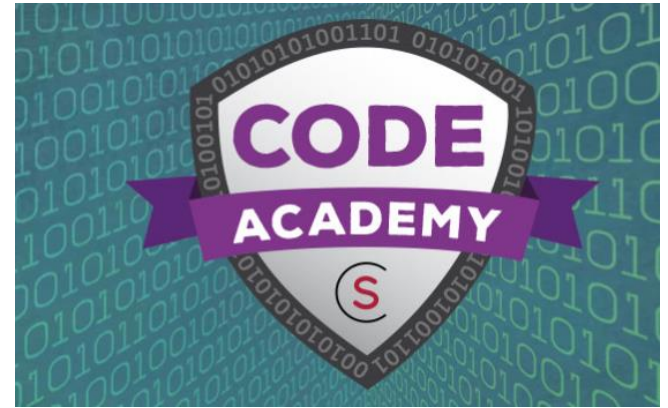


# Day 13: Mobile development and cloud services

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CODE BOOTCAMP VAASA 2021  
JANI JÄRVINEN, INTERTECHNO TRAINING OY

# Mobile development

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# The web and mobile development

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- The most common mobile platforms are Android ja Apple iOS
  - Marketshares in 2021: Android ca. 71 %, iOS ca. 28 %, other ca. 1 % (StatCounter)
- The easiest way to develop applications for these platforms is to create a web-based solution
- The main types of mobile applications
  - Mobile-friendly web pages
  - Actual applications or “apps”
- The difference between these two types is getting smaller and smaller
  - Web applications can use more and more functionality to access the phone’s features
  - For example touch-screen support, camera, GPS, battery level, cryptography, ...

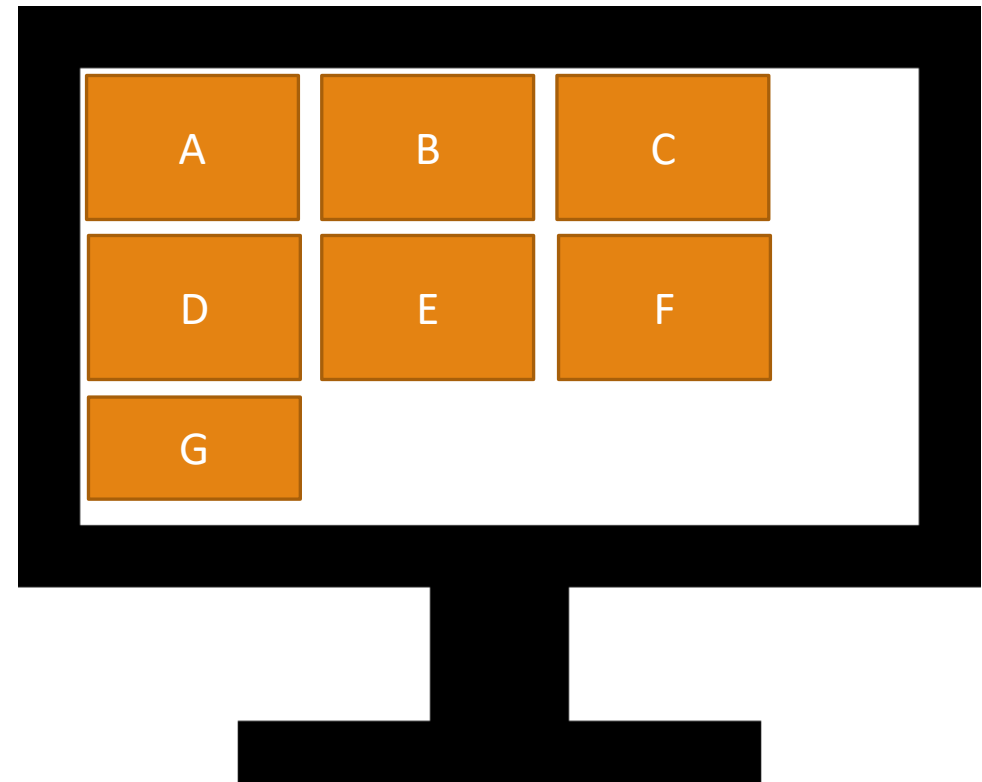
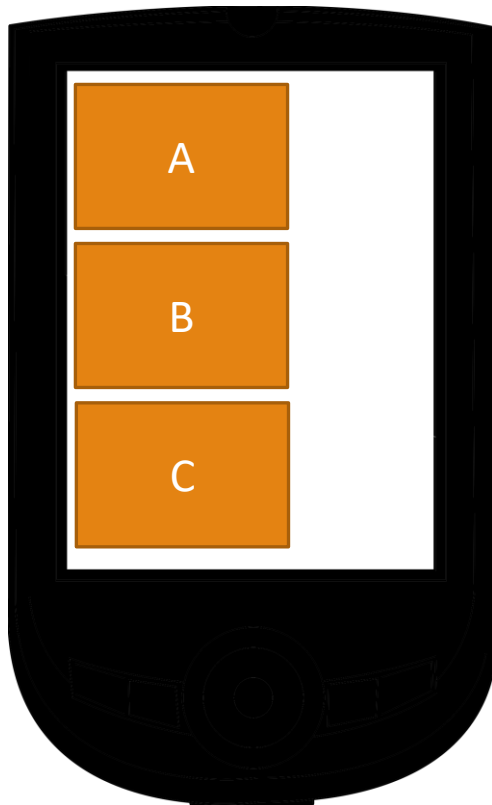
# Mobile app development with HTML

