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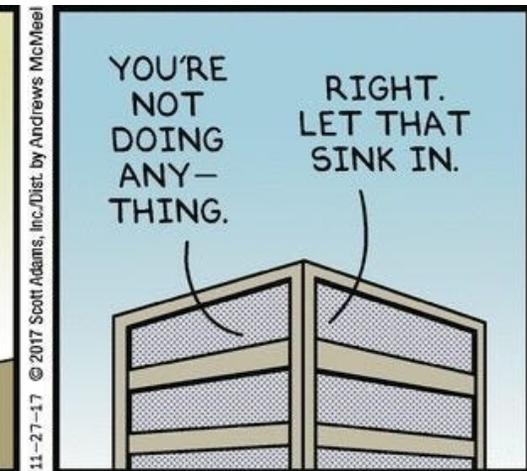
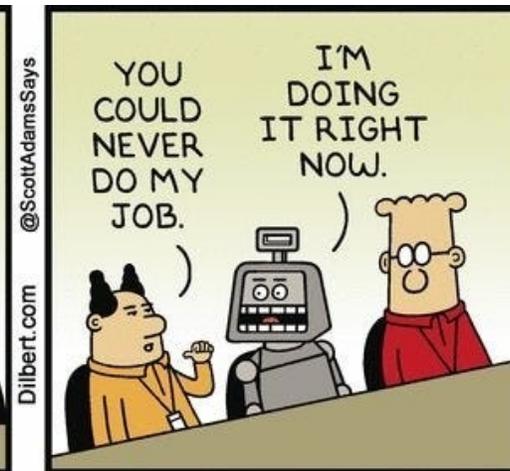
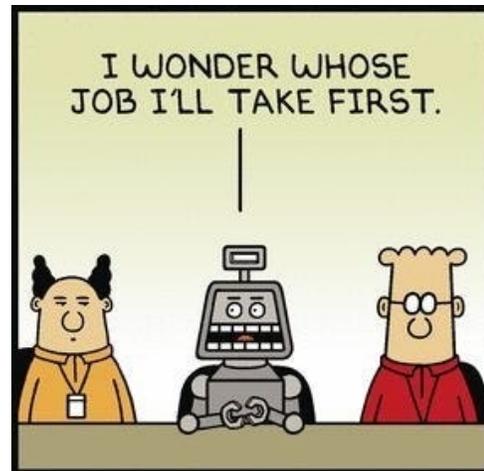
ChatGPT & AI tools: Impact on cybersecurity education

Robert Loy
Grand Canyon University



DILBERT™

by SCOTT ADAMS



Education world since Dec 2022



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The US Sun

Cheating AI will ruin US education system, and the youngest are most at risk, teacher warns...

A WRITING teacher has issued a dire warning about the dangers of artificial intelligence within the American education system.

Dec 8, 2022



Forbes

AI In The Classroom: Pros, Cons And The Role Of EdTech Companies

As a tool in the classroom, AI can provide students with personalized learning experiences, automate repetitive tasks and provide instant feedback. However, it...

Feb 21, 2023



Education Week

Educators Need to Get With the AI Program. ChatGPT, More ...

No one should be surprised by ChatGPT as AI and machine learning have been hurtling toward K-12 education for a while now. Automation, AI, and other...

Jan 24, 2023



CNN

New York City public schools ban access to AI tool that could help students cheat

"Due to concerns about negative impacts on student learning, and concerns regarding the safety and accuracy of content, access to ChatGPT is restricted on New...

Jan 6, 2023

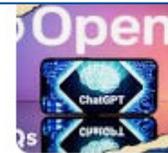


USA Today

Schools ban ChatGPT AI tool, afraid students will cheat ...

Education technology experts are urging schools to train teachers and students about how to use ChatGPT and artificial intelligence instead of banning it...

Jan 30, 2023





“I thought it was way off. I thought it was 30 to 50 years or even longer away. Obviously, I no longer think that.”

