Application Security Concepts

Practical Results

- This is a basic introduction to Security Concepts
  - Focus on practical results
  - Not an A to Z reference

- We will cover following tasks related to our ecommerce project
  - **User login/logout security**
  - **Provide access to special VIP page only for authenticated customers**
  - **Keep track of order history for registered customers**

The Problem

- We need to authenticate a user
- We need to know what actions a user/app is authorized to perform
- Delegate permissions to another app

Key Terms

- Authentication
- Authorization
- OAuth 2
- OpenID Connect (OIDC)
- JSON Web Tokens (JWT)

Authentication

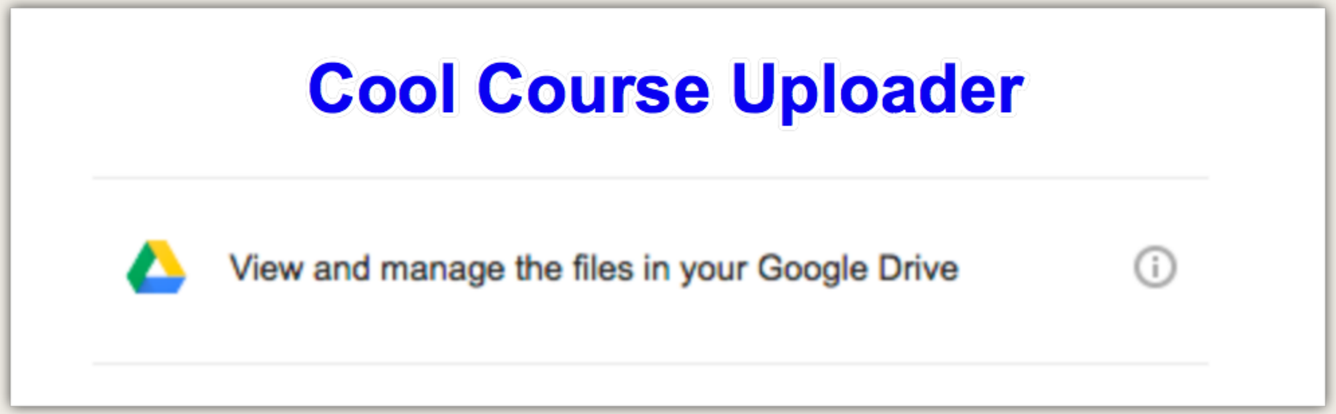
- The process of validating whether a user/app is who they claim to be
  - User name / password
  - Token / pin
  - Finger print / retina scan

Authorization

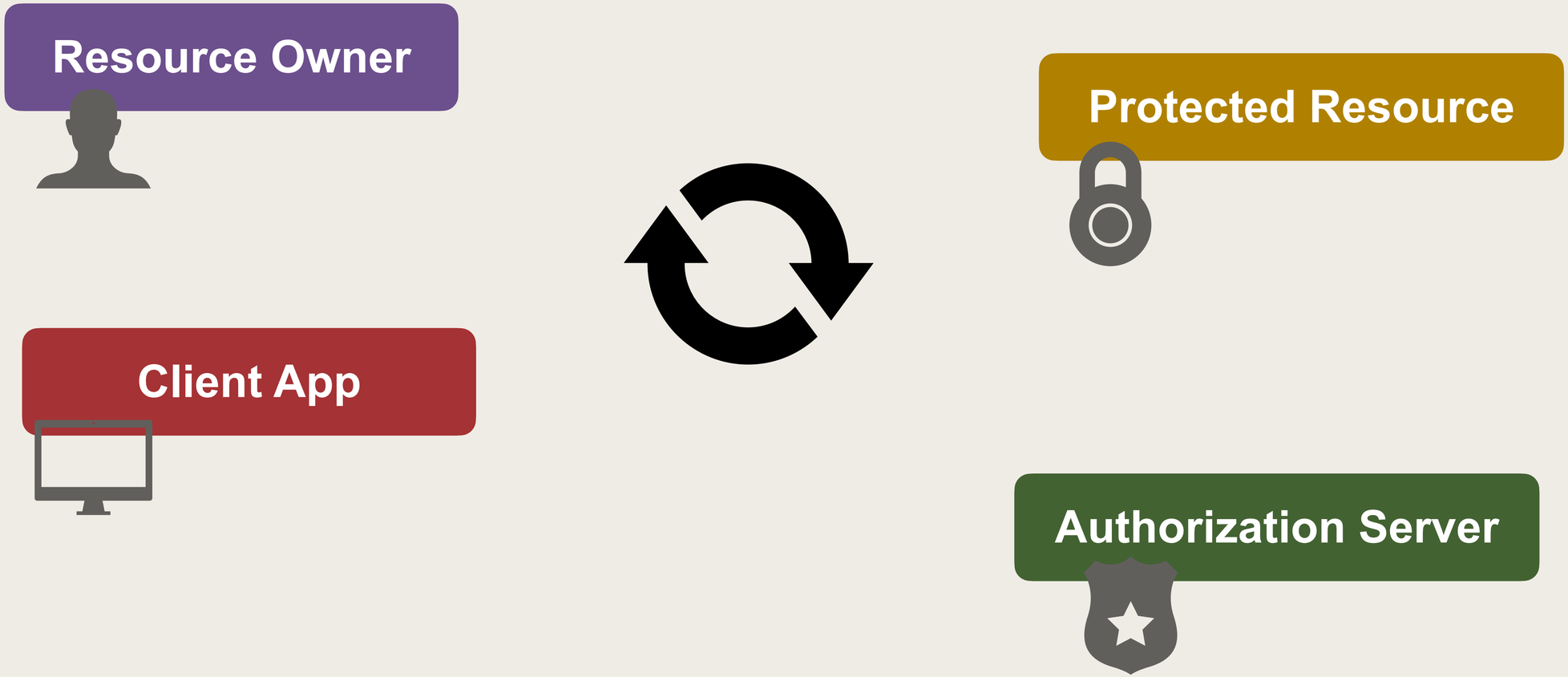
- Process of determining the actions a user / app can perform
- Commonly understood as roles
  - Guest user: minimal actions (read only)
  - Authorized user: read/write data in user account
  - Admin: full access to all accounts system wide

