Portfolio content guide questions

1. Concepts and Definitions of Information Systems: Data, Information, and Knowledge

- **Guide Questions:**
  - What differentiates data, information, and knowledge?
  - How does data transform into information and subsequently into knowledge?
  - What are examples of data, information, and knowledge in real-world scenarios?

2. Areas of the Computer Science Discipline

- **Guide Questions:**
  - What are the main areas of Computer Science?
  - How do these areas contribute to technology and society?
  - What skills or knowledge are unique to each area?

3. Various Uses of Computer Systems in the Modern World

- **Guide Questions:**
  - What are the main uses of computer systems in different industries?
  - How have computers revolutionized work and daily life?
  - What are the potential future uses of computers in emerging fields?

4. Algorithm, Pseudocode, and Flowcharting

- **Guide Questions:**
  - What is the purpose of algorithms in problem-solving?
  - How do pseudocode and flowcharts aid in programming?
  - What are the differences between pseudocode and flowcharts?

5. Concept of Number Systems

- **Guide Questions:**
  - What are the common number systems used in computing?
  - How do conversions between binary, decimal, and hexadecimal work?
  - Why is the binary system essential for computers?

6. Software and Application Concepts: General and Specific Purpose Software

- **Guide Questions:**
  - What is the difference between general-purpose and specific-purpose software?
  - How do they cater to different user needs?
  - What are examples of each type?

7. Computer Hardware Concepts: IPOS Devices, Internal and External Parts

- **Guide Questions:**
    - What are the main components involved in the Input-Process-Output-Storage (IPOS) cycle?
    - How do internal and external hardware components support computing?
    - What are the functions of each component?

8. Software Application Types: Utilities

- **Guide Questions:**
    - What are utility software types and their purposes?
    - How does each utility software contribute to system maintenance and security?
    - What are examples of antivirus, backup, file compression, and productivity apps?

9. Basic Concepts and Definitions of Data and Database

- **Guide Questions:**
    - What is the purpose of a database, and how is it structured?
    - How does data storage differ between traditional files and databases?
    - What are the advantages of using databases?

10. Basic Concepts of Computer Networks: Topology, Scope, Types, and Tools

- **Guide Questions:**
    - What are different network topologies, and where are they used?
    - How do network types vary (e.g., LAN, WAN)?
    - What tools are commonly used in networking?

11. Security, Ethics, and Privacy: IT Code of Ethics

- **Guide Questions:**
    - What are common ethical concerns in IT?
    - How do security and privacy considerations impact technology use?
    - What is the purpose of the IT Code of Ethics?

12. HTML Programming

- **Guide Questions:**
    - What is the structure of an HTML document?
    - How are HTML tags used to structure content on a webpage?
    - What are common HTML tags?

13. CSS Programming

- **Guide Questions:**
    - How does CSS enhance HTML?
    - What are the main components of CSS syntax?
    - How can CSS be applied to improve the look and feel of web pages?

14. Future of Computing: Generative AI and Data Analytics

- **Guide Questions:**
    - What is Generative AI, and how does it differ from traditional AI?
    - How are data analytics transforming industries?
    - What ethical considerations are associated with AI?

Non creative output version

1. Essay or blog content with 300-500 words
    - Describe a situation where data is collected and transformed into knowledge. Explain each transformation stage.
2. Essay or blog content with 300-500 words
    - Choose two areas within Computer Science (e.g., Artificial Intelligence, Cybersecurity) and discuss their importance and applications.
3. Essay or blog content with 300-500 words
    - Select an industry (e.g., healthcare, finance) and explore the role of computer systems within it.
4. Essay or blog content with 300-500 words
    - Create a simple pseudocode and flowchart for a real-life scenario, like a vending machine transaction.
5. Essay or blog content with 300-500 words
    - Demonstrate the steps to convert a decimal number (e.g., 25) into binary and hexadecimal.
6. Essay or blog content with 300-500 words
    - Compare general-purpose software (e.g., MS Word) with specific-purpose software (e.g., payroll software) in terms of features and use cases.
7. Essay or blog content with 300-500 words
    - Create a labeled diagram showing IPOS devices and describe the function of each component.
8. Essay or blog content with 300-500 words
    - Provide an overview of three different utility applications and their benefits (e.g., antivirus software, backup software).
9. Essay or blog content with 300-500 words
    - Describe how a student information database can be organized and what data fields it may contain.

