Nerding out in Large Classes with Interactive Games

Slides + Links: `https://waf.cs.illinois.edu/slides/pbd21/`

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Introductions

No good party starts without introductions...

Introductions:

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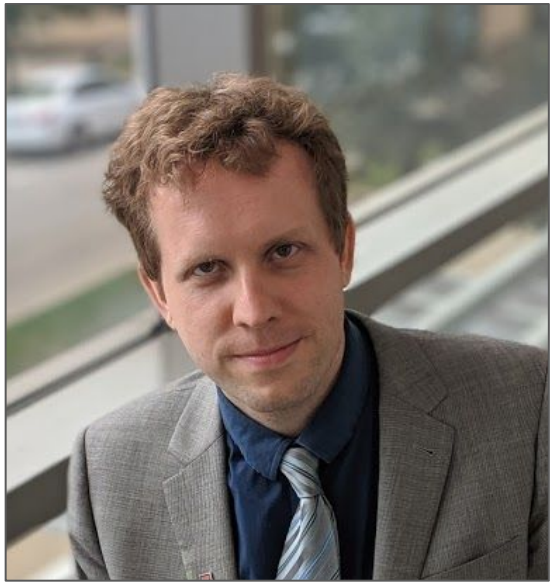

Wade Fagen-Ulmschneider (waf)
Teaching Associate Prof. of Computer Science
Grainger College of Engineering
profwade