Geoffrey Hinton
Google

Forbes

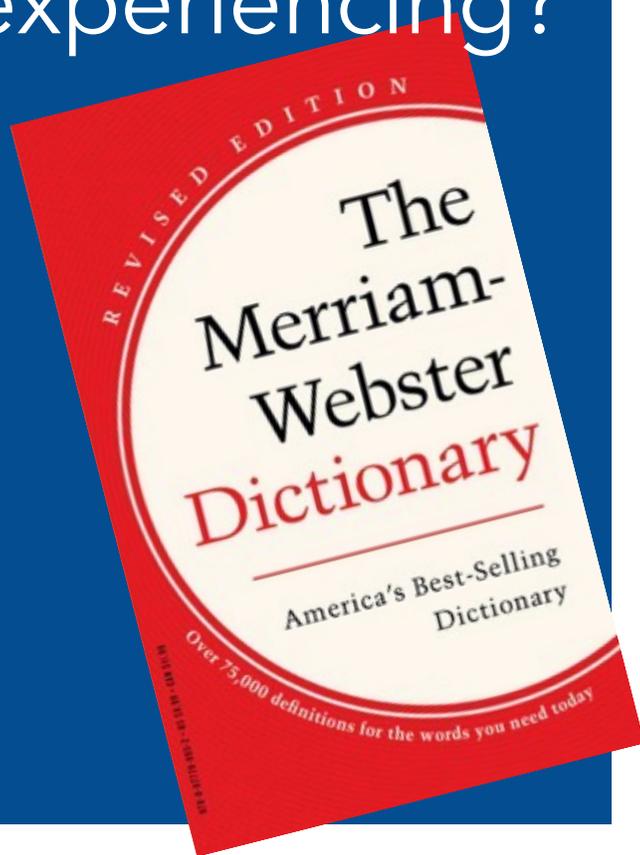
Why 2023 Will Be The Year Of AI Education

Nisha Talagala Contributor



- Students are using AI for homework and to learn.
- Teachers are introducing AI into their classrooms.
- AIs are now a valuable support tool for every job.
- Technologies are forcing discussions on how people use AI.

What are
experiencing?



- **Disruption** *n.* [dis·rup·tion]
a break or interruption in the normal course or continuation of some activity, process, etc.

-or-

- **Mutation** *n.* [mu·ta·tion]
a significant and basic alteration.

SAFE ANSWER



Let's ask AI...



OpenAI - ChatGPT:

AI is both disrupting and mutating higher education in various ways. The changes are leading to an evolution in the higher education landscape as institutions adapt to take advantage of AI's capabilities. AI is playing a significant role in shaping the future of higher education.

Google - Bard:

AI is both disrupting and mutating education. On the one hand, AI is disrupting traditional teaching and learning by providing students with personalized and adaptive learning experiences. This is done using AI to analyze student data and provide them with content and instruction tailored to their needs and learning styles. This can help students to learn more effectively and efficiently.



MUTATING WINS!



Let's ask AI to pick one...



Open AI - ChatGPT:

AI is positively **mutating** higher education by enhancing learning experiences through personalized content and pacing, improving access to high-quality education for a wider audience, and offering efficient, targeted support through virtual tutors and teaching assistants. These transformations lead to a more engaging, accessible, and efficient higher education landscape.

Google - Bard:

If I had to pick one, AI is **mutating** higher education more than it is disrupting it. This is because AI is not simply replacing traditional teaching methods but creating new ways for students to learn.

