COS30049 – Computing Technology Innovation Project

# Week 9 - UX/UI and React in Practice

( Lecture – 01 )

Ningran Li (Icey)
ningranli@swin.edu.au

# Acknowledgement of Country

We respectfully acknowledge the Wurundjeri People of the Kulin Nation, who are the Traditional Owners of the land on which Swinburne's Australian campuses are located in Melbourne's east and outer-east, and pay our respect to their Elders past, present and emerging.

We are honoured to recognise our connection to Wurundjeri Country, history, culture, and spirituality through these locations, and strive to ensure that we operate in a manner that respects and honours the Elders and Ancestors of these lands.

We also respectfully acknowledge Swinburne's Aboriginal and Torres Strait Islander staff, students, alumni, partners and visitors.

We also acknowledge and respect the Traditional Owners of lands across Australia, their Elders, Ancestors, cultures, and heritage, and recognise the continuing sovereignties of all Aboriginal and Torres Strait Islander Nations.

# Objectives of Today

## Integrating UI&UX Design with Material UI

- Introduction to UX design
- Introduction to UII design
- Key Skills & Principles

## Material UI Introduction

- What's it & Why?
- Applying UX with Material UI
- Styling with Material UI (Seminar)

## React Router for Navigation

- Routing in SPA (Seminar)
- Navigation between components (Seminar)
- Practical Example (Seminar)

# Integrating UI&UX Design with Material UI

# User Experience (UX) Design

- What is UX Design?
  - The study of how users interact with and perceive digital products, encompassing websites, applications, and any other digital interfaces on their devices.
- Role of UX Designers: What do they do?


Image from [MyCaptain]

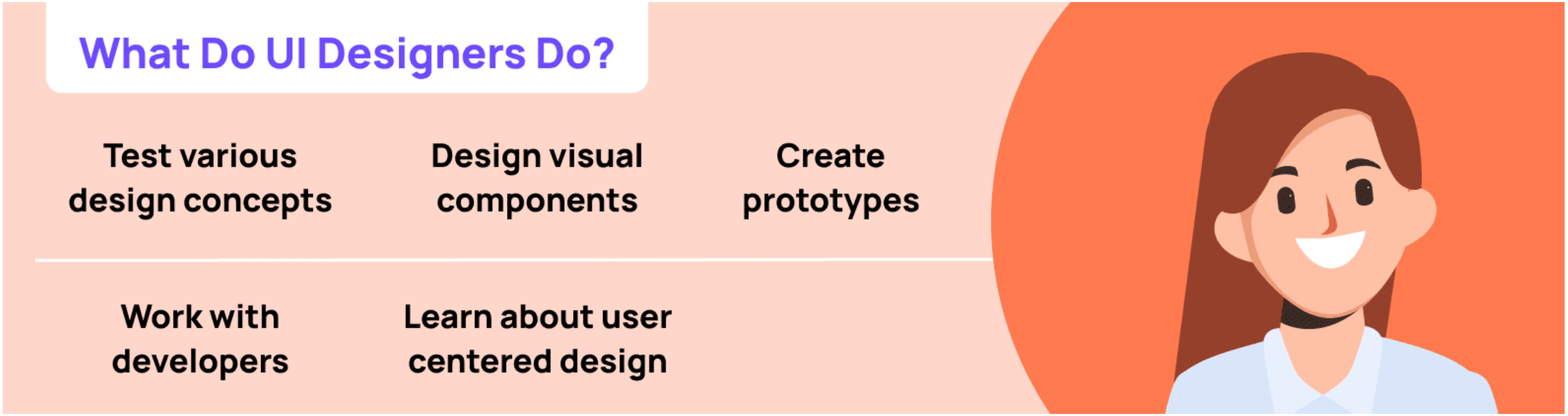
# Skills Required to Become a UX Designer

- Creating designs and layouts to test product functionality.
- Using design software like Figma and Sketch.
- Understanding user needs and testing designs with users.
- Familiarity with Agile project management.
- Organizing content for a seamless user experience.
- Basic knowledge of web development languages.
- Working well with teams and taking feedback.
- Effective communication and presentation skills.
- Managing time and tasks efficiently.