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- HTML5 based implementations are usually done a *responsive* implementations
  - Called responsive web design, or RWD
- Responsivity is implemented mainly in CSS and its *media query* functionality, possibly along with some JavaScript logic
- For example, layout should be made using percentage values instead of actual pixel values
- The concept of a flow layout is useful; "the content is water"
- A HTML page can adapt to the user's device screen size and orientation
- An alternative method is to identity the device in the backend, and only return data accordingly

# Layout example

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# CSS Media Query

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- Used in many mobile-friendly web pages as the base for responsiveness
- Similar functionality can be implemented in JavaScript, but this is slower and more complex
- Can be set either using @media tags in CSS, or as the media attributes in <link rel="stylesheet"> definitions:

```
@media screen and (min-width:
600px) {
    body {
        background-color: blue;
    }
}
```

```
<link rel="stylesheet"
media="screen and (min-width:
600px)" href="blue.css">
```

# Visual Studio's support for mobile dev

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- Visual Studio supports mobile development on both Android and iOS
- Good support for web development in general, including NPM based frameworks
  - For example Ionic, ManifoldJS (Web Application Manifest)
- Apache Cordova is also supported
- Testing can be done using virtualized platforms, for instance Android
- Another nice technology supported by Visual Studio is Xamarin
  - Today, a free framework for all users, including Visual Studio Community edition
  - For Mac user: Visual Studio for Mac

# React Native

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- React Native allows the development of native mobile applications with React-like user interface definitions
- React Native applications can be combined with native libraries made with other programming languages, such as Objective-C on iOS
- Uses a development tool called Expo, which allows a fast start to the development work
- React Native and Expo are both open source
- For details
  - <https://reactnative.dev/> and <https://expo.io/>



# Cloud services

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# Cloud services

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- Highly scalable systems that allow even large applications to be set up without the need to purchase your own hardware and maintain them
- Payment is often done on monthly basis based on the real usage (just like electricity)
- The price is based on various things like CPU usage, disk space, databases, network connections, scalability, etc.
- Geographically distributed
- Allow for high availability, downtime is often very limited, if at all