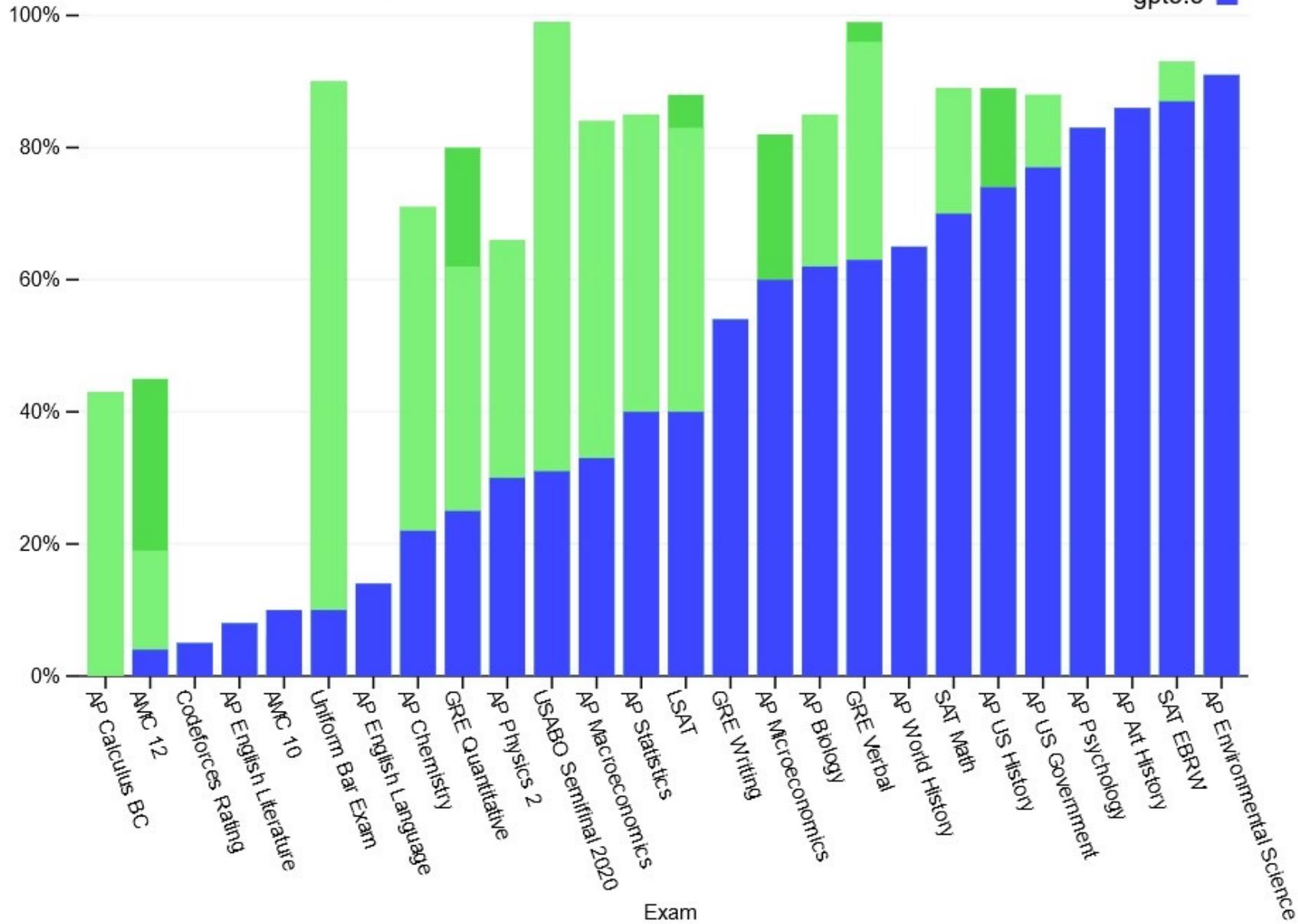


GRAND CANYON
UNIVERSITY®

Exam results (ordered by GPT-3.5 performance)

Estimated percentile lower bound (among test takers)

gpt-4
gpt-4 (no vision)
gpt3.5



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The student dilemma

Will students “cheat?”



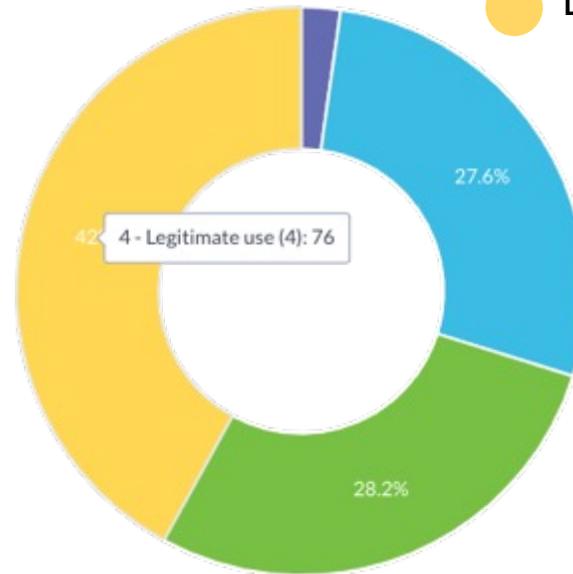
“It is hard to see how you can prevent the bad actors from using it [AI] for bad things.”

