Towards Frontends and Finale!

CS 240 - The University of Illinois

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November 30, 2021

Frontend Technologies

Frontend Technologies

[Application Native Frontends]:

Frontend Technologies

[Frontend Abstraction Libraries]:

Native Frontend Technologies

[HTML]:

Native Frontend Technologies

+CSS:

Native Frontend Technologies

[Native Desktop]:

Native Frontend Technologies

[Native Mobile]:

HTML

```
<body>
[...]
<main role="main"
      class="container">
<div class="row">
<div class="col-md-4"
     id="lec24">
```

CS 240: Introduction to Computer Systems

Fall 2021, University of Illinois

Home Syllabus Schedule Assignments

Upcoming Deadlines

Homework 10: Practice for Midterm 2
- Due: December 3, 2021

MIX Project Part III - Towards a Course-wide Service
- Due: December 5, 2021

Lecture: Every Tuesday/Thursday at 12:30pm in 2035 CIF

Lecture #24: Authentication with SAML2 (SSO Login)

- Lecure Handout
- Lecure Slides

Assignments:
- Homework 10 (Exam Review)

November 18, 2021

Lecture #23: Security and Authentication

- Lecure Handout
- Lecure Slides

November 16, 2021

Lecture #22: Content Delivery Networks (CDNs)

- Lecure Handout
- Lecure Slides

Lecture #21: Domain Name System (DNS)

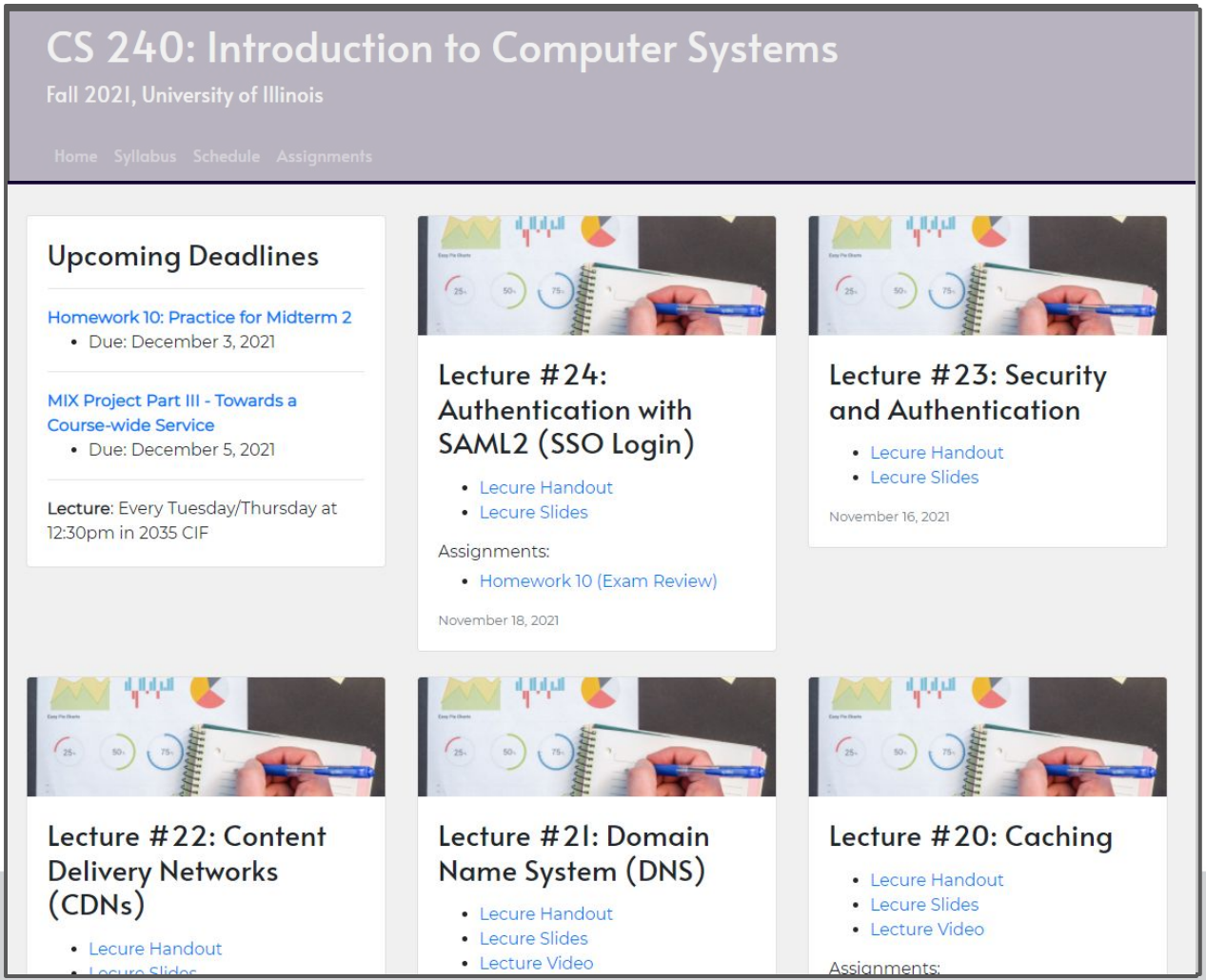
- Lecure Handout
- Lecure Slides
- Lecture Video