10. Essay or blog content with 300-500 words
    - Explain different network topologies (e.g., star, mesh) and their advantages.
11. Essay or blog content with 300-500 words
    - Discuss an ethical issue in IT (e.g., data privacy) and how the IT Code of Ethics addresses it.
12. Essay or blog content with 300-500 words
    - Create a simple HTML structure for a personal webpage including headings, paragraphs, and lists
13. Essay or blog content with 300-500 words
    - Write a CSS style sheet to style a webpage with specific colors, font sizes, and layouts.
14. Essay or blog content with 300-500 words
    - Explain the potential impact of Generative AI in a field like healthcare or education and discuss any ethical concerns

Creative output version

1. Concepts and Definitions of Information Systems: Data, Information, and Knowledge

- **Creative Sample Output Prompt:** Create a visual infographic that illustrates the transformation process from data to information to knowledge, using an example from daily life (e.g., weather data to forecast insights). Include a brief description of each stage.

2. Areas of the Computer Science Discipline

- **Creative Sample Output Prompt:** Design a mind map that shows the different areas of Computer Science (e.g., AI, Cybersecurity) with key concepts, career roles, and recent innovations. Add a brief description of each area to explain its impact on society.

3. Various Uses of Computer Systems in the Modern World

- **Creative Sample Output Prompt:** Choose an industry (e.g., healthcare, finance) and create a storyboard showing how computer systems are used throughout a workday. Illustrate specific applications, technologies, and benefits.

4. Algorithm, Pseudocode, and Flowcharting

- **Creative Sample Output Prompt:** Develop a flowchart for a real-life scenario, such as preparing a meal or planning a trip, and write the pseudocode to accompany each step. Add a short paragraph on how this process could be automated.

5. Concept of Number Systems

- **Creative Sample Output Prompt:** Create a poster that visually explains the steps of converting between decimal, binary, and hexadecimal. Include real-life examples of binary in computing (e.g., representing on/off states in a circuit).

6. Software and Application Concepts: General and Specific Purpose Software

- **Creative Sample Output Prompt:** Design a brochure comparing general-purpose software with specific-purpose software. For each, include at least two examples, list features, and add real-world user testimonials for added creativity.

7. Computer Hardware Concepts: IPOS Devices, Internal and External Parts

- **Creative Sample Output Prompt:** Build a 3D model (digital or physical) of a computer system highlighting IPOS components, including both internal and external parts. Label each part and create a short guide on how it contributes to the IPOS process.

8. Software Application Types: Utilities

- **Creative Sample Output Prompt:** Create a "User's Guide" booklet for utility software applications like antivirus, backup, and productivity apps. Include sections on how to use each type, key benefits, and a troubleshooting FAQ.

9. Basic Concepts and Definitions of Data and Database

- **Creative Sample Output Prompt:** Design an illustrated database schema for a small library, showing data tables (e.g., books, authors, members). Write a short narrative that explains how the library staff would use this database to manage inventory.

10. Basic Concepts of Computer Networks: Topology, Scope, Types, and Tools

- **Creative Sample Output Prompt:** Create a network diagram of a small business showing topology (e.g., star, mesh) and network tools (e.g., routers, switches). Write a one-page scenario about how the network setup supports daily business operations.

11. Security, Ethics, and Privacy: IT Code of Ethics

- **Creative Sample Output Prompt:** Develop a comic strip illustrating a common ethical dilemma in IT (e.g., data privacy vs. public safety). Show how the IT Code of Ethics guides professionals in resolving the issue.

12. HTML Programming

- **Creative Sample Output Prompt:** Design a mini website prototype (HTML only) for a fictional community event. Create pages with headings, images, and links. Include a creative element like an “About Us” section or “Event Highlights” with descriptions.

13. CSS Programming

- **Creative Sample Output Prompt:** Build a style guide for a fictional company website. Include CSS styles for headings, buttons, and background colors, and provide a sample webpage mockup using the CSS styles for branding consistency.

14. Future of Computing: Generative AI and Data Analytics

- **Creative Sample Output Prompt:** Write a short science fiction story (1-2 pages) set 20 years in the future where Generative AI and data analytics are part of daily life. Describe a character's interactions with these technologies and address potential ethical issues.