjects.

How Does Parsons Method Work?

- Students are given **unordered code fragments** (or logical statements/sentences).
- Their task is to **arrange these pieces in the correct order** to solve a specific problem or complete a concept.
- Sometimes, **extra/distractor fragments** are included to deepen thinking.

Why Is This Effective?

- Focuses on **understanding structure and logic**, not just memorizing syntax.
- Reduces cognitive load: students don't need to recall details, just reason about the sequence.
- Proven to **boost conceptual understanding and debugging skills**, according to educational research.

When to Use Parsons Problems

- Teaching new control structures like conditionals, loops, and function calls.
- Early assessment of conceptual understanding without syntax friction.
- Formative practice with immediate feedback.
- Automated assignments where ordering and indentation are primary learning targets.

Example 1: Parsons Problem (Python)

Suppose you want students to arrange code fragments to print "Hello, World!" 5 times:

Unordered Fragments:

```
print("Hello, World!")
```

for i in range(5):

The correct order:

for i in range(5):

print("Hello, World!")

Sometimes, an extra fragment (like print(i)) is included to challenge reasoning.

Example 2 : Loop and Accumulation (Beginner → Intermediate)

Task: Read n and print sum of integers from 1 to n.

Shuffled fragments:

```
i = 1  
while i <= n:  
    total += i  
n = int(input("Enter n: "))  
i += 1  
total = 0  
print(total)
```

Correct ordering:

```
n = int(input("Enter n: "))  
total = 0  
i = 1  
while i <= n:  
    total += i  
    i += 1  
print(total)
```

Parsons Problem Python If Else

Learning objectives

- Understand Python if else control flow.
- Practice arranging code fragments into a correct, runnable sequence.
- Identify indentation and boolean expressions.

Problem statement

Arrange the shuffled code blocks into the correct order to implement a program that asks the user for their age and prints whether they are an adult or a minor. Use proper indentation and include input conversion.

Shuffled code blocks

1. `print("You are an adult.")`
2. `age = int(input("Enter your age: "))`
3. `else:`
4. `if age >= 18:`
5. `print("You are a minor.")`

Distractor fragments (optional wrong pieces you may include to increase difficulty)

- `print("Age recorded")`
- `age = input("Enter your age: ")`

Correct ordering (solution)

1. `age = int(input("Enter your age: "))`
2. `if age >= 18:`
3. `print("You are an adult.")`
4. `else:`
5. `print("You are a minor.")`

Explanation of solution

- The program first reads and converts user input to integer.
- The if tests the boolean condition `age >= 18`.
- The print under if executes when condition is true.
- The else branch handles the false case and must be at the same indentation level as if.
- The statements under if and else must be indented consistently.

Additional prompts on program 8

Demonstrate the Parsons Method for Interactive Problem Statements. Parson's Method enhances problem-solving skills by giving students code fragments or sentences they must put in the correct logical order, proven to improve conceptual understanding. Live Demonstration Prompt: Generate a Parson's Problem using Python conditional statements for beginner-level students. Provide shuffled code blocks for a simple "if-else" structure.

Additional Parson's Problem Prompts

Prompt 1: Loop Problem

Create a Parson's Problem for a Python for-loop that prints numbers 1-10. Include blocks for: loop initialization, print statement, and range function.
Shuffle the blocks and add one distractor (incorrect) block.

Prompt 2: Function Problem

Generate a Parson's Problem for defining a simple function that calculates the area of a rectangle. Include: function definition, parameters, calculation, return statement and function call. Provide shuffled blocks.

Prompt 3: List Operations

Create a Parson's Problem for basic list operations: create a list of fruits, add an item, remove an item, and print the final list. Shuffle all blocks and include proper indentation markers.

Program 9

Demonstrate the usage of AI Tools for Creating and Delivering Tests. Tools available are: Quizzes' AI, Class Marker, Formative, Google Forms + AI (Form Presenter) Demonstrate a Use case of AI Tools for Creating and Delivering Tests. Once questions are created (Q7), automate their conversion into online tests for ease of deployment and analysis. Use Quizzes' AI for Automated MCQs, grading and analytics.

Here's a clear, step-by-step demonstration of how you can use AI tools—even as a beginner—for creating and delivering online tests. I'll focus on Quizzes' AI, since it covers automated MCQ generation, grading, and analytics, but also show how others (Class Marker, Formative, Google Forms + AI) support test delivery and analysis.

Step 1: Prepare Your Questions (Q7)

Let's say you have a set of questions (for example, Q7: "What is the capital of France?"). You don't need to format them—all you need is your list.

Step 2: Use Quizzes' AI for Automated Test Creation

Quizzes' AI helps you:

- Generate MCQs from your topics.
- Add distractors (wrong options).
- Instantly grade and analyze responses.

How it works:

1. Log in to Quizzes' AI.
2. Paste your questions into their input box.
3. Select options to "Auto-generate MCQs" and "Enable analytics."
4. The tool will:
 - Suggest answer choices.
 - Create a ready-to-use MCQ test.
 - Provide instant grading after students complete the test.
 - Offer analytics (class averages, question performance, etc.)

Example output:

Question	Choices	Correct Answer
What is the capital of France?	A) Berlin B) Paris C) Rome D) Madrid	B) Paris

Step 3: Deliver the Test Online

After creation, you can deploy your test for students to access remotely.

- **Quizzes' AI:** Share a unique link; students open it on any device.
- **Other platforms (Class Marker, Formative, Google Forms + AI):**
 - These support importing your questions (often from spreadsheet or text).
 - You can set timers, restrict attempts, and receive auto-graded results.

Process:

1. Click “Share” or “Assign” in your tool of choice.
2. Distribute the test link via email, LMS, or chat.

Step 4: Automate Grading and View Analytics

Quizzes' AI advantage: All submissions are graded instantly. Analytics dashboards show:

- Each student's score.
- Class average, question-wise accuracy.
- Identify which questions students found difficult.
- Export results to Excel or PDF for records.

Step 5: Use Data for Feedback and Improvement

After test completion, use built-in analytics to:

- Give personalized feedback.
- Review common mistakes.

Adjust future lessons.

Summary Table: AI Tool Features for Test Creation & Delivery

Tool	Automated MCQ Generation	Online Delivery	Auto-Grading	Analytics/Reports
Quizzes' AI	Yes	Yes	Yes	Yes
Class Marker	No (manual import)	Yes	Yes	Yes
Formative	Limited (import/AI)	Yes	Yes	Yes
Google Forms + AI	Limited (Form Presenter)	Yes	Yes	Yes (via add-ons)

Additional prompts on program 9

Demonstrate the usage of AI Tools for Creating and Delivering Tests. Tools available are: Quizizz AI, ClassMarker, Formative, Google Forms + AI (Form Presenter) Demonstrate a Use case of AI Tools for Creating and Delivering Tests. Once questions are created (Q7), automate their conversion into online tests for ease of deployment and analysis. Use Quizizz AI for Automated MCQs, grading and analytics.