Lecture #20: Caching

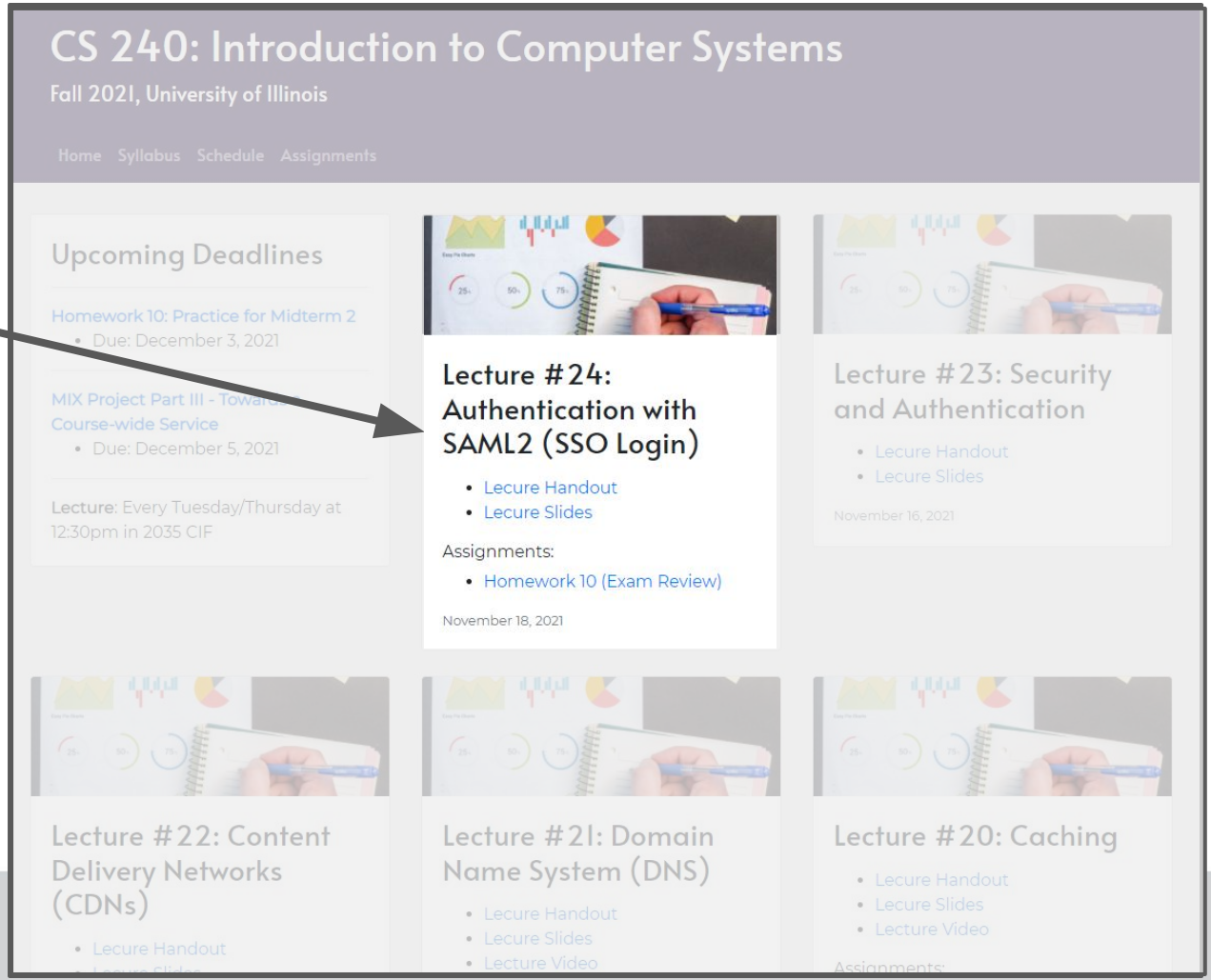
- Lecure Handout
- Lecure Slides
- Lecture Video