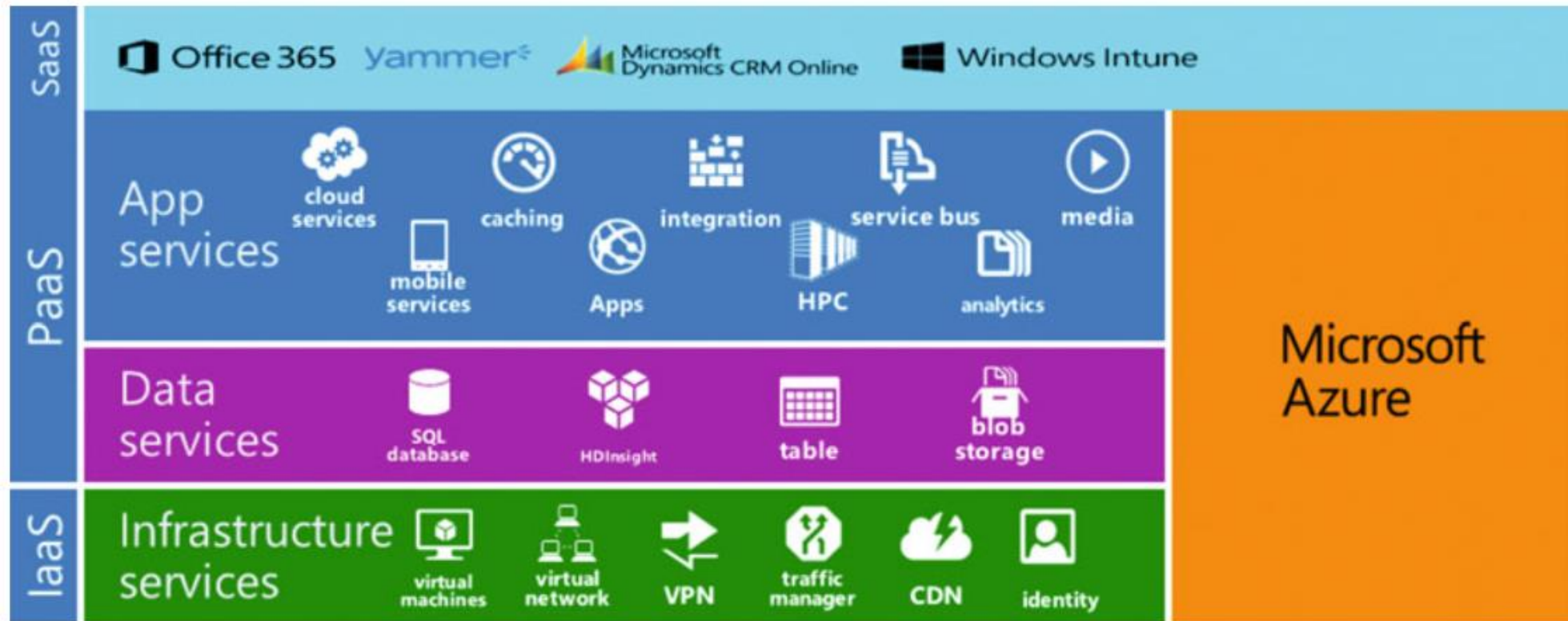
# Azure overview

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- Microsoft's main cloud service, which contains hundreds of services for IT professionals and developers
- Not only for Microsoft's own technology
  - Linux, Docker, JavaScript, Python, .NET, PHP, Java and Node.js, etc.
- Web developers are interested in services that allow web application to be run on the cloud
- You will need a credit card to access these services
- Under heavy development, which means new functionality can pop up almost weekly
- Visual Studio provides nice support for Azure based development



# The terms IaaS, PaaS ja SaaS



# Different services

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## Compute

- Web Apps, Web Jobs, Mobile Services, virtual machines

## Storage

- Table Storage, Blob Storage, Queue Storage

## Big Data

- HDInsight, Hadoop, Spark, Machine Learning

## Infrastructure

- Active Directory, Rights Management (DRM), Multi-Factor Authentication

## Viestintä ja integraatiot

- Virtual Network, Content Delivery (CDN), BizTalk Services, RemoteApp

# Pricing

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- Azure's pricing is either based on actual usage or acquired processing capacity
- Each service has its own detailed pricing model
- Taking a simple web application and a database
  - Web server, for light usage:  $\approx 60$  €/month
  - SQL Server database, light usage:  $\approx 15$  €/month
- Calculator
  - <https://azure.microsoft.com/en-us/pricing/calculator/>