Additional Prompts

Prompt 1: Once questions are created (Q7), Google Forms combined with AI-powered Form Presenter automates their conversion into online tests for simple and efficient deployment. Form Presenter adds powerful time, audience, action, and presentation controls to Google Forms, allowing educators to set timers, restrict access, and monitor user activities during assessments. It supports automatic grading scripts and real-time performance dashboards for detailed analytics, making it suitable for schools and organizations seeking quick, manageable quiz deployment with secure, customizable test environments. This approach simplifies test management while providing insight into learner progress and engagement.

Prompt 2: Once questions are created (Q7), ClassMarker automates their conversion into secure, professional online tests for formal and high-stakes assessment environments. It supports multiple question types such as multiple-choice, true/false, essay, and matching, allowing for comprehensive test construction. ClassMarker offers advanced settings including timed exams, randomized questions and answers, and access controls like passwords and IP restrictions for exam integrity. Tests can be distributed either via private user accounts or sharable direct links, catering to both controlled groups and scalable audiences. Automatic grading and immediate result analytics streamline evaluation, while customizable certificates can be issued upon completion or based on passing scores. ClassMarker ensures test security, reliability with 24/7 monitoring, and compliance with data privacy regulations, making it ideal for professional certifications and formal exams in educational or corporate settings.

Program 10

Demonstrate the use of AI-Driven Research Ideation (ChatGPT + Search) Live Demonstration Example: Example Prompt given to ChatGPT: Suggest 3 novel research angles on the topic: 'Impact of Social Media on Mental Health' relevant to Psychology researchers.

Step 1 — Define the Goal

Clearly specify the research objective:

"We aim to explore and generate three novel, researchable ideas related to the *Impact of Social Media on Mental Health*."

Step 2 — Conduct Literature Search (using Search Engine)

Search Prompts / Queries used:

1. systematic review social media mental health 2020..2025
2. algorithmic curation social media mental health
3. digital phenotyping smartphone stress depression
4. social media screen time randomized trial

Expected Observation from Search:

- Heavy social media use correlates with depression, anxiety, and poor sleep.
- “Digital phenotyping” (tracking digital behavior) is an emerging research tool.
- Few experimental studies isolate algorithmic effects (feed personalization).
- Ethical challenges are growing due to AI-based content curation.

Step 3 — Use ChatGPT for Research Ideation

Open ChatGPT and enter the following **prompt exactly** as shown:

Prompt 1 (Main Ideation Prompt):

You are advising psychology researchers. Based on recent findings that problematic social media use is linked to worse mental health (including sleep problems), that digital phenotyping is an emerging monitoring method, and that algorithmic curation and AI models can shape and mis-measure mental health, suggest 3 novel, feasible research angles on "Impact of Social Media on Mental Health". For each angle give:

- Title
- Rationale

- Two research questions/hypotheses
- Study design and methods
- Analysis approach
- Ethical considerations
- Next step (pilot or preregistration)

Step 4 — Analyze AI Output

ChatGPT will produce three distinct, research-ready ideas. Document each with title, rationale, methodology, and ethics.

7. Observations

AI-Generated Research Angles

1. Algorithmic Exposure & Mood Dynamics

- **Rationale:** Focuses on how algorithm-driven feeds (e.g., TikTok, Reels) affect mood fluctuations in adolescents — an area under-explored.
- **Research Questions:**
 1. Does exposure to algorithmic short-form content affect daily mood variation?
 2. Is increased algorithmic exposure linked with sleep disturbance?
- **Design:** Randomized experiment (curated vs. neutral feed).
- **Measures:** EMA (Ecological Momentary Assessment), screen time, actigraphy.
- **Analysis:** Multilevel mixed models for mood variability.
- **Ethics:** Parental consent, privacy of screen data.
- **Next Step:** Pilot with 20 adolescent participants.

2. Multimodal Digital Phenotyping for Early Detection

- **Rationale:** Combines sensor data and social media behavior for early detection of depressive symptoms — integrating multiple data types.
- **Research Questions:**
 1. Can combined sensor + social media data predict mental health decline?
 2. Which features (activity, sentiment, usage) are strongest predictors?
- **Design:** Longitudinal 3-month study.
- **Measures:** Smartphone sensors (GPS, accelerometer, sleep), app usage, sentiment analysis.

- **Analysis:** Time-series ML (LSTM) and regression.
- **Ethics:** Data anonymization, participant consent.
- **Next Step:** Run a small feasibility pilot.

3. Fairness in AI Mental Health Detection

- **Rationale:** Investigates bias in AI systems predicting mental health from posts — a gap in fairness research.
- **Research Questions:**
 1. How do AI models differ in accuracy across ethnic and cultural groups?
 2. What causes misclassification in specific communities?
- **Design:** Mixed-methods audit + interviews.
- **Measures:** Model accuracy, qualitative language analysis.
- **Analysis:** Stratified fairness metrics + thematic analysis.
- **Ethics:** Transparent consent, prevent cultural stigmatization.
- **Next Step:** Perform small-scale audit study.

8. Validation of Novelty

To confirm the uniqueness of the generated research angles, use these **validation search prompts:**

"algorithmic exposure randomized trial adolescents mood"

"digital phenotyping social media depression prediction"

"bias AI mental health detection social media"

If limited results (<5 studies) are found, the topic is **novel**.

9. Additional ChatGPT Prompts (for Enhancement)

Use these prompts to refine or expand the ideas during demonstration:

Prompt 2 — To Generate Research Abstract

Write a 250-word research abstract for the first research idea titled

"Algorithmic Exposure & Mood Dynamics" including significance, method, expected outcomes, and ethical safeguards.

Prompt 3 — To Create Ethical Checklist

List 10 ethical concerns for conducting research involving adolescents' social media data and propose one mitigation strategy for each.

Prompt 4 — To Design EMA Survey

Generate 8 short EMA questions to measure mood, social comparison, and social media engagement.

Each question should be one sentence and use a 1–5 rating scale.

Additional prompts on program 10

Demonstrate the use of AI-Driven Research Ideation (ChatGPT + Search) Live Demonstration Example:
Example Prompt given to ChatGPT: Suggest 3 novel research angles on the topic: 'Impact of Social Media on Mental Health' relevant to Psychology researchers.

Additional Prompts

Prompt 1: "Propose 3 interdisciplinary research questions combining psychology and data science focused on analyzing social media's influence on adolescent mental health trends."