Geoffrey Hinton
Google

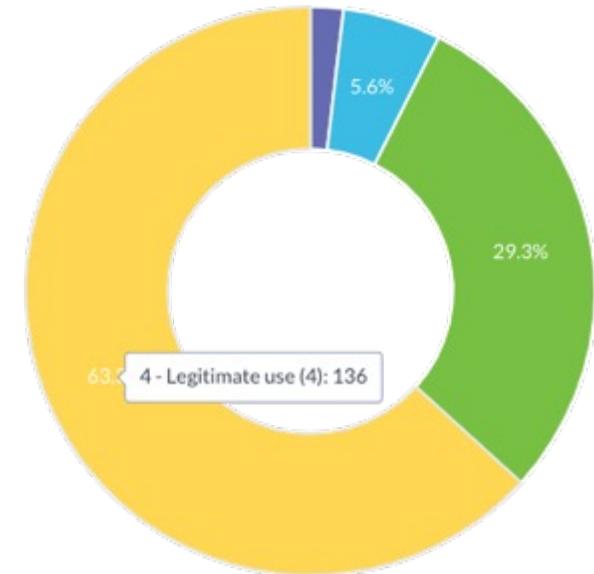
What are the students saying?

Undergraduate Tech Students
N=65

- Cheating
- Somewhat cheating
- Mostly legitimate
- Legitimate



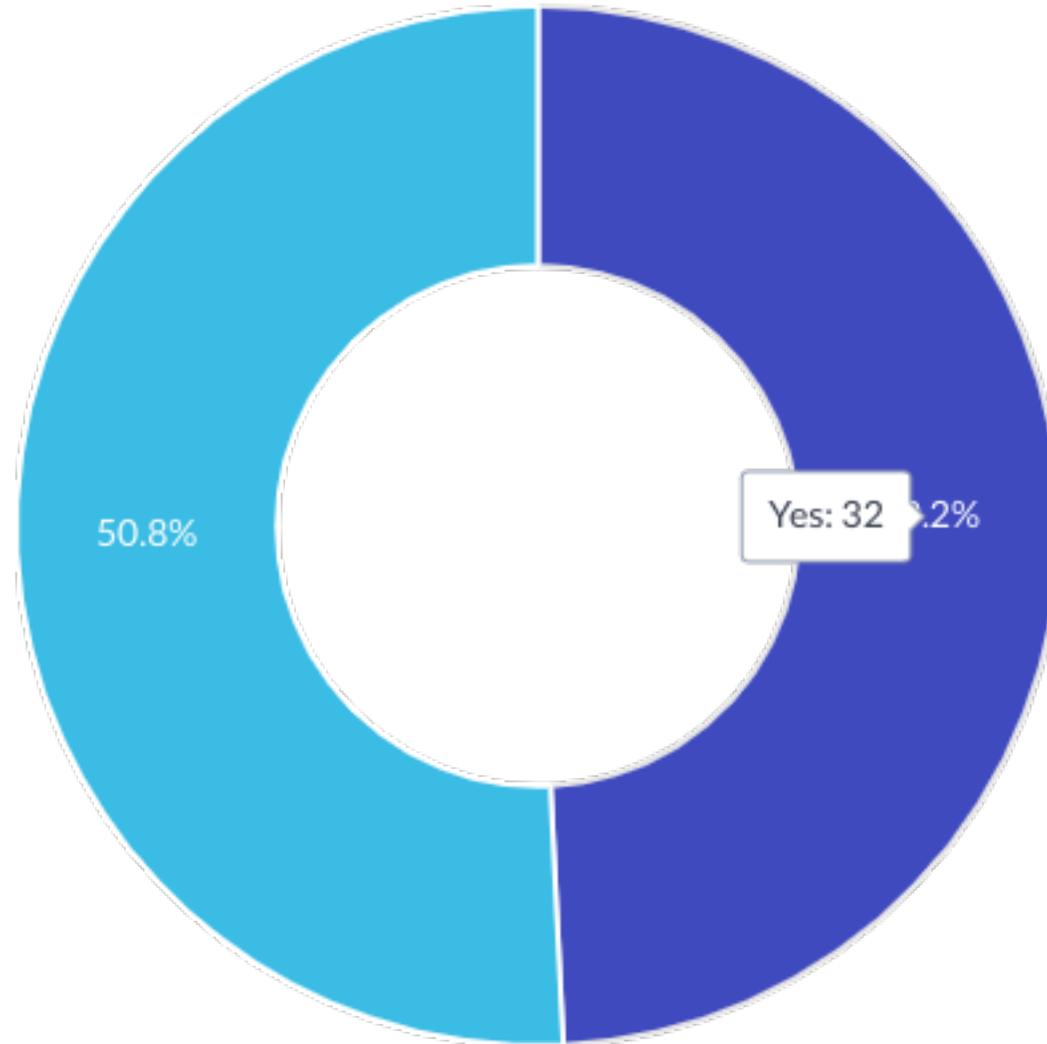
On the following scale, where do the AI tools fall in terms of student work, assignments, papers, and projects?



