

Security and Authentication

The background of the slide features a photograph of the Almathea statue at the University of Illinois, which depicts a woman in classical attire. The entire image is overlaid with a semi-transparent orange color. The text is positioned on the left side of the slide.

CS 240 - The University of Illinois

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Overview of Cloud Services (AWS)

<https://aws.amazon.com/>

Overview of Cloud Services (Others)

<https://azure.microsoft.com/en-us/services/>

<https://cloud.google.com/products>

A photograph of a crowd gathered around a statue of Alma Mater, overlaid with a semi-transparent orange filter. The statue is the central focus, with the words "ALMA MATER" visible on its base. The crowd consists of many people, mostly seen from the back or side, looking towards the statue. The background shows trees and a building, all rendered in shades of orange and red.

Security and Authentication

Token-Based (“Bearer”) Authorization

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What is a token?

Length	Combinations	Avg. Time to Find @ 1m guesses /sec
1	$62^1 = 62$	0.031 ms
2	$62^2 = 3,844$	1.9 ms
3		
4	$62^4 = 1,4776,336$	7.4 seconds
5	$62^5 = 916,132,832$	458 seconds
10	$62^{10} = 8.4 \times 10^{17}$	13 298 years
15	$62^{15} = 7.7 \times 10^{26}$	~12,182,899,300,000 years

1P061GTQYgMp0W0XqmJqh2Zz1K2AFZDPeJmWLWThtU1E

12345678901234567890123456789012345678901234

1

2

3

4444

What happens when you lose a token?

What happens when you lose a token?

...does this make it insecure?

Token Storage

SQL Database: (Relational Datastore)	<pre>CREATE INDEX UserToken ON tableUserTokens (token);</pre>
MondoDB: (NoSQL Datastore)	<pre>db.userTokens.createIndex({ "token": 1 }, { unique: true })</pre>
Redis (Memory Datastore)	<i>(Every key acts like an index.)</i>



Authorization vs. Authentication

Authorization vs. Authentication

Tokens provide a form of authorization (access) to a specific resource, and are often used after a form of authentication (verification) is done.

Authentication as a Service

Ex: “Login with Google” / “Login with Instagram” / ...

Ex: Queue@Illinois \Rightarrow Login w/ Illinois

- Shibboleth (UIUC login technology) provides user authentication without revealing any details except that the user!

Authentication as a Service

Advantages:

Disadvantages:

Project MIX