Prompt 2: "Suggest innovative qualitative research methods to study how social media usage affects emotional resilience among young adults."

Prompt 3: "Identify potential ethical challenges and considerations for researchers studying the correlation between social media engagement and mental health disorders."

Prompt 4: "Provide 3 ideas for longitudinal studies investigating the causative links between social media use patterns and the onset of anxiety or depression."

Prompt 5: "Outline 3 potential research projects exploring the role of social media in shaping body image perceptions and eating disorders in teenagers."

Program 11

Rapid Literature Discovery using Elicit (elicit.com)

Deploy Elicit (elicit.com) for Rapid Literature Discovery.

To overcome manual search limitations, use Elicit, an AI-driven tool specialized in academic literature discovery.

Example: Topic provided: "What is the impact of mindfulness techniques on anxiety among university students?" The student should Customize Table Columns: say, Click "Columns" →Select additional details to view: Population studied, Intervention details, Outcomes measured, Research methods

Show the Advanced Filtering techniques: Say

- Filter results by: Publication date, Study type (e.g., randomized control trials, observational studies), Citations count (to identify influential papers)

Analyzing Search Results: Elicit automatically generates a structured table of scholarly papers directly related to your query. It quickly provides: Paper titles, Abstracts (automatically summarized),

Methodologies, Participants/sample sizes, Year published, citations count, and study types.

What is Elicit?

Elicit (or "Elicit AI") is an AI-powered research assistant tool designed to help with academic and scientific literature work. It automates and streamlines many tedious tasks in the research process.

Example Query

Topic: "What is the impact of mindfulness techniques on anxiety among university students?"

Step-by-Step Procedure to Use Elicit

Step 1: Go to Elicit

- Open your web browser and visit <https://elicit.com>
- Sign up or log in using your email, Google account, or university credentials.

Step 2: Start a New Literature Search

- Enter your research question in the search bar (e.g., 'What is the impact of mindfulness techniques on anxiety among university students?').

Step 3: Customize Table Columns

- Click on “Columns” and select additional details to view in the results table, such as:
 - Population studied
 - Intervention details
 - Outcomes measured
 - Research methods

Step 4: Apply Advanced Filtering

Use the filters to narrow down results:

- Publication date
- Study type (e.g., randomized control trials, observational studies)
- Citations count (to identify influential papers)

Step 5: Analyze Search Results

Elicit automatically generates a structured table of scholarly papers directly related to your query. This table includes:

- Paper titles
- Abstracts (automatically summarized)
- Methodologies
- Participants/sample sizes
- Year published
- Citations count
- Study types

Step 6: Explore and Export

- Click on any paper title to view full details. You can export the results table for your reference or literature review.
- Elicit simplifies the process of finding and organizing relevant academic papers, allowing researchers and students to focus on critical analysis rather than manual searching.

Additional prompts on program 11

Deploy Elicit (elicit.com) for Rapid Literature Discovery. To overcome manual search limitations, use Elicit, an AI-driven tool specialized in academic literature discovery. Example: Topic provided: "What is the impact of mindfulness techniques on anxiety among university students?" Analyzing Search Results: Elicit automatically generates a structured table of scholarly papers directly related to your query. It quickly provides: Paper titles, Abstracts (automatically summarized), Methodologies, Participants/sample sizes, Year published, citations count, and study types. The student should Customize Table Columns: say, Click "Columns" àSelect additional details to view: Population studied, Intervention details, Outcomes measured, Research methods Show the Advanced Filtering techniques: Say • Filter results by: Publication date, Study type (e.g., randomized control trials, observational studies), Citations count (to identify influential papers)

Additional Prompts

Prompt 1: "Use Elicit to perform a systematic discovery of recent randomized controlled trials on 'effects of dietary interventions on cardiovascular health'. Customize the results table to include sample sizes, intervention types, outcomes measured, and publication year. Filter to show only studies published in the last 3 years with citation counts above 30."

Prompt 2: "Apply Elicit to extract key methodologies and participant demographics from observational studies investigating 'digital learning impacts on student performance'. Generate an organized table summarizing each study's design, location, sample characteristics, and main findings."

Prompt 3: "Leverage Elicit's semantic search to find empirical studies on 'AI applications in mental health diagnostics'. Use advanced filtering to include only peer-reviewed articles with more than 50 citations and published after 2020. Customize columns to display research gaps noted by authors."

Prompt 4: "Execute a literature review using Elicit on 'environmental factors influencing adolescent depression'. Build a table presenting study types, population age ranges, location, key variables studied, and reported effect sizes. Filter results to focus on meta-analyses and systematic reviews."

Prompt 5: "Use Elicit to search for and summarize policy-related research assessing the 'impact of remote work on employee well-being'. Include columns such as study methodologies, intervention types, populations studied, and policy implications as reported. Restrict results by study type and date."

Program 12

Using Consensus for Quick Expert Insights (consensus.app). The Consensus AI tool summarizes academic research consensus clearly and visually. Example: Enter your research query.: "Does social media use negatively impact teenagers' mental health?" Understand the Results: "Consensus Meter" summarizing expert agreement, Conduct In depth Exploration of each summarized statement, do Advanced Filtering (Narrow down by year, relevance, study type, or agreement level.

Objective:

To learn how to use the Consensus AI tool (consensus.app) to obtain research-based answers to academic questions and interpret expert agreement visually.

Procedure:

Step 1: Introduction to Consensus

Consensus AI is a research summarization platform that extracts insights from peer-reviewed papers to show expert agreement on any academic question. It helps students and researchers quickly understand what the scientific community agrees on.

Step 2: Accessing the Tool

1. Open a browser and go to <https://consensus.app>.
2. Sign up or log in using an email ID.
3. In the search bar, enter a research question.

Step 3: Example Query

Example:

"Does social media use negatively impact teenagers' mental health?"

Step 4: Understanding the Results

Consensus will display: - A Consensus Meter indicating how strongly experts agree or disagree (e.g., 75% agreement).

- Summarized statements that briefly explain findings from multiple research papers.
- Citations and study links to explore the original papers.

Step 5: Exploring Further

Click on any summarized statement to view: - Excerpts from the original papers.

- Variations in study results and reasoning.
- Supporting or opposing evidence.

Step 6: Advanced Filtering

Use filters to refine results based on: - Year Range: (e.g., 2018–2024)

- Relevance or Study Type: (review, meta-analysis, experiment)
- Agreement Level: (high, medium, low)

This helps in focusing on the most credible and recent academic findings.

Observation Table:

Query	Consensus Meter Result	Majority Opinion	Example Study Reference
Does social media use negatively impact teenagers' mental health?	~75% agreement	Most studies show moderate negative impact	<i>Journal of Youth Studies</i> , 2022

Outcome:

Students will be able to: - Formulate research questions effectively.