# User Experience (UX) Design

- What is UI Design?
  - **User Interface (UI) Design** focuses on the **look** and **feel** of a product. It involves designing the **visual elements** that users interact with, such as buttons, typography, colors, and layout.

- Role of UI Designers: What do they do?

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# Skills Required to Become a UI Designer

- **Visual Design**: Create visually appealing designs using fonts, colors, and imagery.
- **Design Software**: Use tools like Figma, Sketch, Photoshop, and Illustrator for UI design.
- **User-Centered Design**: Understand user behavior to create intuitive and user-friendly interfaces.
- **Prototyping and Wireframing**: Build interactive prototypes and wireframes to test design ideas.
- **Collaboration**: Work effectively with developers and UX designers.
- **Communication and Presentation**: Present design ideas and collaborate with stakeholders.
- **Responsive Design**: Design interfaces for different devices and screen sizes.
- **Basic Front-end Development**: Knowledge of HTML, CSS, and JavaScript for collaboration with developers.
- **Attention to Detail**: Be meticulous in design for a polished user interface.

# Difference Between UX and UI Designers

| UX Designer | UI Designer |
| --- | --- |
| Concerned with the overall user experience | Concerned with the visual design of a product |
| Focuses on usability, efficiency, and enjoyment | Focuses on colors, fonts, icons, and layout |
| Designs user flows and wireframes | Designs buttons, menus, and dialog boxes |
| Works closely with UI designers | Works closely with UX designers |

Image from [MyCaptain]

# Why Discuss UI & UX Design Before Using Material UI?

**1. Foundation of User-Centered Development**

- Without understanding the basics of **user needs** and **design consistency**, even well-designed UI libraries may not be used effectively.

**2. Ensures Thoughtful Use of Material UI Components**

- Material UI provides pre-built components, but knowing **how** and **why** to use them requires a solid grasp of UX and UI.
- Helps you select and customize components based on both **functionality** and **visual appeal**.

**3. Improves Overall User Experience**

- A good understanding of UX design helps you apply Material UI components in a way that makes your app not only **aesthetic** but also **intuitive** and **easy to navigate**.

**4. Aligns Design Choices with User Needs**

- Discussing UX and UI first ensures that every design decision using Material UI is rooted in **what the user needs**, not just what looks good.

# Material UI Introduction

# React Component Libraries

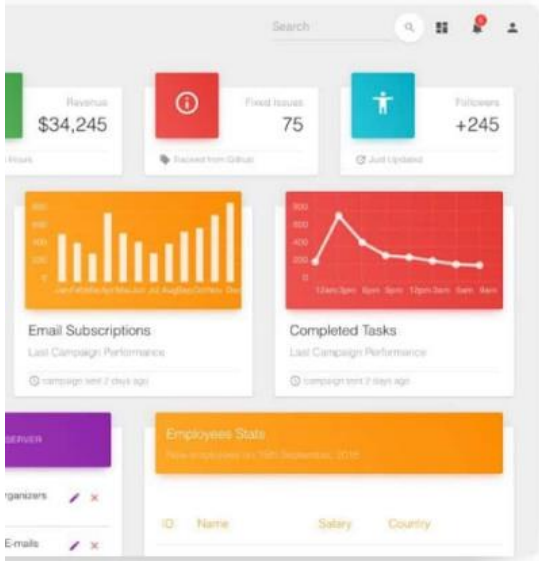
- ***Material UI***
- Google's Material Design
- Ant Design
- For enterprise applications
- Chakra UI
- Modular architecture
- Headless UI
- Build custom UI components
- React Bootstrap
- Implements the Bootstrap CSS framework
- Collection of pre-built components

