

# Introduction To Modern Application Development

## Course Plan

### Week 1 - Introduction to the Internet

Understand basic concepts like,

- What really happens when you connect to a website via your browser?
- What is a client and a server?

Understand the basics of networking and common network protocols.

*Project: Students will create a basic webpage and deploy it on their own computer*

### Week 2 - Building a web application

Introduction to,

Client-side Javascript.

Server-side Javascript.

Use of different javascript frameworks

Javascript libraries

Practical introduction to SSH

Common network utilities.

*Project: Students will write a basic but complete web application and deploy it in their own server provided by Hasura.io.*

### Week 3 & 4 - Databases

Learn the how & why of modelling data for your application using databases.

How do databases work.

Interacting with DBMS

Advanced database concepts like performance, security and backups, database analytics.

How to scale a database

Differences between SQL and NoSQL databases.

*Project: Create their own database and make the previous web application "dynamic" by serving content from database.*

### **Week 5 - Performance & security**

Analyse performance and learn how to measure things on the web.

Authentication with HTTP.

How do you ensure security of your applications

We will also teach you how to 'hack' into applications.

Learn about cookies, sessions & the need for encryption.

*Project: Implementing a password storage system, a login system and sessions for your app.*

### **Week 6 & 7 - Build a mobile application**

Finally, we will take a deep dive into building mobile applications!

Introduction to IDEs like Android Studio.

Basics of programming languages like Java.

Cover basics of building an app in Android and IOS.

Deploying applications into App-stores.

*Project: Build a blog app in android with basic functionalities.*

### **Week 8 - Modern development practices.**

Version control systems.

Evolution of backend architectures

Understand typical requirements for an application backend, traditional ways of creating back-ends and finally learn about the trade-offs involved in opting for a microservice-based architecture

*Project: Students can add more functionalities to their application. Revision and preparation for NPTEL exam.*