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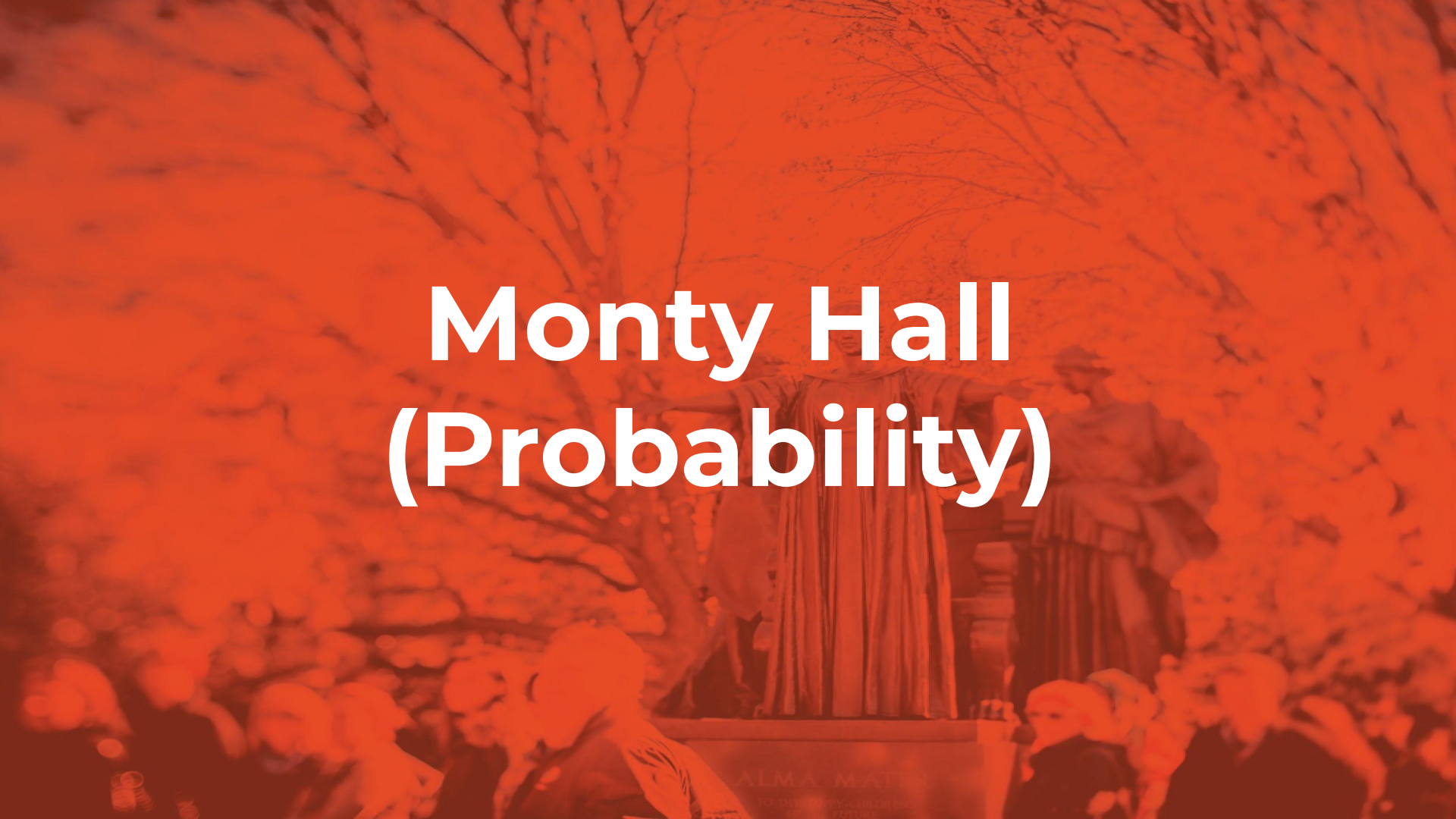
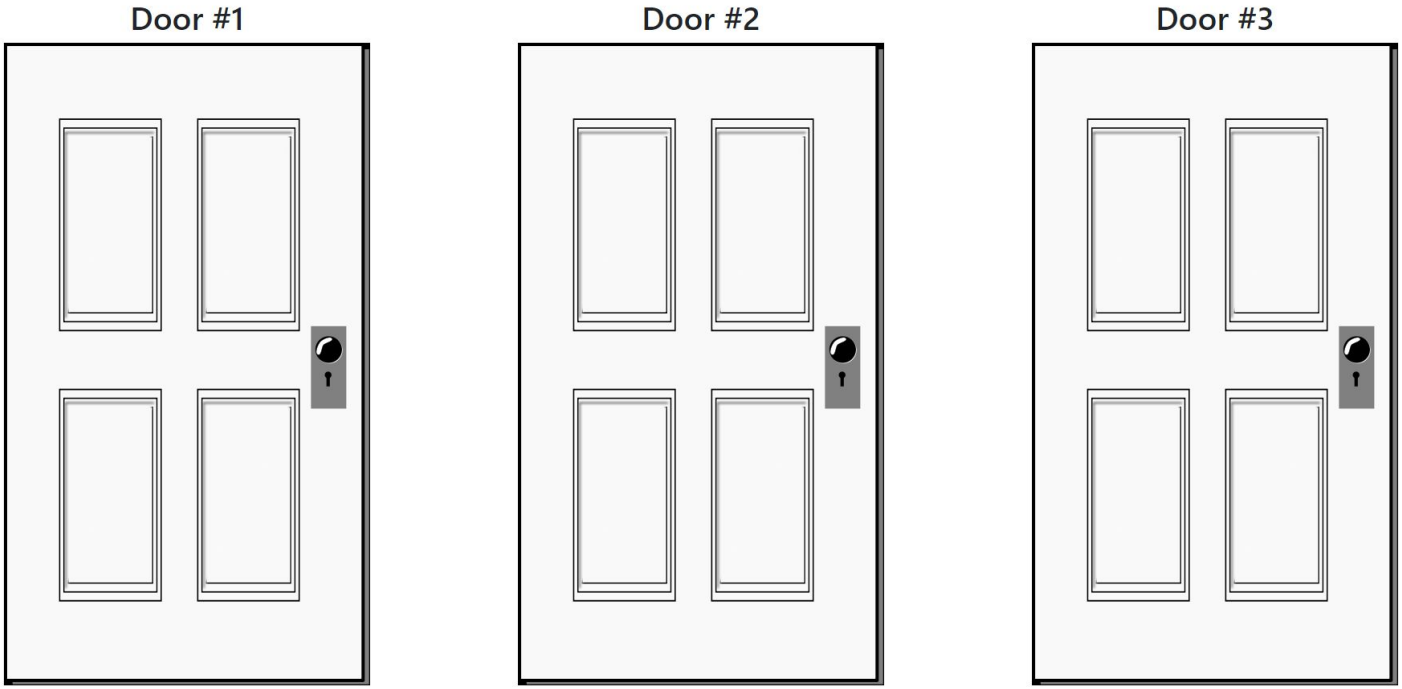