- Interpret the Consensus Meter to assess expert agreement.
- Filter results to explore credible evidence-based insights.

Additional prompts on program 12

Using Consensus for Quick Expert Insights (consensus.app). The Consensus AI tool summarizes academic research consensus clearly and visually. Example: Enter your research query.: "Does social media use negatively impact teenagers' mental health?" Understand the Results: "Consensus Meter" summarizing expert agreement, Conduct Indepth Exploration of each summarized statement, do Advanced Filtering (Narrow down by year, relevance, study type, or agreement level.

Additional Prompts

Prompt 1: "Query Consensus to evaluate the evidence on 'Are vitamin D supplements effective in preventing respiratory infections?' Use the Consensus Meter and filter results by recent randomized controlled trials with high agreement levels."

Prompt 2: "Use Consensus to find expert consensus on 'Does remote work improve employee mental health?' Apply advanced filtering for systematic reviews from the last 3 years, and examine detailed study summaries and methodologies."

Prompt 3: "Ask Consensus to summarize the latest findings on 'The role of gut microbiota in anxiety disorders.' Explore diverse viewpoints, assess study quality with the Consensus Meter, and identify gaps for future research."

Prompt 4: "Explore Consensus for consensus evidence about 'Impact of climate change on mental health outcomes.' Narrow down results by epidemiological studies conducted after 2020 and those with more than 30 citations."

Prompt 5: "Utilize Consensus to compare conflicting research about 'Use of artificial intelligence in cancer diagnosis.' Analyze expert agreement levels, review conflicting summaries, and filter for experimental and clinical trial papers."

Program 13

Visualizing Research Connections with Litmaps (app.litmaps.com)

Litmaps, a visualization tool that simplifies understanding complex academic citation networks visually

Example: Enter your core research paper or DOI (Digital Object Identifier).

Explore the Visual Citation Map (Connected papers represented visually, indicating citation relationships clearly. Papers connected via arrows showing who cites whom).

Interactivity and Exploration: Click on any paper node to: Quickly see its abstract, authors, citations. Explore further connections expanding research context.

Refine the Map: Filter the visualizations by: Year, Citations, Keywords, Publication type

What are Litmaps?

Litmaps is a powerful tool that helps you visually explore how academic papers are connected through citations. It shows you which papers cite each other, helping you understand the research landscape more easily.

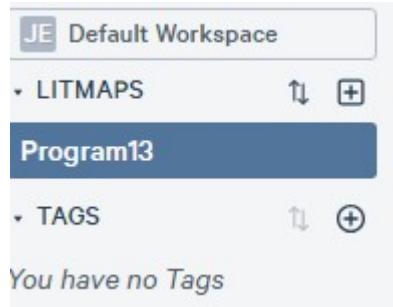
Step-by-Step Procedure to create bitmap

Step 1: Go to Litmaps

- Open your web browser and go to: <https://app.litmaps.com>
- Sign up or log in with your email, Google, or university account.

Step 2: Start a New Map

- Click on “New Litmap” or “Create Map”.
- Give your map a name (e.g., "Climate Change Research").



Step 3: Add a Core Paper

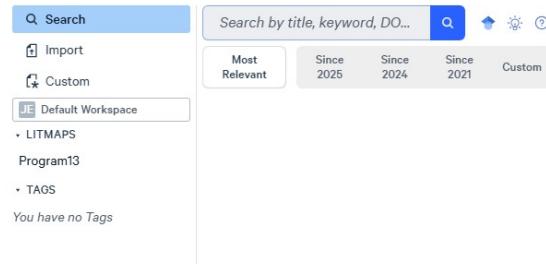
- Click on “Add Paper” or the “+” icon.
- Enter a DOI (Digital Object Identifier), title, or keywords for your main research paper.
 - Example: 10.1016/j.jclepro.2020.123456
- Litmaps will find the paper and add it to your map.

This Litmap is Empty

Add one or more articles to get started.

[Add Articles](#)

Add Articles to Litmap

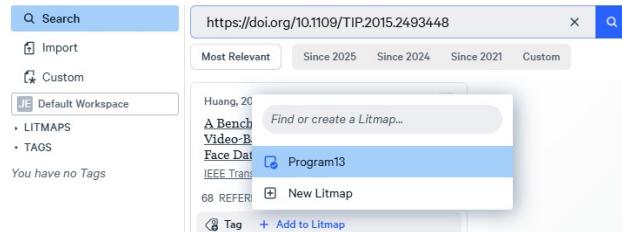


- Paste the DOI/title/keyword of the paper in the search bar and click on search.
- Click on Add to Litmap and select the Litmap you have created.

Add Articles to Litmap



Add Articles to Litmap



Step 4: Explore the Visual Citation Map

- Litmaps will display a visual network (map) of papers:
 - Arrows show citation direction (who cites whom).
 - Nodes (dots or bubbles) represent research papers.
- Click on a node to see:

- Abstract
- Authors
- Citations
- Publication info



Step 5: Expand the Network

- Click on a paper to “Add Citations” or “Add References”.
 - This shows papers that cite it or are cited by it.
- You can expand multiple layers to explore deeply.

Step 6: Filter and Refine

Use the filtering tools on the side:

- Year: See papers from a specific time period.
- Number of Citations: Focus on more influential papers.
- Keywords: Narrow down to specific topics.
- Publication Type: Choose between journal articles, conference papers, etc.

Step 7: Interact with the Map

- Drag and move nodes to organize your map.
- Click nodes to read summaries.
- Save your map to come back to it later.
- You can export the list of papers for referencing in your literature review.

Additional prompts on program 13

Visualizing Research Connections with Litmaps (app.litmaps.com) Litmaps, a visualization tool that simplifies understanding complex academic citation networks visually Example: Enter your core research paper or DOI (Digital Object Identifier). Explore the Visual Citation Map (Connected papers represented visually, indicating citation relationships clearly. Papers connected via arrows showing who cites whom). Interactivity and Exploration: Click on any paper node to: Quickly see its abstract, authors, citations. Explore further connections expanding research context. Refine the Map: Filter the visualizations by: Year, Citations, Keywords, Publication type

Additional Prompts

Prompt 1: "Create a literature map on 'machine learning applications in healthcare' using a core set of key papers. Visualize citation links, highlight the most cited papers by clustering, and tag papers by subtopics like diagnostics, treatment, and data privacy."

Prompt 2: "Use Litmaps to analyze the citation network for a specific researcher's publications. Explore how their work influenced subsequent studies, identify their most impactful papers, and find recent studies building on their findings."