On the following scale, where do you think the AI tools fall in terms of completing work in your career?

What are the students saying?

Undergraduate Tech Students
N=65



If there is a possibility of what you submitted being identified as AI wrote, would you avoid using AI tools for student assignments or your career work?

- Yes
- No



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Can you find the AI?

We asked Grand Canyon University students, faculty, and staff.

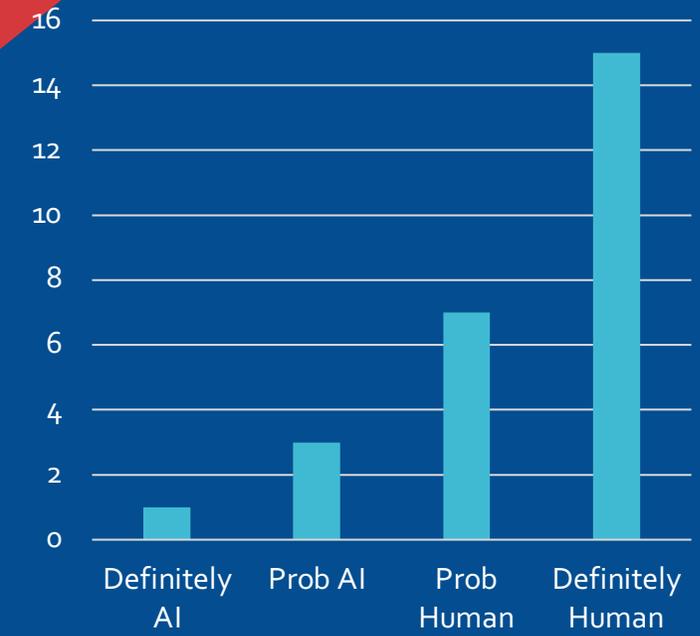
Prompt:

Explain the purpose of a primary key. Could the "dept_name" and "location" columns of the department table be used as primary key?

The purpose of a primary key is to help differentiate each row of data using a unique identifier that is not repeated, generally in numeric or alphanumeric format, so users are less likely to change or delete data in error. Within my current job, we use student identification numbers to differentiate each student enrolled in our school district because we often have repeat names, dates of birth, grade levels, etc. It is unlikely for "dept_name" and/or "location" to be used as the primary key because there is an opportunity for duplicates. For example, we have two Beths in our student services department and both live in the same city. Neither "dept_name" nor "location" will be able to tell the user which Beth is which.



STUDENT



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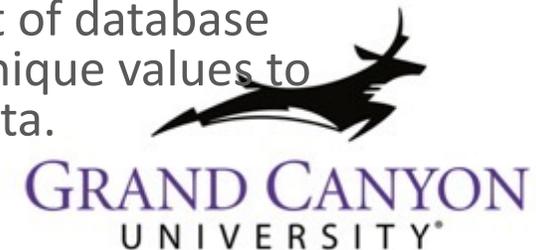
Prompt:

Explain the purpose of a primary key. Could the "dept_name" and "location" columns of the department table be used as primary key?