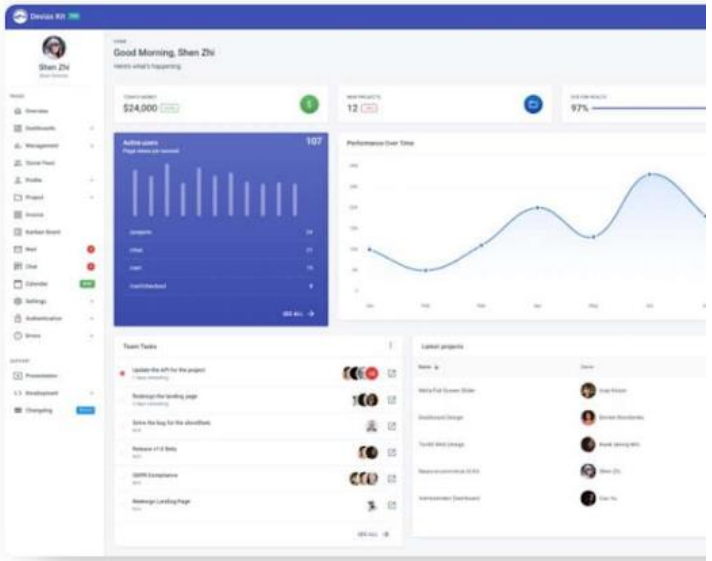
# Material UI Features

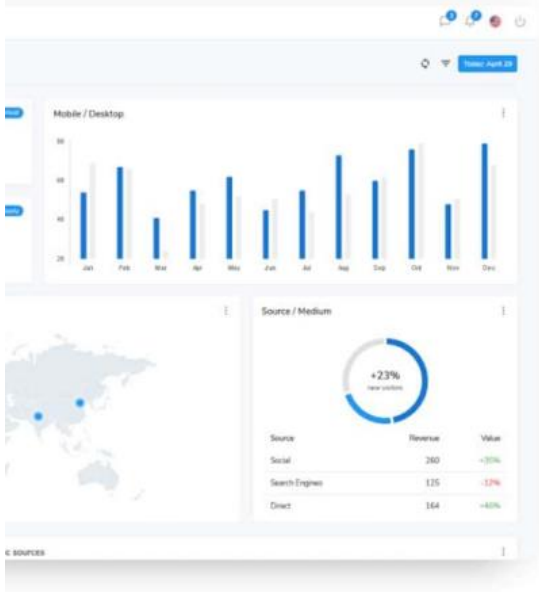
- Pre-built components
  - A comprehensive ***collection of pre-built components***
  - Including buttons, forms, tables, charts, and more
- Accessibility
  - A focus on accessibility
  - Ensuring that all components meet the highest standards for usability
- Customizability
  - A suite of customization options
  - Make it easy to implement your custom design system
- Theme support
  - Easily change the look and feel of your entire application
- Strong community

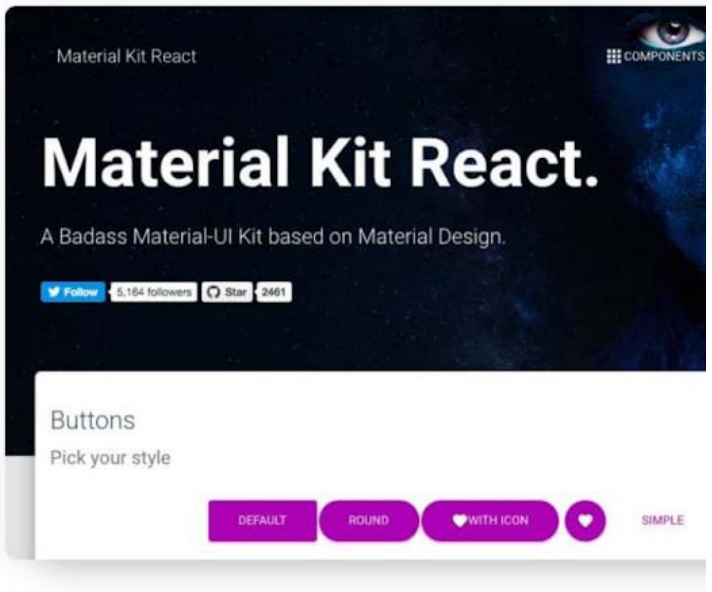
# Material UI's Use Cases

- Can be used to build ***any type of React application***
    - form simple websites to complex enterprise applications
- Especially ***well-suited*** for building applications
    - need to be visually appealing and consistent
- ***Accessible*** to all users