OAuth 2

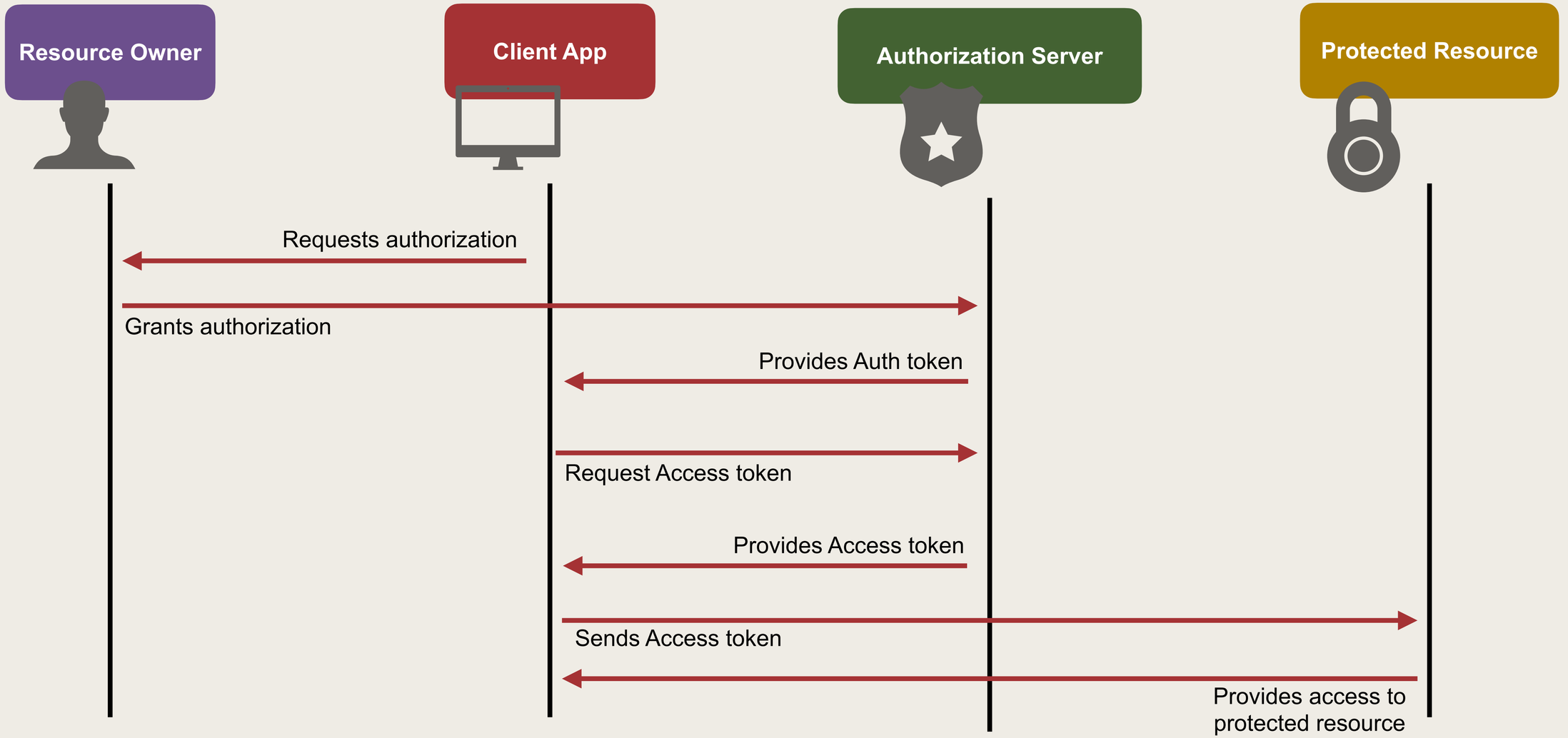
- Authorization framework that enables applications to have limited access to a resource on behalf of a resource owner (user)