Monty Hall (Probability)



https://d7.cs.illinois.edu/projects/interactive-classroom/monty-hall-lets-make-a-deal/

Lincoln Hall Theater
Oct. 8, 2021
Photo by Katy Miles

Lincoln Hall Theater
Oct. 8, 2021
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Keywords -- Pedagogy

- *Realistic Math Education* - students see the connection between what they do in the classroom and the real world

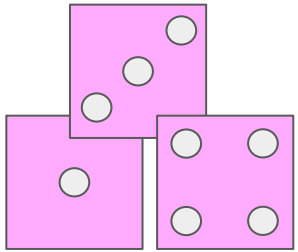
- *Interactive Lecture Demonstrations* - students can actively participate and engage during a large lecture

- *Memorable Examples that Challenge Intuition* - students remember these examples because they go against their original intuition

Monty Hall (Reinforcement Learning)

Reinforcement Learning

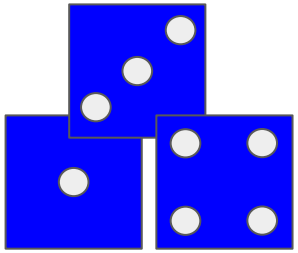
Action #1: You must pick a door.



Pink Dice

⇒

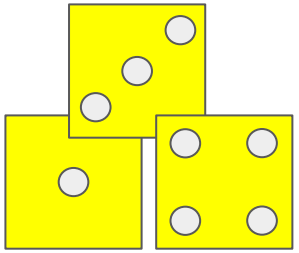
Choose Door #1



Blue Dice

⇒

Choose Door #2



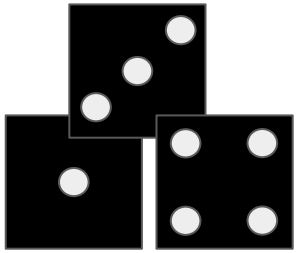
Yellow Dice

⇒

Choose Door #3

Reinforcement Learning

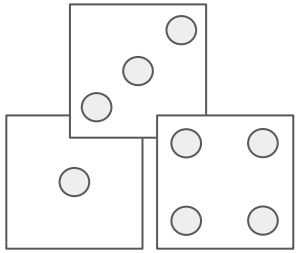
Action #2: You must pick if you want to change your door.