Prompt 3: "Build a Litmap around your thesis topic on 'climate change adaptation strategies.' Filter papers by publication year to focus on the latest decade, highlight meta-analyses, and label clusters associated with different ecosystems or geographical regions."

Prompt 4: "Apply keyword filtering in Litmaps to trace how the concept of 'sustainable urban planning' has evolved over time. Identify research gaps by spotting isolated nodes in the network with few citations or connections."

Prompt 5: "Use Litmaps' Monitor feature to track new publications related to 'neurodegenerative diseases.' Set alerts for papers citing your core articles and visualize emerging research trends monthly with customized tags."

Program 14

Explore how Generative AI can be applied in education to enable personalized learning experiences and support learners across various tasks. Use AI Tools such as Khanmigo, Question Well (For generating questions aligned to standards) or Diffit (For creating differentiated instructional materials).

- **Example Prompt 1:**
 - “Act as a backend software development interviewer. Ask questions about JavaScript, React, Node.js, SQL, AWS, and System Design. Provide feedback based on a rubric.”
- **Example Prompt 2:**
 - “Act as a Python Developer. Create a learning plan for someone transitioning from another programming language. Ask clarification questions before proceeding.”
- **Example Prompt 3:**
 - "Provide constructive feedback on the student's answer based on the rubric. Mention 2 strengths, 2 areas for improvement, and suggestions. Use a positive tone." Tools You Can Explore: Brisk (Chrome extension for Google Docs), MagicSchool.ai (AI assistant for teachers)."

How Generative AI Enables Personalized Learning

- **Personalized Learning Paths:** Students receive content and support tailored to their pace and level.
- **Teacher Efficiency:** AI handles repetitive tasks like quiz creation and content adaptation.
- **Inclusive Education:** Tools like Diffit ensure all students, regardless of ability, can access meaningful learning materials.
- **Khanmigo (by Khan Academy):**
 - Acts as a tutor and teaching assistant powered by AI.
 - Supports students with step-by-step guidance in subjects like math, science, and humanities.
 - Helps teachers by generating lesson plans, quizzes, and feedback tailored to student needs.
- **Question Well:**
 - Generates standards-aligned questions for assessments and practice.

- Teachers can select the grade level, subject, and learning objectives to get customized question sets.
- Integrates with platforms like Google Forms and Quizizz for seamless deployment.
- **Diffit:**
 - Creates differentiated instructional materials based on student reading levels and learning styles.
 - Teachers can input a topic or article, and Diffit produces versions suited for various learners (e.g., beginner, intermediate, advanced).
 - Includes summaries, vocabulary support, and comprehension questions.

Backend Software Developer Interview (Structured)

This interview covers key backend areas: **JavaScript**, **React (backend context)**, **Node.js & Express**, **SQL**, **AWS**, and **System Design**.

Core Interview Questions

1. JavaScript

- Difference between var, let, const – scope and hoisting.
- Explain the JavaScript Event Loop; its importance in Node.js for non-blocking I/O.

2. React (Backend perspective)

- Significance of the key prop when rendering lists in React; issues with array index as key.

3. Node.js & Express

- Role of middleware, example of custom middleware function.
- Evolution of asynchronous handling – callbacks, Promises, async/await; benefits.

4. SQL

- Concept of database normalization; when denormalization is suitable.
- SQL Query: Employees with salary > department average (using EmployeeID, Name, DepartmentID, Salary).

5. AWS

- Three essential AWS services for backend deployment and their role.
- Difference between Amazon SQS and SNS; which to use in microservices.

6. System Design

- Design a URL shortening service (Bitly): key functional and non-functional requirements, core components, and main API endpoint.
-

Example Post-Interview Rubric & Feedback

1. JavaScript

Candidate successfully explained variable scope/hoisting and the Event Loop's role in Node.js.

2. React

Showed understanding of key prop's importance and pitfalls of using index as key.

3. Node.js & Express

Solid grasp of middleware and async evolution; explained readability and flow of async/await.

4. SQL

Good explanation of normalization vs. denormalization. SQL query correctly compared employee salary to department average.

5. AWS

Identified EC2/Lambda, RDS/DynamoDB, S3, API Gateway as core backend services. Differentiated SQS (queue, guaranteed delivery) and SNS (pub/sub, notifications) well.

6. System Design

Clarified requirements and outlined API Gateway, Service, Key Generation, NoSQL database.

Feedback

- *Strengths:*
 - Excellent understanding of the Event Loop (Node.js concurrency).
 - Articulate comparison of SQL normalization/denormalization.
 - Clear differentiation between SQS/SNS; structured system design.
- *Areas for Improvement:*
 - Could discuss specific async primitives (e.g. `process.nextTick` vs. `setImmediate`) for deeper Event Loop mastery.
 - Advanced SQL: Discuss indexing strategies for performance with large datasets.
- *Suggestions:*
 - Build a sample service with Python's `asyncio` and deploy with FastAPI.

- Always consider indexes and query plans for SQL optimization.
-

Python Learning Plan (for an Intermediate Java Developer, Backend Focus)

Phase 1: Python Fundamentals & The Pythonic Way (1-2 Weeks)

- Setup: Python 3, pip, virtual environments.
- Data structures: lists, tuples, dicts, sets.
- Control Flow: if/elif/else, for loops, function definitions.
- Pythonic idioms: list comprehensions, generators, docstrings, PEP 8.
- OOP: self, duck typing, properties.

Phase 2: Asynchrony & Standard Library (2-3 Weeks)

- Async with async/await, asyncio library.
- File I/O, JSON/CSV parsing, context managers.
- Exceptions (try/except/finally).
- Libraries: requests, logging.
- Package management: pip, requirements.txt.

Phase 3: Web Frameworks & Databases (3-4 Weeks)

- Frameworks: Django (full-stack), Flask, FastAPI (microservices).
- Django: MVT, ORM, routing, forms.
- REST APIs: Django REST, FastAPI.
- Database: SQLAlchemy if outside Django ORM, managing connections/transactions.

Phase 4: Deployment & Ecosystem (Ongoing)

- Production: WSGI/ASGI servers (Gunicorn, uWSGI).
- Containerization: Docker.
- CI/CD: unittest, pytest, linters (Flake8, Black).
- Backend tools: Redis, Memcached (caching), Celery (task queues).

Suggested Strategy

- Compare Python/Java constructs (list vs. ArrayList, dict vs. HashMap).
- Start with Pythonic projects (list comprehensions, context managers).
- Move into Django/FastAPI after mastering basics.

Additional prompts on program 14

Explore how Generative AI can be applied in education to enable personalised learning experiences and support learners across various tasks. Use AI Tools such as Khanmigo, QuestionWell (For generating questions aligned to standards) or Diffit (For creating differentiated instructional materials).