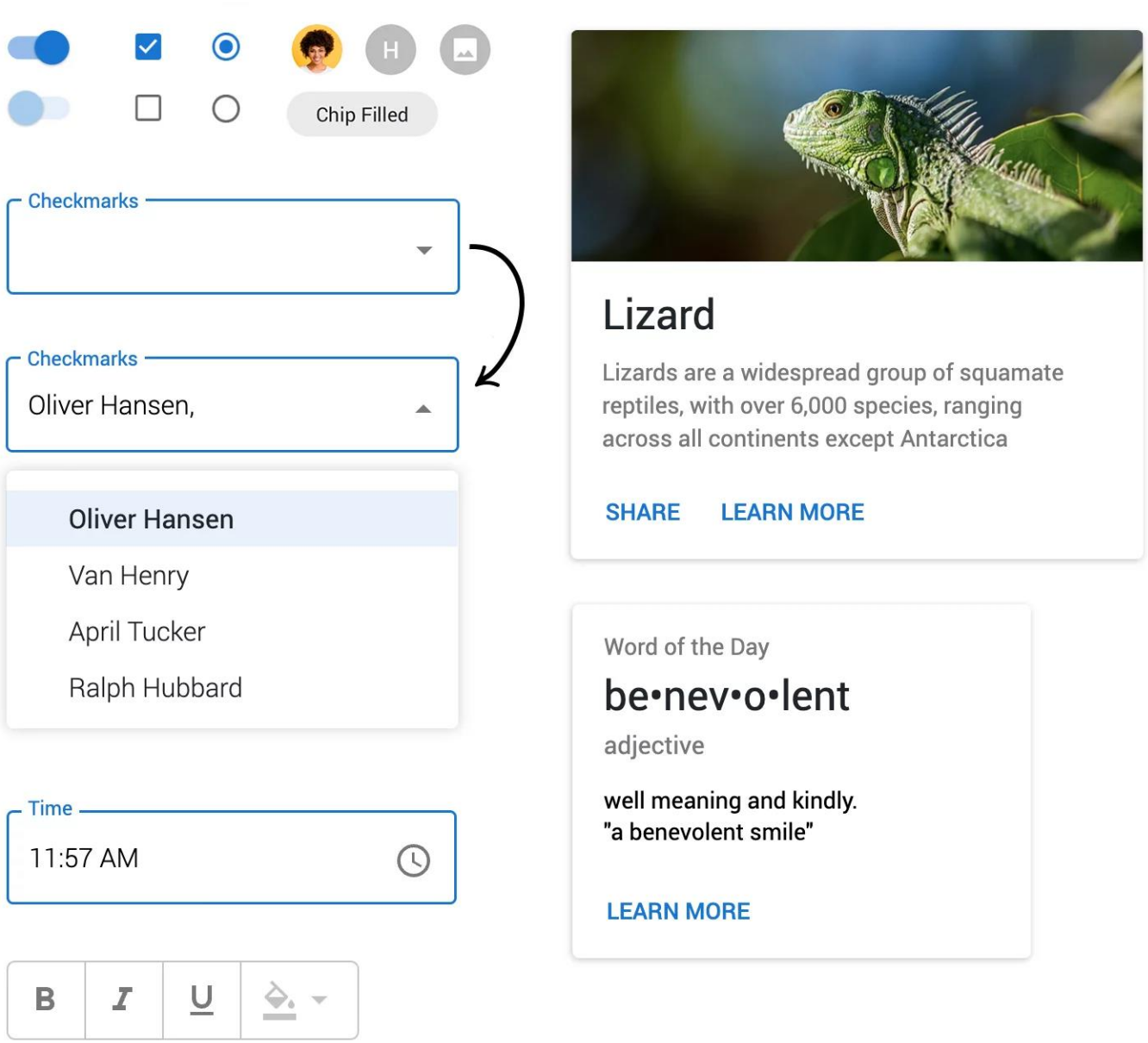



# Applying UX with Material UI

How Material UI aligns with some of UIUX principles?

