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Gomoku Web Game Platform



The Game

- Also known as *five in a row*
- 2 Players
- First player that has 5 stones in a row wins
- Japanese game from mid-1700s

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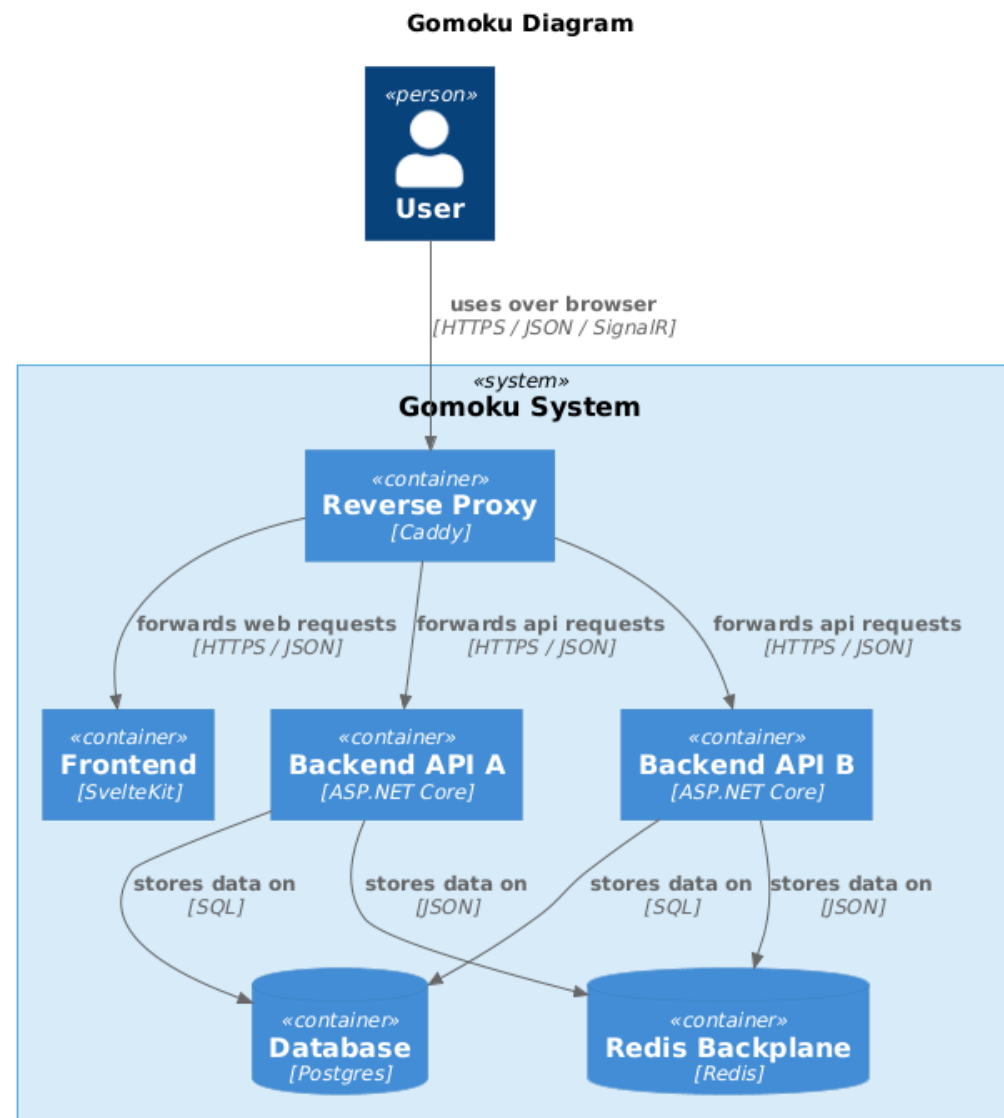
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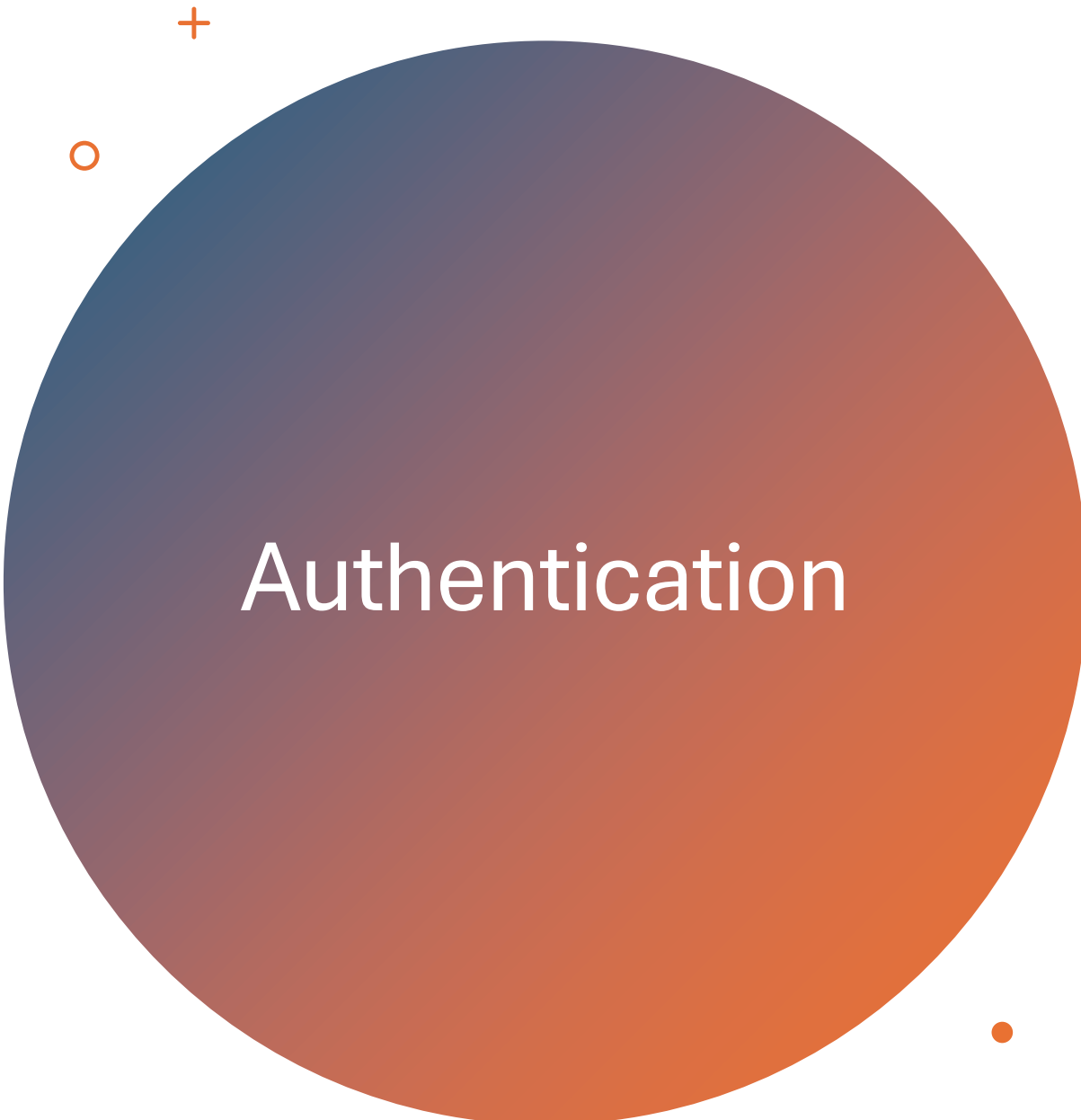
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Tech Stack