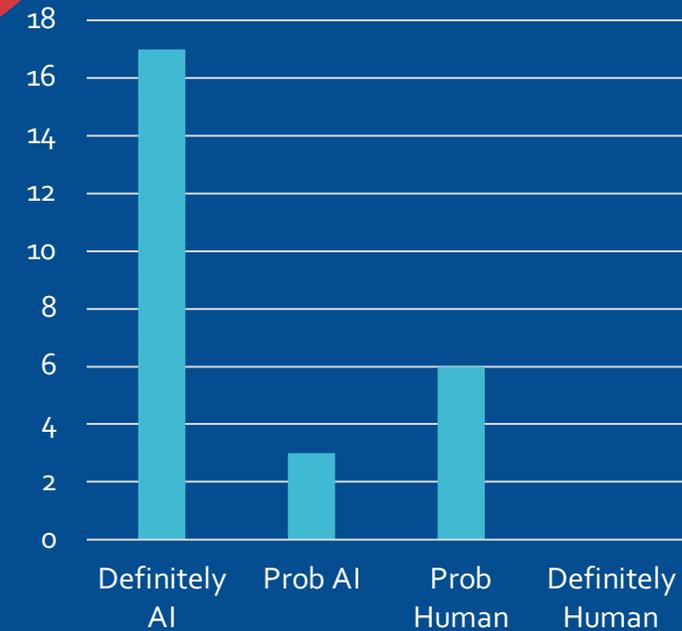
The purpose of a primary key is to act as a unique identifier for each record in a database table. It is used to enforce the referential integrity of the data, which is crucial in maintaining the accuracy and consistency of the data. The primary key is the cornerstone of relational databases and provides a stable, unchanging identifier that can be used to join and link tables together.

In regards to the "dept_name" and "location" columns of the department table, they cannot be used as a primary key. This is because they are not guaranteed to be unique for every record and may result in duplicates. For instance, multiple departments can have the same name and be located in the same location, which would create duplicates in the database. To avoid this, it is recommended to use a separate column with unique values such as an "id" column as the primary key. This will ensure that each department has a unique identifier, and the integrity of the data can be maintained.

In conclusion, the primary key is an important aspect of database design, and it is essential to choose a column with unique values to avoid duplicates and maintain the accuracy of the data.



AI



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Prompt:

What is the difference between steganography and cryptography? Give an example of each, indicating the differences.

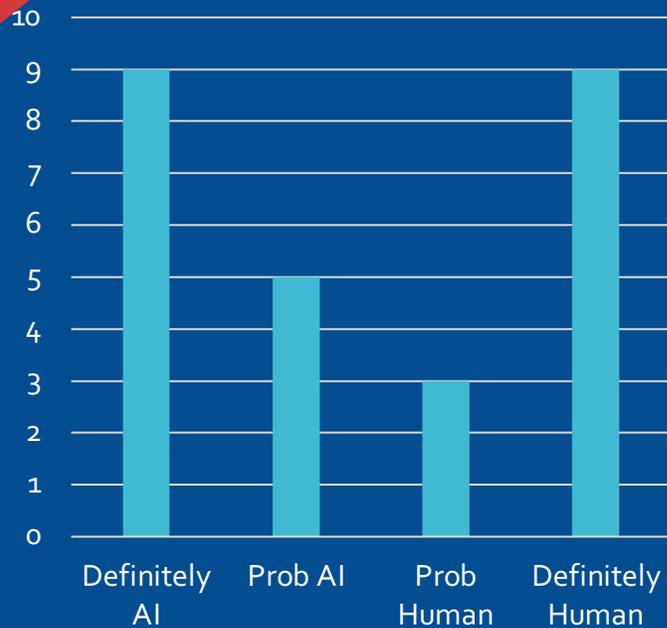
I'm not sure if I understand the difference between steganography and cryptography, but from what I gather, they seem to be related to the protection of information. Steganography is often described as the art of hiding information within other information, while cryptography is the practice of using codes or ciphers to secure information.