- Example Prompt 1: "Act as a backend software development interviewer. Ask questions about JavaScript, React, Node.js, SQL, AWS, and System Design. Provide feedback based on a rubric."
- Example Prompt 2: "Act as a Python Developer. Create a learning plan for someone transitioning from another programming language. Ask clarification questions before proceeding."
- Example Prompt 3: "Provide constructive feedback on the student's answer based on the rubric. Mention 2 strengths, 2 areas for improvement, and suggestions. Use a positive tone."

Tools You Can Explore: Brisk (Chrome extension for Google Docs), MagicSchool.ai (AI assistant for teachers).

Additional Prompts

Prompt 1: Khanmigo Tutor Simulation:

"Act as a personalized AI tutor guiding a student struggling with calculus concepts, adapting explanations based on student responses and proposing interactive practice problems tailored to their skill level."

Prompt 2: QuestionWell Standards-Aligned Question Generation:

"Generate a set of 5 multiple-choice questions aligned with Common Core standards on the topic of fractions for 5th-grade students, varying in difficulty and including detailed answer rationales."

Prompt 3: Diffit Differentiated Materials Creation:

"Create three versions of a reading comprehension passage with questions, tailored for beginner, intermediate, and advanced English learners, highlighting vocabulary scaffolding and question complexity."

Prompt 4: MagicSchool.ai Classroom Assistant:

"Provide an AI-generated weekly lesson plan for middle school science aligned to state standards, including suggested multimedia resources and formative assessment ideas optimized for diverse learner engagement."

Prompt 5: Brisk Feedback & Annotation:

"Review a student's essay on the causes of climate change using Brisk, and provide inline suggestions for improving clarity, organization, and grammar, along with a summary feedback paragraph."

VIVA Questions

PROGRAM 1 — Create High-Quality, Structured Course Content Using ChatGPT

1. What prompt did you use to generate your course content?
2. How did you specify the topic and target audience in your prompt?
3. What structure did ChatGPT follow in the generated lecture?
4. How do you include examples and summaries in the prompt?
5. Why is specifying tone (e.g., academic or beginner-friendly) important?
6. How can you use ChatGPT to generate assignments from your lecture content?
7. What was the difference between a short and a detailed prompt?
8. How do follow-up prompts refine generated content?
9. How did you prompt ChatGPT to include subheadings or sections?
10. What prompt created the quiz portion of your lecture?
11. How can ChatGPT help maintain consistency across multiple lessons?
12. What changes did you make when the output wasn't accurate?
13. How does prompt clarity affect factual correctness?
14. What are the limitations of using ChatGPT for academic lectures?
15. How do you cite or verify AI-generated content?
16. How can you use ChatGPT to generate both text and code examples?
17. What parameters improve readability in generated notes?
18. How does prompt engineering save time for educators?
19. What ethical issues arise when submitting AI-generated material?
20. How can you adapt the same prompt for another subject, e.g., History or Biology?

PROGRAM 2 — Demonstrate the Canvas Mode in ChatGPT

1. What is Canvas Mode in ChatGPT?
2. How does Canvas Mode differ from normal chat?
3. What types of edit prompts can be applied in Canvas Mode?
4. What prompt did you use to simplify your text?
5. How do “Make shorter” and “Summarize” differ?
6. What happens when you apply multiple edit prompts sequentially?

AI Tools and Applications(BCIL358C)

7. How does ChatGPT preserve formatting during edits?
8. What are the benefits of interactive editing through Canvas Mode?
9. How did you test prompts like “Add analogy here”?
10. What prompt gave the best clarity improvement?
11. Can you combine multiple instructions in one edit?
12. How does Canvas Mode support collaboration?
13. What challenges did you face during editing?
14. How can this feature help in report writing?
15. How can Canvas edits help polish student projects?
16. What prompt helped convert a paragraph to bullet points?
17. How did adding real-life examples improve comprehension?
18. How does the AI interpret vague prompts like “Improve this”?
19. What are ethical guidelines when editing academic work with AI?
20. How can Canvas Mode be used to refine research abstracts?

PROGRAM 3 — Demonstrate Use of Notion (Knowledge Management Platform)

1. What makes Notion ideal for managing AI-generated content?
2. What structure did you follow while organizing GPT output in Notion?
3. How does prompt design affect Notion page formatting?
4. How did you use GPT to prepare summaries for collapsible sections?
5. How do you create toggles in Notion for each subtopic?
6. How can prompts help you create tables or timelines for Notion?
7. What's the benefit of nested pages in academic documentation?
8. How can Notion help in collaborative note-taking?
9. What prompt style is best for generating concise section headings?
10. How did you make your Notion workspace visually appealing?
11. How can AI help generate database properties like tags or categories?
12. How do prompts aid in planning a semester schedule in Notion?
13. How can AI-generated notes be imported efficiently?
14. What's the difference between raw text and structured output for Notion?
15. How can Notion templates be enhanced with AI content?
16. What are the steps to export Notion pages for lesson delivery?
17. How does prompting improve readability of Notion databases?
18. What were your challenges when converting GPT text into Notion blocks?

19. How can Notion and ChatGPT work together for project tracking?
20. Why is it important to maintain structure and hierarchy when pasting AI-generated text?

PROGRAM 4 — Demonstrate Use of Canva Docs and Canva Magic Tools

1. How does Canva Docs differ from Google Docs?
2. What steps did you follow to transfer GPT content into Canva Docs?
3. What prompt helped you summarize your content?
4. How did you use Magic Write for rewriting?
5. How can prompts generate titles and headings for Canva Docs?
6. What features make Canva suitable for lesson formatting?
7. How can you prompt AI to suggest relevant images or icons?
8. What is the purpose of a “Key Takeaway” section?
9. How did you prompt Canva to create quiz questions?
10. How can Canva’s Magic Tools enhance visual storytelling?
11. How can AI assist in aligning text and visuals?
12. What kind of content formatting did you apply?
13. How did you ensure accessibility (mobile/print)?
14. What’s the difference between “Rewrite” and “Expand” in Magic Write?
15. How can prompts help adapt the same material for different age groups?
16. What features make Canva Docs dynamic and interactive?
17. How does Canva save time for educators?
18. How can Canva be used for student project reports?
19. What is the role of Magic Suggestions in design improvement?
20. How did you validate the AI content before finalizing the design?

PROGRAM 5 — Demonstrate Use of MagicSuite (Magic Write, Eraser, Replace, Transform)

1. What are the main tools in MagicSuite?
2. How does Magic Write differ from ChatGPT prompts?
3. What type of prompt produces effective rewriting?
4. How did you apply Magic Eraser to remove unwanted objects?