Black Dice

⇒

Change Door



White Dice

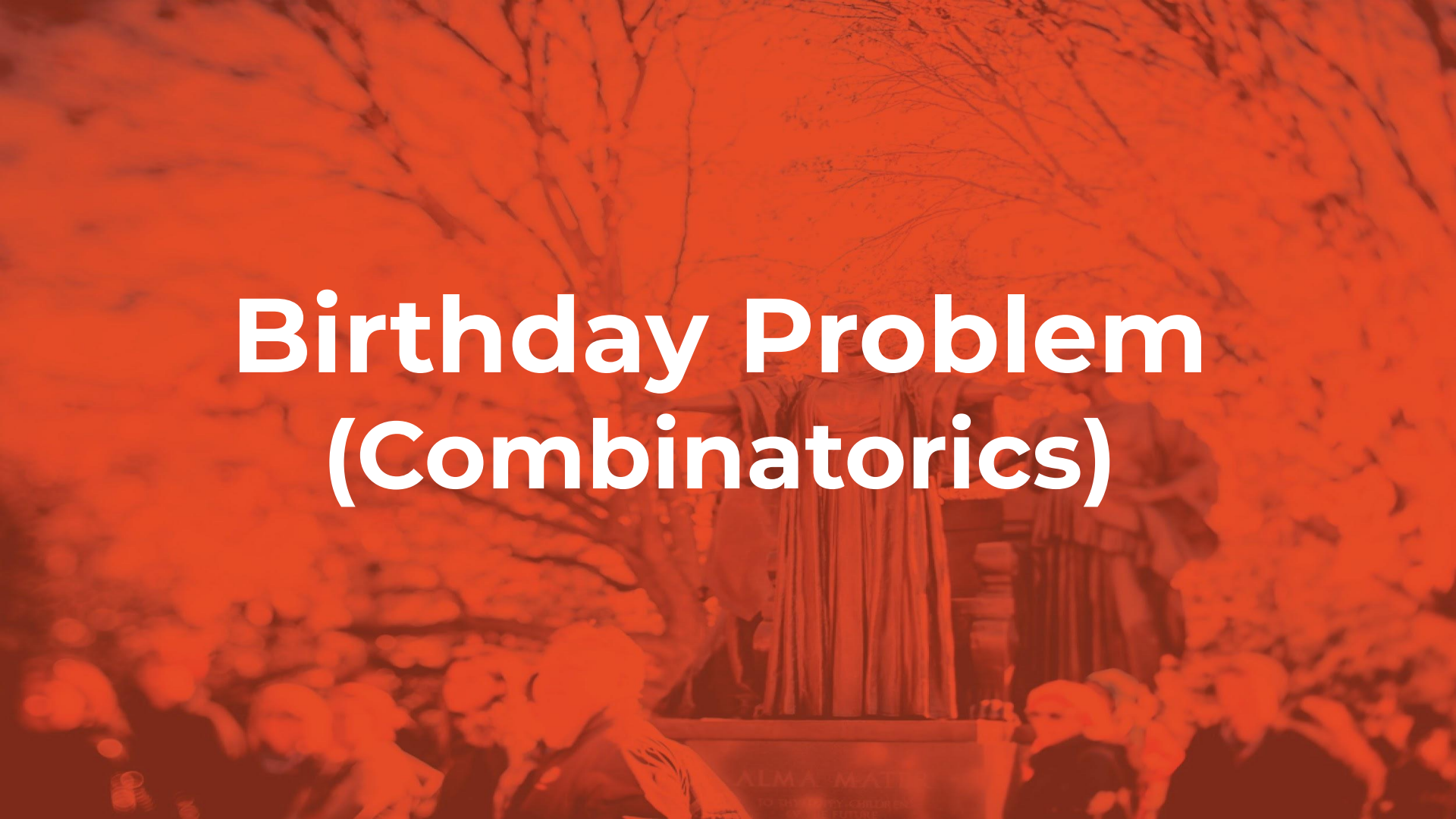
⇒

Keep Door

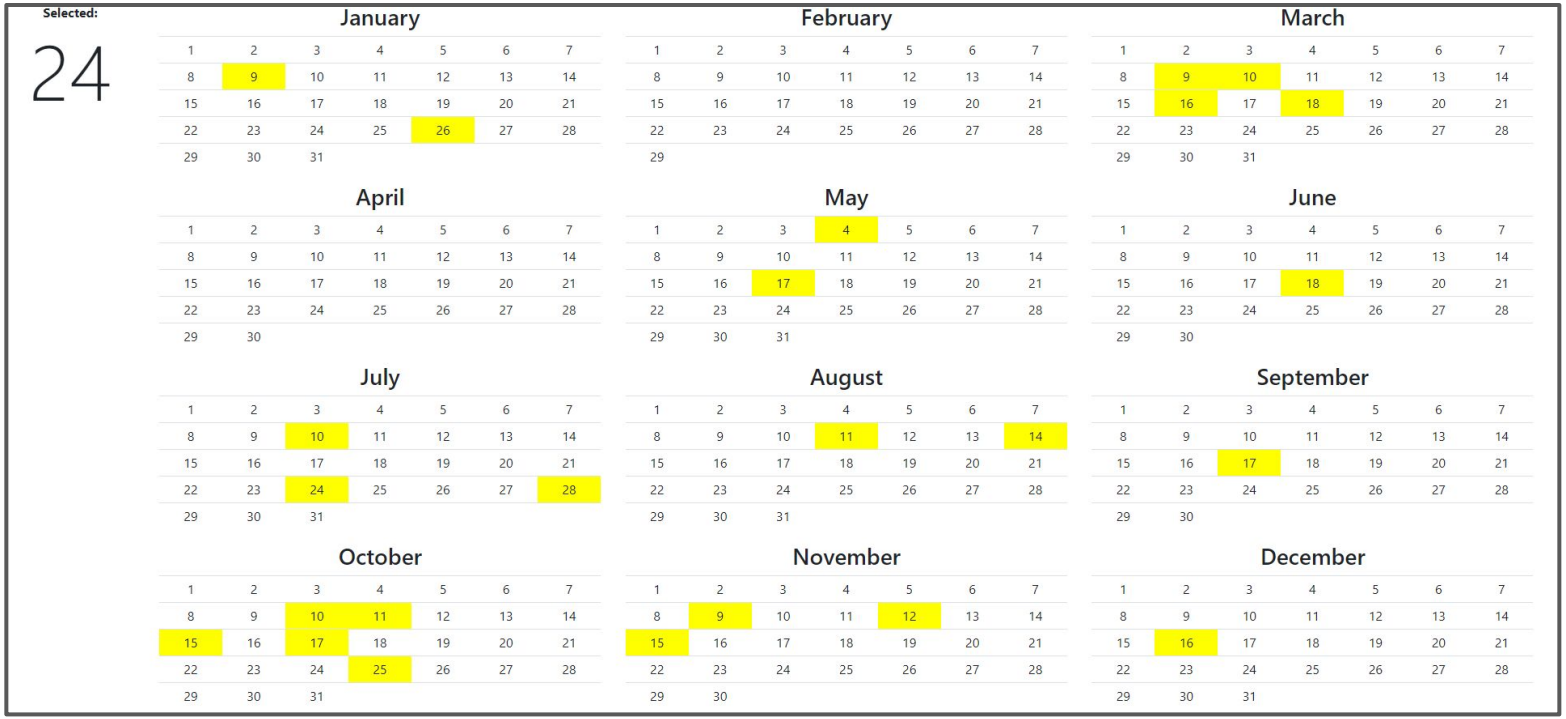
Reinforcement Learning

- When we win: (**positive reward**)
  - Add two dice of the winning choice!

- When we lose: (**negative reward**)
  - Remove the losing dice that was chosen.

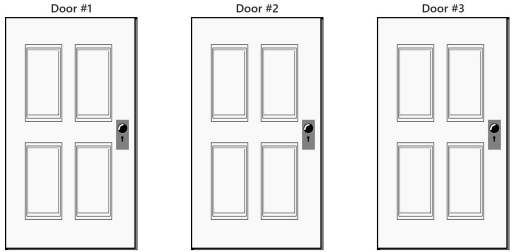


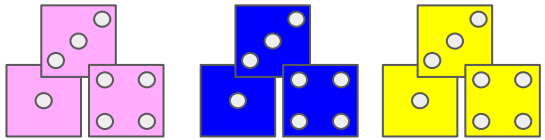
Birthday Problem (Combinatorics)

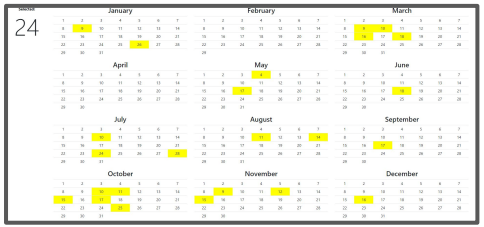


http://d7.cs.illinois.edu/projects/interactive-classroom/birthday-problem-calendar/

Thank You!







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