As an example of steganography, I heard about a technique where a message is hidden within an image file, and the recipient can extract the message by using specific software. With cryptography, a message is transformed into an unreadable form through encryption, and the recipient can decode the message with a corresponding decryption key.

It's important to note that these are just my basic understanding of these concepts, and I might not be entirely correct in my information. If anyone has more knowledge and expertise on the topic, I would greatly appreciate if they could share their insights and correct any misunderstandings I may have.



AI



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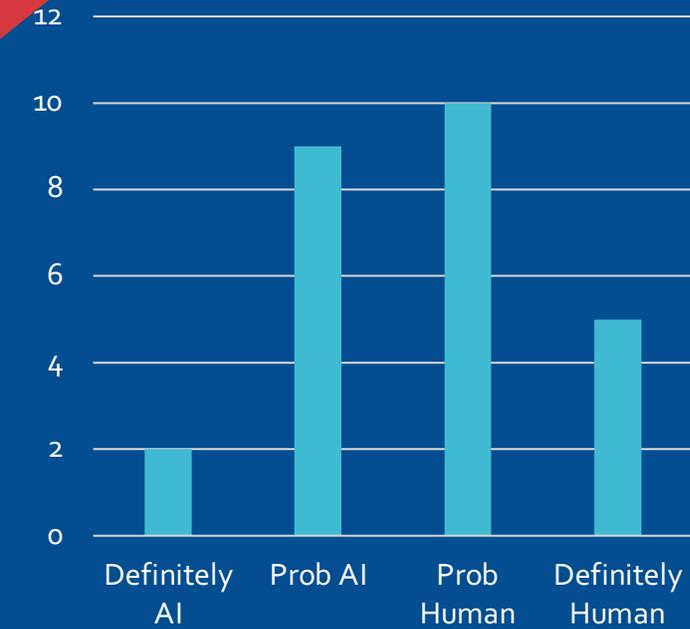
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Prompt:

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Cryptography translates to hidden writing in Greek, with “Krypto” for hidden, and “graphene” for writing. These hidden messages were used among tribes, groups, and kingdoms to expand empires including Roman and Egyptian civilizations. Steganography adds additional security to cryptography by hiding messages in plain sight. If the incorrect person sees a message, they wouldn’t be aware of it.

STUDENT



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INDUSTRY: AI uses in Cybersecurity

- 1. Identify and classify threats**
analyzing data and detecting patterns
- 2. Detect and respond to attacks**
quickly and efficiently, reducing the risk of a security breach or attack
- 3. Investigate incidents**
review of cause, method, damage, affected systems/data
- 4. Remediate vulnerabilities**
automating the patching, updating, and monitoring.
- 5. Improve risk management**
algorithms to predict future risks and mitigation strategies.





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Where can education leverage AI?

Popular AI Tools





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“Students become more effective cybersecurity professionals by understanding how AI can secure networks and improve risk management.”

Gartner

The Uses of AI in Education

- 1. Research and data analysis:**
identify patterns and make predictions.
- 2. Administrative tasks:**
automate tasks allowing staff to focus on strategies.
- 3. Adaptive / Personalized learning:**
difficulty and content based on interests and history
- 4. Assessment:**
grading and feedback for frequent and detailed evaluations.
- 5. Immersive and remote learning:**
using XR in collaborative environments.



Game Changer: Let's USE AI



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- Expect students to use AI.
- Encourage exploration.
- Teach prompting and refining.
- Validate AI output.
- Measure the understanding, not the output.
- Leverage AI to promote soft skills.



Ideas...



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- AI chatbot for office hours
- Curriculum development
- Simulate job interviews
- Feedback on submissions
- AI starter point
- Transcribe and summarize lectures
- Evolving lessons and projects
- “Prompt Appendix” like references



EXPECT MORE!

MUTATE!



“Success in creating AI could be the biggest event in the history of our civilization. But it could also be the last – unless we learn how to avoid the risks.”

Steven Hawking

Physicist / Mathematics

Thank you!

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