AI Tools and Applications(BCIL358C)

5. What's the process of replacing an image object in Canva?
6. How does Magic Transform help in changing formats?
7. What prompt did you use to expand a short paragraph?
8. How do AI tools handle grammar corrections automatically?
9. How can Magic Suite features improve academic posters?
10. How do you prompt Canva to simplify complex text?
11. How did AI help redesign your layout automatically?
12. What are possible issues with erasing copyrighted items?
13. How can Magic Transform export your work to presentations or PDFs?
14. What did you learn about content refinement using Magic Write?
15. How can prompts improve tone and style consistency?
16. How does Magic Eraser use context to fill background?
17. How can you instruct Magic Replace for creative object swaps?
18. What are some ethical limits of using Magic Tools?
19. How did Magic Transform save time during documentation?
20. What's the difference between rewriting for tone vs. rewriting for length?

PROGRAM 6 — Demonstrate Use of Gamma.app (AI-Powered Presentation Builder)

1. What is Gamma.app and its main purpose?
2. How does Gamma use AI to generate slides?
3. What prompt did you use to start your presentation?
4. How can prompts specify slide count and tone?
5. What edits did you perform after slide generation?
6. How do you ensure text and visuals align logically?
7. What are the advantages of AI slide builders over PowerPoint?
8. How can you prompt Gamma to add visuals automatically?
9. How does Gamma handle content hierarchy (title, body, summary)?
10. What is the effect of adding audience level in prompts?
11. How can Gamma save time in academic presentation design?
12. What prompt generated a real-world example slide?
13. How can you update slides with additional prompts later?
14. How can Gamma help summarize research papers?
15. How can you export or share AI-generated presentations?
16. What is the difference between prompt refinement and manual editing?

AI Tools and Applications(BCIL358C)

17. How can you prompt for a slide containing only visuals?
18. How did you evaluate the accuracy of your presentation content?
19. What are the limitations of AI-based presentation tools?
20. How can Gamma integrate with other AI apps like Notion or Canva?

PROGRAM 7 — Generate Questions from Content (CTRL Method)

1. What is the CTRL method in prompt engineering?
2. What types of questions can be generated using prompts?
3. How did you design your initial question-generation prompt?
4. What is the advantage of specifying question type in the prompt?
5. How do you control difficulty level through prompt design?
6. What prompt created the most accurate MCQs?
7. How can you ensure generated questions have correct answers?
8. How can you prompt AI to explain the correct answers too?
9. What are the challenges when using PDFs as a source?
10. How did you use web links for question generation?
11. How does including context improve question relevance?
12. What parameters ensure fairness and clarity in generated questions?
13. How can you prompt AI to create higher-order thinking questions?
14. What's the benefit of AI-assisted question generation for teachers?
15. How do you verify the accuracy of AI-generated questions?
16. How can AI prompts create both MCQs and descriptive questions?
17. How can you reuse the same prompt template for multiple subjects?
18. What's the difference between a vague and a precise question prompt?
19. How can the CTRL method reduce human bias in question papers?
20. How can students use this method for self-assessment and revision?

Program 8 Parsons Method Viva Questions

- 1) What is the Parsons Method used for?
- 2) In what types of structures is the Parsons Method applied?
- 3) What is the basic principle behind Parsons Method?
- 4) Is Parsons Method applicable to determinate or indeterminate structures?
- 5) How does the Parsons Method differ from the Moment Distribution Method?

- 6) Why do we need iterative methods like Parsons Method?
- 7) What are the assumptions made in Parsons Method?
- 8) Explain the compatibility condition used in Parsons Method.
- 9) What is the role of redundant forces in Parsons Method?
- 10) How is the initial moment distribution done in Parsons Method?
- 11) What is the correction moment in Parsons Method and why is it needed?
- 12) How many iterations are generally required for convergence in Parsons Method?
- 13) Explain the concept of convergence in the context of Parsons Method.
- 14) Is Parsons Method suitable for non-prismatic (variable cross-section) members?
- 15) List out the steps involved in solving a two-hinged arch using Parsons Method.
- 16) How are fixed-end moments calculated in Parsons Method?
- 17) What is meant by the carry-over factor?
- 18) How are distribution factors used in Parsons Method?
- 19) How would you check the accuracy of your final results?
- 20) What happens if the structure doesn't converge in Parsons Method? What would you do?

Program 9 a Quizizz Tool Viva Questions

- 1) What is Quizizz?
- 2) Is Quizizz a formative or summative assessment tool?
- 3) What type of questions can you create in Quizizz?
- 4) How is Quizizz different from Kahoot or Google Forms?
- 5) What is the maximum number of players allowed in a Quizizz game (free version)?
- 6) Can students use Quizizz without creating an account?
- 7) What types of question formats are supported by Quizizz?
- 8) Explain the use of memes in Quizizz.
- 9) What is the 'Teleport' feature in Quizizz?
- 10) Can you import questions from Excel or other quizzes in Quizizz?
- 11) How can you assign homework using Quizizz?
- 12) What is the difference between 'Live Quiz' and 'Homework Quiz' modes?
- 13) Can audio and images be added to the questions in Quizizz?
- 14) Which platforms/devices support Quizizz (mobile/PC/tablet)?
- 15) Can Quizizz work without the internet?
- 16) Is there a Quizizz app? What platforms is it available on?

- 17) What happens if a internet disconnects during a quiz?
- 18) Can AI tools assist in generating questions for Quizizz?
- 19) How would you use ChatGPT to prepare a quiz for Quizizz?
- 20) Can you automate quiz generation and uploading using APIs or tools?

Program 9 b Class marker Viva Questions

- 1) What is ClassMarker?
- 2) Who are the primary users of ClassMarker?
- 3) Is ClassMarker a free tool? What features are included in the free version?
- 4) What are the key advantages of using ClassMarker over traditional exams?
- 5) What types of assessments can be created in ClassMarker?
- 6) What question types does ClassMarker support?
- 7) Can you randomize questions and answer choices in ClassMarker?
- 8) Does ClassMarker support multimedia (images, audio, video) in questions?
- 9) Can you set time limits for individual questions or the entire test?
- 10) What is the purpose of assigning tests to groups or individuals?
- 11) Is ClassMarker mobile-friendly? Can it be used on phones and tablets?
- 12) Does ClassMarker integrate with Learning Management Systems (LMS)?
- 13) Can test results be exported from ClassMarker? In which formats?
- 14) Is ClassMarker suitable for high-stakes testing? Why or why not?
- 15) What browsers or technical requirements does ClassMarker recommend?