OAuth 2



OAuth 2



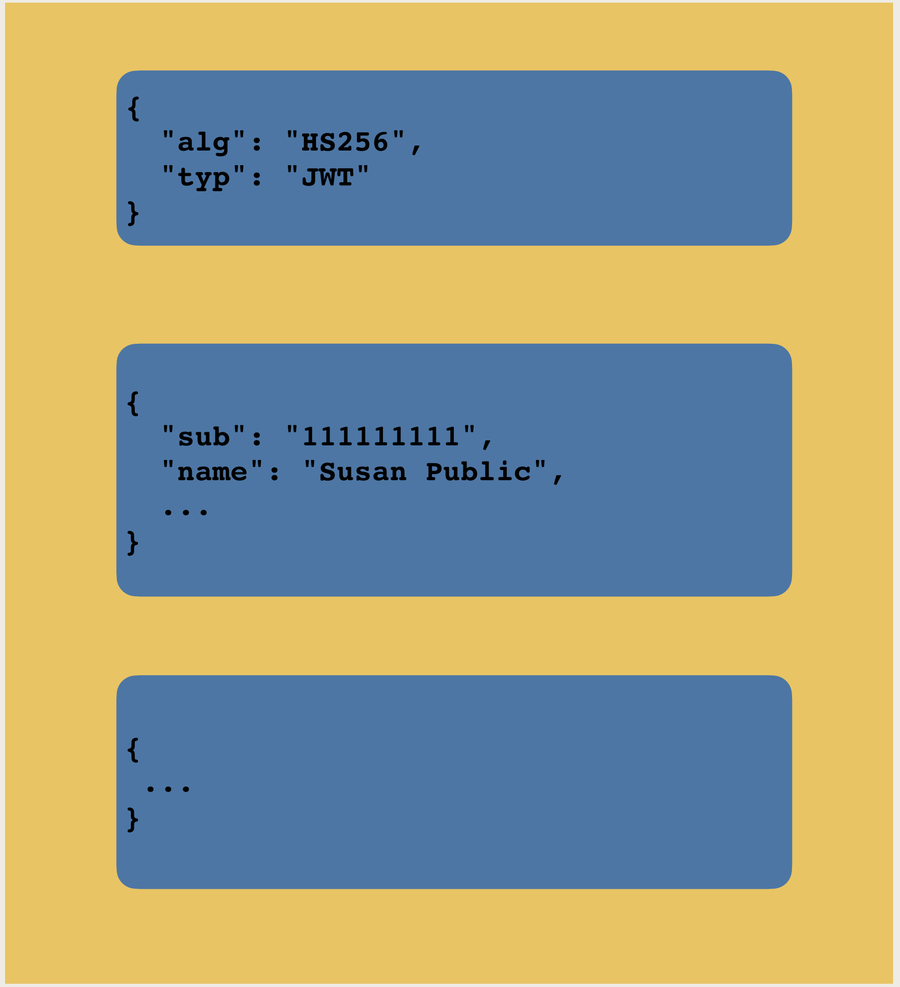
OpenID Connect

- Identity layer on top of OAuth 2
- Allows clients to receive "identity" information about authenticated resource owners (users)
  - Provided via an ID Token

JSON Web Token (JWT)

- Open standard that defines self-contained way of describing tokens
- Secure and digitally signed to guarantee integrity
- Used by OAuth and OpenID Connect

JSON Web Token (JWT)



Authorization Servers

- Generate tokens and define security policies
- **Simple Solutions**
  - Create your own simple solution with code
  - A lot of low-level coding and vulnerable to security holes / flaws
- **Real-time Enterprise Solutions**
  - Off-the-shelf solutions from companies specializing in security
  - Cloud-based solutions and on-premise solutions

Additional Resources

Technology	Website
OAuth 2	www.oauth.net
OpenID Connect	www.openid.net/connect
JWT	www.jwt.io