- **Consistency**: The Material Design system ensures uniformity across the app.
- **Simplicity**: Using pre-made components ensures a clean, minimal design.

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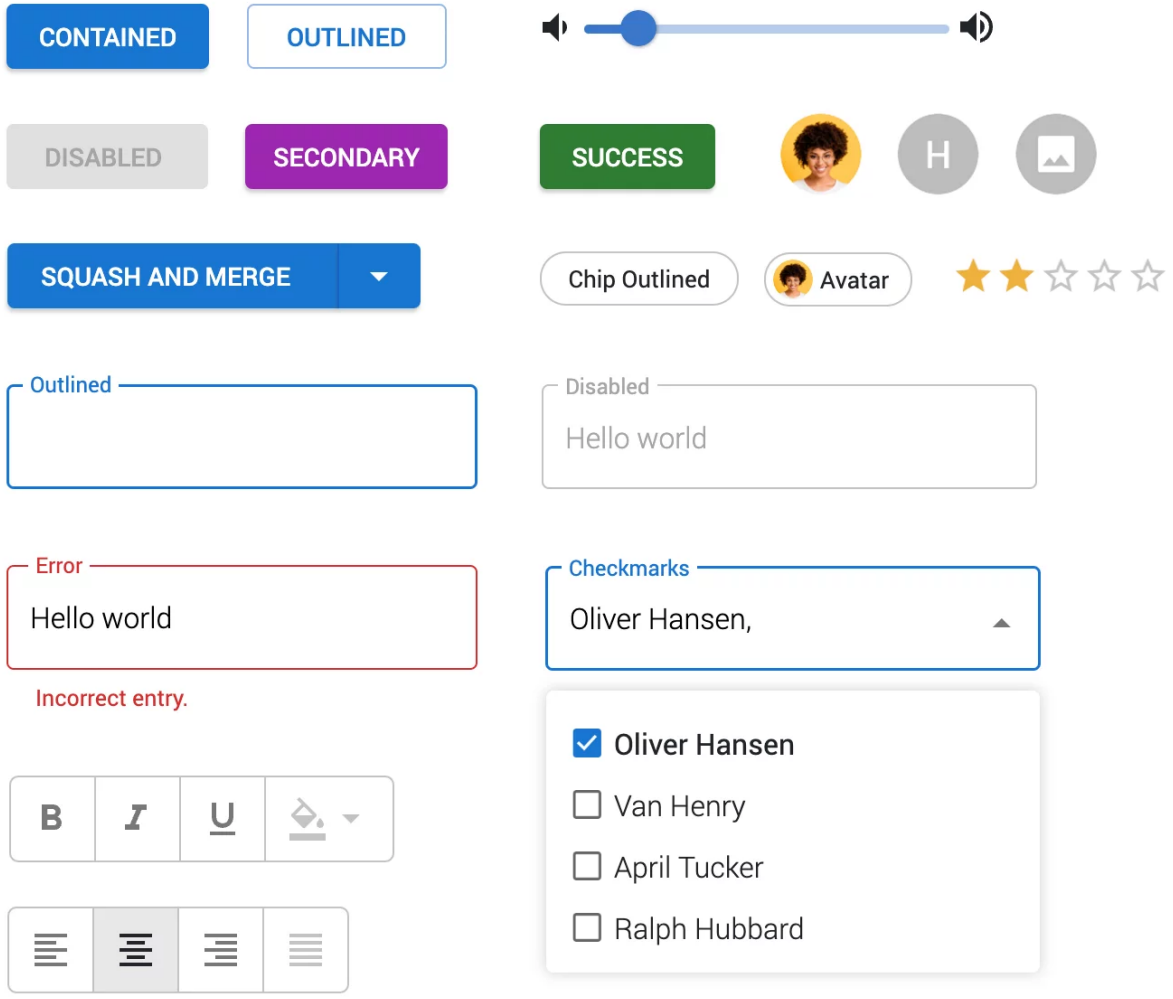