Program 9 c Formative Viva Questions

- 1) What is formative assessment?
- 2) How is formative assessment different from summative assessment?
- 3) What is the primary purpose of formative assessment?
- 4) Who benefits more from formative assessment
- 5) Is grading essential in formative assessment?
- 6) What are the key features of effective formative assessment?
- 7) How often should formative assessments be conducted?
- 8) What role does feedback play in formative assessment?
- 9) Can formative assessment be informal? Give an example.
- 10) What is the relationship between formative assessment and learning outcomes?
- 11) Name any three tools used for formative assessment.

- 12) How can rubrics support formative assessment?
- 13) What is the role of questioning in formative assessment?
- 14) Can online tools like Quizizz, Kahoot, or Google Forms be used for formative assessment?
- 15) Describe a method of peer-assessment in a formative setting.

Program 9 d Google Forms Viva Questions

- 1) What is Google Forms?
- 2) Is Google Forms free to use?
- 3) What are the primary uses of Google Forms?
- 4) How does Google Forms integrate with other Google Workspace apps?
- 5) Can Google Forms be used offline?
- 6) How do you create a new Google Form?
- 7) What types of questions can you add in Google Forms?
- 8) How do you add images or videos to a form?
- 9) Can you customize the theme or appearance of a Google Form?
- 10) How do you add sections to the Google Form?
- 11) How do you turn a Google Form into a quiz?
- 12) What settings allow automatic grading in Google Forms?
- 13) Can you assign point values to individual questions?
- 14) How can you provide feedback for correct or incorrect answers?
- 15) Is it possible to shuffle questions or answer options?
- 16) How do you share a Google Form with respondents?
- 17) Can you restrict who can respond to a form? How?
- 18) Is it possible to collaborate with others when building a form?
- 19) Can respondents edit their responses after submitting?
- 20) How do you close or disable a Google Form?

Program 10 AI-Driven Research Ideation

- 1) What is AI-driven research ideation?
- 2) How can Artificial Intelligence assist in generating research ideas?
- 3) What are the advantages of using AI tools in the early stages of research?
- 4) What's the difference between AI-assisted and human-generated research ideas?
- 5) Is using AI in research ideation ethical? Why or why not?

AI Tools and Applications(BCIL358C)

- 6) Name some AI tools that can help in research ideation.
- 7) Have you used tools like ChatGPT, Elicit, or Scite for your research? Explain how.
- 8) How do language models (like GPT) help in brainstorming research questions?
- 9) What AI-based tools can be used for literature review and knowledge synthesis?
- 10) What is the role of NLP (Natural Language Processing) in AI-driven research ideation?
- 11) How can a AI be used selecting research topic?
- 12) How did AI help you refine or narrow down your research question?
- 13) Did you cross-check the ideas suggested by AI? If so, how?
- 14) Can AI identify gaps in existing research? How reliable is it?
- 15) How do you ensure that your AI-asisted research idea is original

Program 11 Elicit Viva Questions

- 1) What is Elicit and who developed it?
- 2) What type of AI model does Elicit use?
- 3) What is the primary purpose of Elicit in research?
- 4) How is Elicit different from ChatGPT or Google Scholar?
- 5) Is Elicit free to use for academic researchers?
- 6) What are the key features of Elicit?
- 7) How does Elicit help in finding relevant research papers?
- 8) What does the “Find Papers” feature do in Elicit?
- 9) How does Elicit summarize academic papers?
- 10) Can Elicit extract methodology or sample size from studies?
- 11) How can Elicit help in generating research questions?
- 12) Can Elicit identify gaps in the literature?
- 13) Have you used Elicit to refine your research topic? If so, how?
- 14) How reliable are the suggestions given by Elicit?
- 15) What are the limitations of using Elicit for ideation?
- 16) How do you use Elicit to conduct a literature review?
- 17) Can Elicit help identify conflicting results in the literature?
- 18) How accurate is Elicit in summarizing abstracts and conclusions?
- 19) How do you verify the quality of papers found through Elicit?
- 20) Can Elicit help extract key variables or themes from studies?

Program 12 Quick Expert Viva Questions

- 1) What is Quick Expert Infotech?
- 2) What services does Quick Expert offer?
- 3) Is Quick Expert only for IT training or does it provide placement assistance too?
- 4) Where is Quick Expert Infotech based?
- 5) Name some popular courses offered by Quick Expert.
- 6) What technologies have you learned from Quick Expert?
- 7) What was the duration of your course?
- 8) Did your course include real-time projects or hands-on practice?
- 9) Was soft skills or interview preparation part of the training?
- 10) Which course module did you find most challenging and why?

Program 13 Litmaps Viva Questions

- 1) What is Litmaps?
- 2) How does Litmaps help researchers?
- 3) What are the main features of Litmaps?
- 4) Is Litmaps free or subscription-based?
- 5) Which academic fields benefit most from Litmaps?
- 6) How do you create a map of literature in Litmaps?
- 7) What is the role of citation networks in Litmaps?
- 8) How can Litmaps help identify key papers and influential authors?
- 9) Can Litmaps show the evolution of research topics over time?
- 10) How do you add or remove papers in Litmaps project?
- 11) What is the 'follow papers' feature in Litmaps?
- 12) How does Litmaps suggest related papers?
- 13) Can you export data or maps from Litmaps?

- 14) How does Litmaps integrate with reference managers like Zotero or Mendeley?
- 15) What filters are available to refine search results in Litmaps?
- 16) How does Litmaps differ from traditional literature search tools like Google Scholar?
- 17) Compare Litmaps with Connected Papers or Research Rabbit.
- 18) Can Litmaps be used alongside AI tools like ChatGPT or Elicit?
- 19) How useful is Litmaps for interdisciplinary research?
- 20) What is your opinion on the accuracy of Litmaps' recommendations?

Program 14 Generative AI Viva Questions

- 1) What is Generative AI?
- 2) How is Generative AI different from Discriminative AI?
- 3) What are some common applications of Generative AI?
- 4) Name popular models used in Generative AI.
- 5) What are the key components of a Generative Adversarial Network (GAN)?
- 6) How do the GANs work?
- 7) What are Variational Autoencoders (VAEs)?
- 8) How does a Transformer architecture relate to Generative AI?
- 9) What is the difference between GPT and BERT?
- 10) What is the role of reinforcement learning play in Generative AI?
- 11) How is Generative AI used in text generation?
- 12) What is the use of Generative AI in image synthesis?
- 13) What is deepfake technology?
- 14) Can Generative AI be used in drug discovery? How?
- 15) How is Generative AI impacting creative industries like music and art?
- 16) What are the ethical issues associated with Generative AI?
- 17) How can Generative AI contribute to misinformation or fake news?
- 18) What measures can be taken to detect AI-generated content?
- 19) What are the potential biases in Generative AI models.
- 20) What are the risks of overfitting in generative models?