Exam (Solution)

The exam consists of multiple-choice questions (MCQs), except for Exercise 3. The correct answer(s) to each question may include one, two, three, or four options, or possibly none.

(3 pts)

- **Exercise 1:**

Question 1: Identify the accurate statement(s) about writing an introduction in a computer science research paper or technical report.

(a) Begin with a strong hook (for example, a key statistic or a thought-provoking question related to the research problem) to engage the reader.

(b) An introduction should include a detailed explanation of all algorithms and methodologies used in the study.

(c) Reveal the entire conclusion in the introduction to maintain complete transparency.

(d) Provide context and introduce the main research problem or question that the study aims to address.

Question 2: Which statement(s) accurately describe the process of writing a conclusion in a computer science research paper or technical report?

(a) Summarize the main findings or contributions without repeating them word for word.

(b) Introduce new technical evidence or concepts never mentioned in the main body.

(c) A conclusion should introduce completely new ideas or topics not discussed in the research.

(d) Provide clear closure to the research problem or question posed in the introduction.

Question 3: Which of the following best describes writing an abstract for a research paper in computer science?

(a) Summarize the main findings, methodologies, and conclusions of the study in your own words.

(b) Include all code examples, algorithms, and technical details to ensure thoroughness.

(c) Identify the core concepts and outcomes, presenting them concisely and clearly.

(d) Write in-depth explanations of every technical term used in the paper.

(e) Provide a detailed review of related work and references cited in the paper.

(4 pts)

- **Exercice 2:**

Question 1: Which of the following best describes a CV for a computer science professional?

(a) Include personal information, work experience, and educational background, emphasizing relevant programming skills.

(b) A professional summary can be added to highlight key qualifications, including technical expertise and projects.

(c) Highlight skills relevant to the job you are applying for, such as proficiency in programming languages, tools, and software development methodologies.

(d) Focus primarily on listing the technologies you have used without providing any context or results.

(e) Include an extensive list of every course you've taken, even if it's not related to the job.

Question 2: Identify the accurate statement(s) regarding the structure of a computer science thesis.

(a) A thesis must include a title page, abstract, methodology, and references, with a focus on relevant algorithms and technologies.

(b) The methodology section explains the research approach in detail, including software tools, programming languages, and experimental setups.

(c) The thesis should avoid using any references to related work to maintain originality in your algorithm development.

(d) The conclusion section should repeat all the experimental results from the methodology section without offering any insights or recommendations.

Question 3: Which of the following best practices for creating computer science presentations are correct? (None)

(a) Slides should include as much detailed text as possible to ensure the audience has all the information.

(b) Diagrams and flowcharts should be avoided, as they complicate the slides and distract the audience from the key points.

(c) The introduction slide should focus only on your personal background, leaving the research objectives for later.

(d) Presentations should only include theoretical content and exclude practical examples or code to prevent confusion.

Question 4: Which of the following statement(s) about academic journal papers in computer science are correct?

(a) An academic journal paper should include an abstract, introduction, methodology, results, and references, with a clear focus on algorithms and experimental setups.

(b) Including accurate citations is essential for credibility, especially when referencing previous work on algorithms, frameworks, or technologies used.

(c) The results and discussion sections present and interpret the findings, including performance metrics, error analysis, and comparisons with existing approaches.

(d) The paper should avoid mentioning related research or comparing the results to other studies in the field.

(e) The methodology section should only describe the code implementation without explaining the theoretical background behind it.

(3 pts)

- **Exercice 3 :**

Question 1: Read the following paragraph about LLMs and summarize it in one sentence:

– "Large Language Models (LLMs) are types of AI that learn from a lot of text data. They are used for tasks like translating languages, answering questions, and writing articles. They work by predicting the next word in a sentence based on the context.".

Solution 1: LLMs are AI models trained on vast amounts of text data to perform tasks like translation, question answering, and text generation by predicting the next word in context.

Solution 2: Large Language Models (LLMs) utilize extensive text data to predict words in a sentence, enabling them to perform translation, text generation, and question answering.

Solution 3: LLMs are artificial intelligence models that learn from large text datasets to generate text, answer questions, and translate languages by predicting words based on context.

Solution 4: By analyzing vast amounts of text data, LLMs predict words contextually, making them effective for tasks such as writing, translation, and answering queries.

Solution 5: Large Language Models use deep learning to predict the next word in a sentence, allowing them to perform natural language processing tasks like translation, writing, and answering questions.

Question 2: Rewrite the following into a single, concise sentence:

– "Public key cryptography involves two keys—one that is publicly available to anyone and another that is kept secret and private. Data encrypted with the public key can only be decrypted using the corresponding private key.".

Solution 1: Public key cryptography uses a public key for encryption and a private key for decryption, ensuring secure communication.

Solution 2: In public key cryptography, data encrypted with a publicly available key can only be decrypted with its corresponding private key.

Solution 3: Public key cryptography secures communication by using a public key for encryption and a private key for decryption.

Solution 4: A public key encrypts data, while a private key decrypts it, forming the basis of secure public key cryptography.

Solution 5: Public key cryptography ensures security by allowing anyone to encrypt data with a public key, but only the private key holder can decrypt it.

(10 pts)

- **Exercise 4: LaTeX**

You are creating a LaTeX document that needs to include an image with a caption. A section you can reference later. And a way to display the percent % symbol correctly.

1. **Question - 1 -** Which LaTeX command is commonly used to include an image (e.g., `example.png`)? Solution is C
   A. `\picture{example.png}`

B. `\graph{example.png}`
C. `\includegraphics{example.png}`
D. `\include{example.png}`

2. **Question - 2 -** Which command do you use to label a section (e.g., "Introduction") for referencing later? Solution is B
   A. `\sectionref{sec:intro}`
   B. `\label{sec:intro}`
   C. `\reference{sec:intro}`
   D. `\makeLabel{sec:intro}`
3. **Question - 3 -** How do you display the percent symbol `%` in your PDF output? Solution is C
   A. %
   B. `%%`
   C. `\%`
   D. `\percent`
4. **Question - 4 -** Which environment is typically used to include and position an image *with a caption*? Solution is B

A	B	C	D
`\begin{picture}` ... `\end{picture}`	`\begin{figure}` ... `\end{figure}`	`\begin{graphic}` ... `\end{graphic}`	`\begin{imgfloat}` ... `\end{imgfloat}`

5. **Question - 5 -** Suppose you labeled your introduction. Which command would you use in your text to reference this label (so it appears as "Section X" in your output)? Solution is C
   A. `\label{sec:intro}`
   B. `\cite{sec:intro}`
   C. `\ref{sec:intro}`
   D. `\pageref{sec:intro}`