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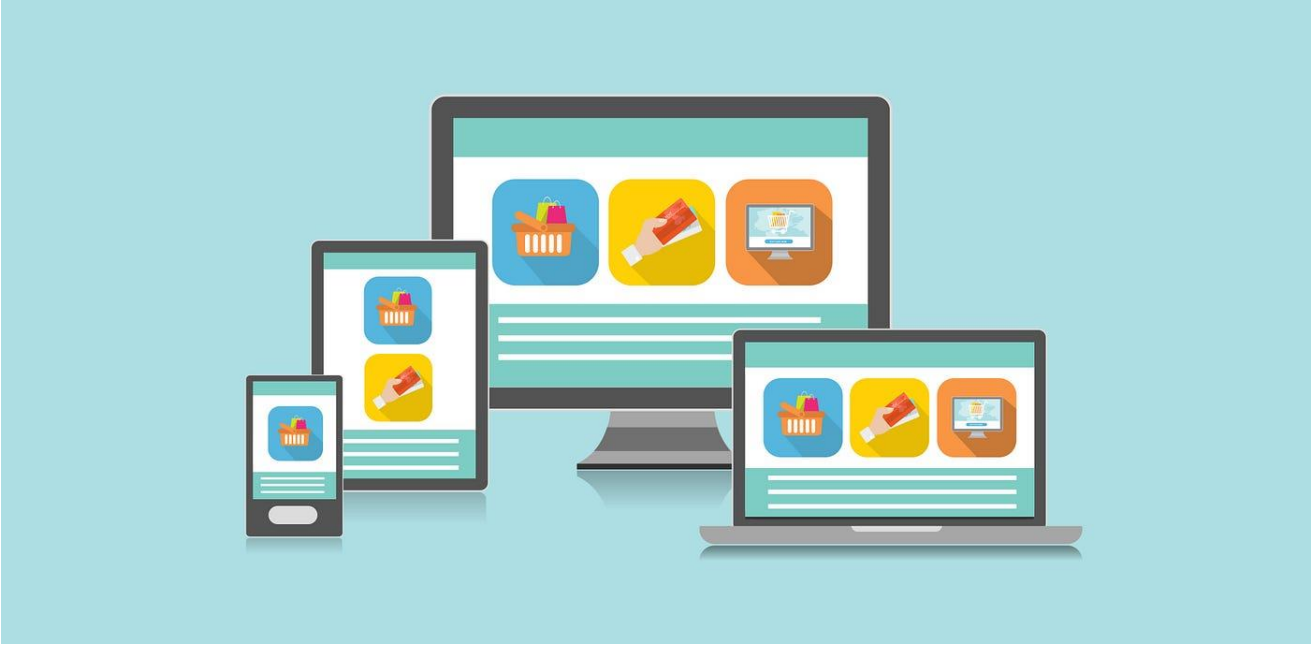
# Applying UX with Material UI

How Material UI aligns with some of UIUX principles?

- **Feedback**: Material UI components like **Snackbar** or **Progress Indicators** provide visual feedback.
- **Accessibility**: Material UI's components are built with accessibility in mind, ensuring proper keyboard navigation, screen reader support, etc.

# Applying UX with Material UI - Responsive UI

- Responsive layouts
  - ➢adapt to any possible screen size.
- Grid
  - ➢adapts to screen size and orientation
  - ➢ensuring consistency across layouts.
- Container
  - ➢centers your content horizontally
  - ➢the most basic layout element
- Breakpoints



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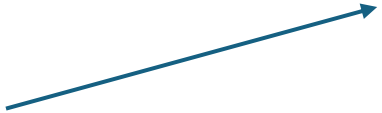
# Make React API Calls

We will cover more in week 11 ☺



## XMLHttpRequest

- An API for sending HTTP requests from a web page to a server
- A low-level API (basic mechanism for making HTTP requests)

## Fetch API

- A  modern, promise-based API for making HTTP requests in JavaScript
- Sample and flexible interface for GET, POST, PUT and DELETE requests
- Handling the response from the server

## Axios

- Easy to send asynchronous HTTP requests to REST endpoints
- Perform CRUD operations (Create, read update and delete)
- As well as handle the responses