Assignments:

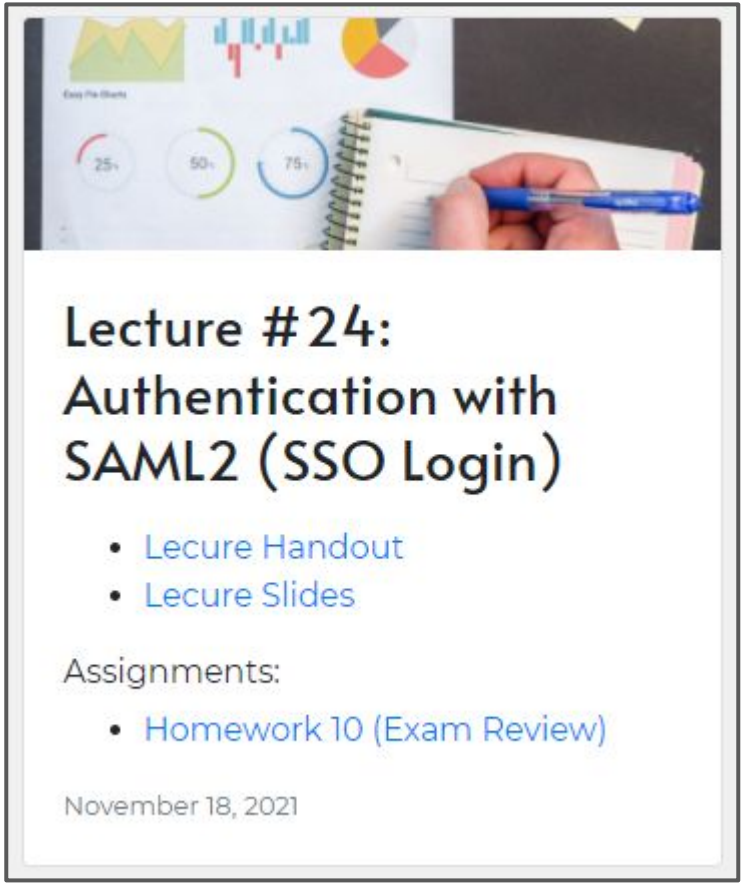
```
<body>
[...]
<main role="main"
      class="container">
<div class="row">
<div class="col-md-4"
     id="lec24">
```



```
<body>
[...]
<main role="main"
      class="container">
<div class="row">
<div class="col-md-4"
     id="lec24">
```



```
  <div class="card mb-4 box-shadow">
    <img class="card-img-top" src="[...]lecture1.jpg"
alt="Authentication with SAML2 (SSO Login)">
      <div class="card-body">
        <h3>Lecture #24: Authentication with SAML2 (SSO
Login)</h3>
        <ul>
          <li><a href="[...].pdf">Lecture Handout</a></li>
          <li><a href="[...].pdf">Lecture Slides</a></li>
        </ul>
        <h6>Assignments:</h6>
        <ul>
          <li><a href="[...]/hw10/">Homework 10 (Exam
Review)</a></li>
        </ul>
      </div>
      <div class="d-flex justify-content-between
align-items-center">
        <small class="text-muted">November 18, 2021</small>
      </div>
    </div>
  </div>
```



HTML Data Structure

Internally, this HTML is maintained inside of a data structure in your web browser called the _____.

...every time we change the website, we update this data structure!

Changing the DOM

Interacting with the DOM Directly

```
e = document.querySelector(selectors)
```

Using a Library to Change the DOM

```
e = $(selectors)
```

Using a Framework to Manipulate the DOM

```
class Timer extends React.Component {
  constructor(props) {
    super(props);
    this.state = { seconds: 0 };
  }

  tick() {
    this.setState(state => ({
      seconds: state.seconds + 1
    }));
  }

  componentDidMount() {
    this.interval = setInterval(() => this.tick(), 1000);
  }

  componentWillUnmount() {
    clearInterval(this.interval);
  }

  render() {
    return (
      <div>Seconds: {this.state.seconds}</div>
    );
  }
}
```

```
ReactDOM.render(
  <Timer />,
  document.getElementById('timer-example')
);
```

Fetching Data

```
fetch("http://cs240-adm.cs.illinois.edu:8000/time", {
  method: “PUT",
  body: JSON.stringify(data),
  ...many other options...
}).then( response => console.log(response) )
```