- Asp-Net Core (Backend)
 - SignalR
 - Ef-Core
- SvelteKit (Frontend)
 - TailwindCSS
- Docker
- Redis Backplane
- Postgres Database
- Caddy Load-Balancer
- WRK Load-Testing
- GitHub

Architecture





Authentication

- JWT Token
- Sent with HttpOnly-Cookie
- Persistent Refresh Token for automatic jwt-refresh



Load Balancing - Caddy

```
1      :80 {
2          handle_path /api/* {
3              reverse_proxy backend1:8080 backend2:8080 {
4                  lb_policy cookie
5                  lb_retries 3
6                  lb_try_duration 6s
7                  health_uri /health
8                  health_interval 3s
9              }
10         }
11         reverse_proxy frontend:3000
12     }
```

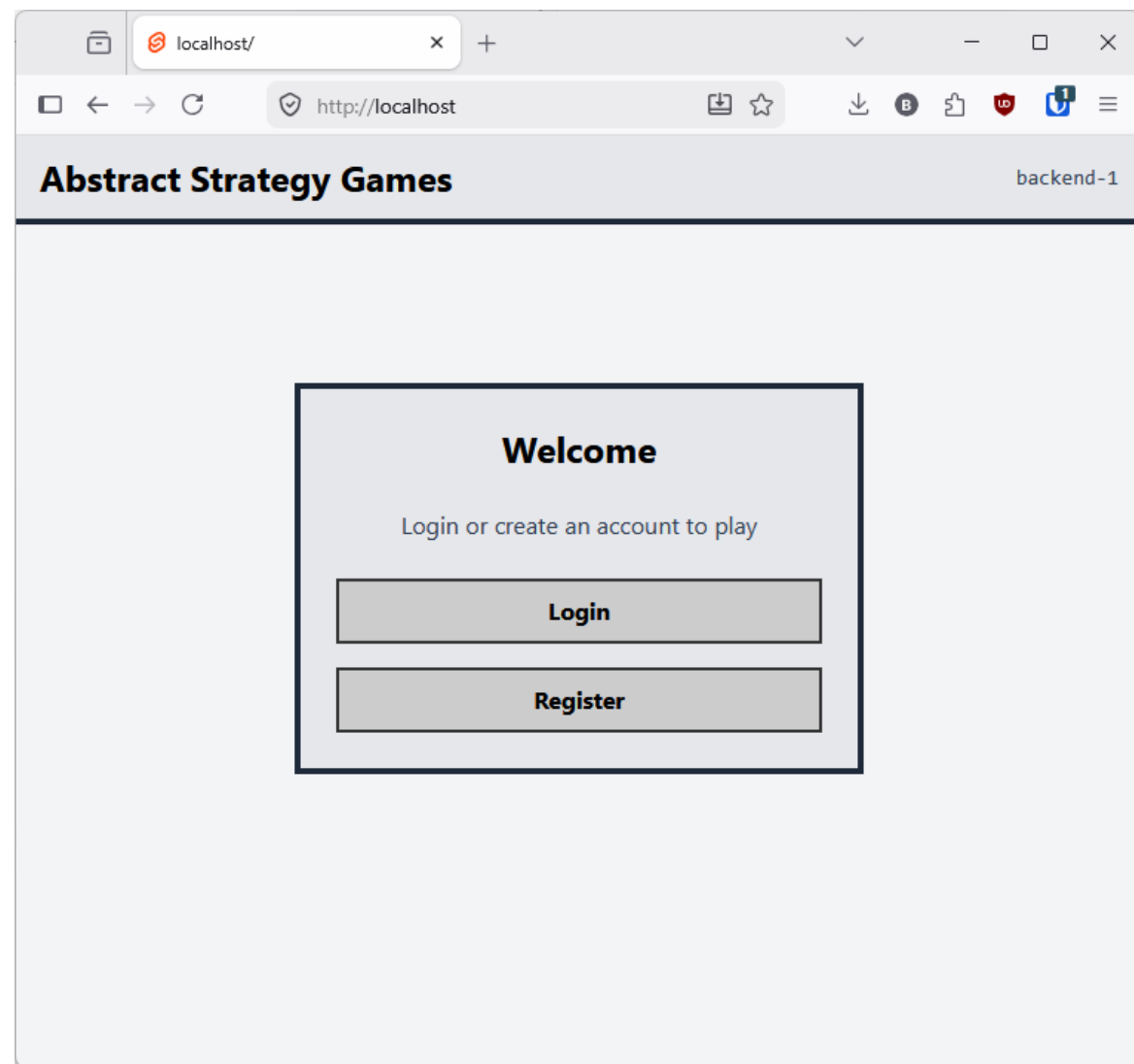


Load Test

- Tool: WRK
- Protected User-Info Endpoint
- Settings: 2 Threads, 40 Concurrent Requests over 30s
- Result: average 5ms latency and 4.11K requests/s
- On Same System
- AMD Ryzen 7 9700X 8-Core CPU
- More Concurrent Request exhausts db-connections → Maybe Context-Pooling?
- Test On Real Server
- Test With More or Less Docker Backend Instances
- Test WebSockets



Application



Application

The screenshot shows a web browser window with the address bar displaying 'localhost/' and 'http://localhost/home'. The page title is 'Abstract Strategy Games' and the user is logged in as 'backend-1'. The interface includes a 'Game Menu' section with a 'Logout' button. Below this is the 'Game Hub' section, which contains two main areas: 'Create New Game' with a 'Create Game' button, and 'Join Existing Game' with an 'Enter Invite Code' input field and a 'Join Game' button.

localhost/

http://localhost/home

Abstract Strategy Games backend-1

Game Menu Logout

Game Hub

Create New Game

Create Game

Join Existing Game

Enter Invite Code Join Game



Application

