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Miskolci SZC Kandó Kálmán Informatikai Technikum

ISLANDERS

School project

Edit Szigili

Norbert Lekner

Balázs Mészáros

Why make a game?

- ➔ There is a lot of stress in the world. Games can help you relax or relieve the stress
- ➔ You can play it with a mobile app or in your browser
- ➔ Easy to play
- ➔ Doesn't require a lot of time
- ➔ Accessible anywhere at anytime

About the game

Choose an island

Battle

Expedition

Build

Upgrade

Collect

The main parts

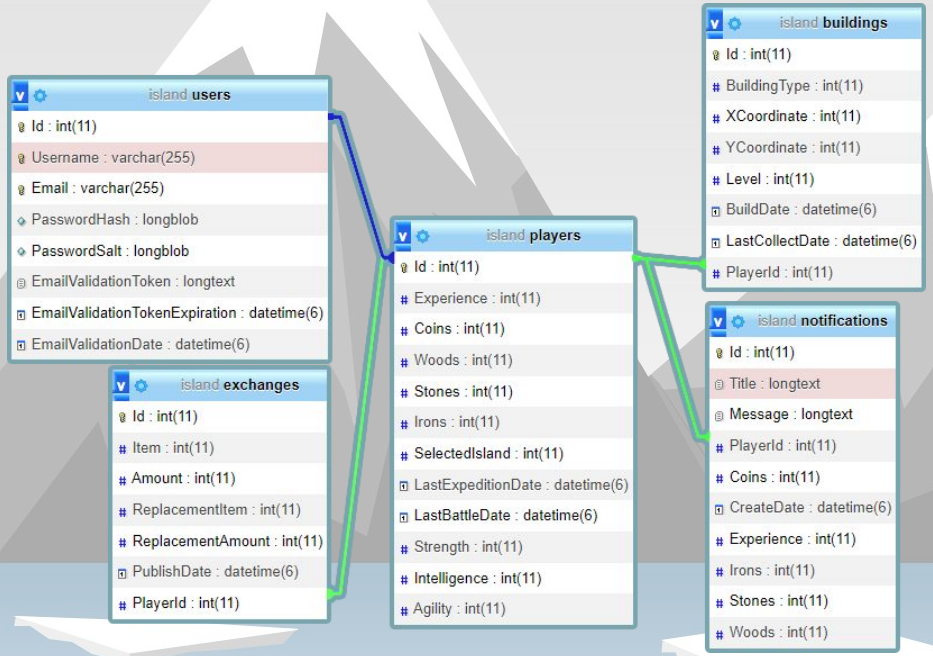
Login / Register / Password reset
My profile
Management
Build
Battle
Expedition
Tutorial
Market
Notifications
Music / sounds
Logout

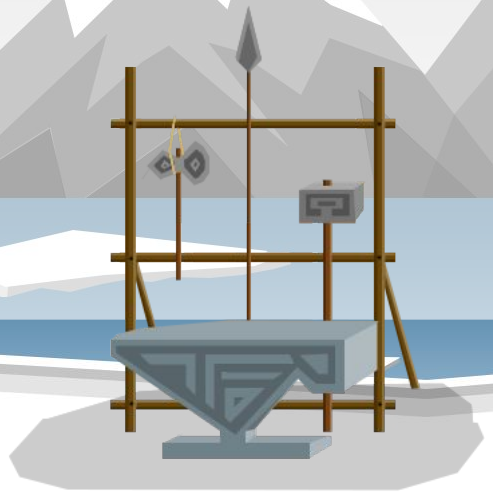
The structure

- Database
  - Mysql + apache
  - Entity framework
- Backend
  - ASP.NET Core
  - Swagger
  - WebAPI / service / authentication
- Frontend
  - React Js
  - Bootstrap + Npm packages

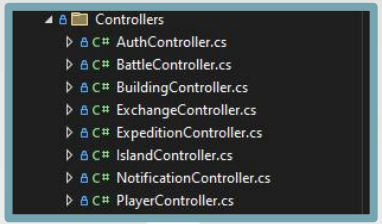
Database

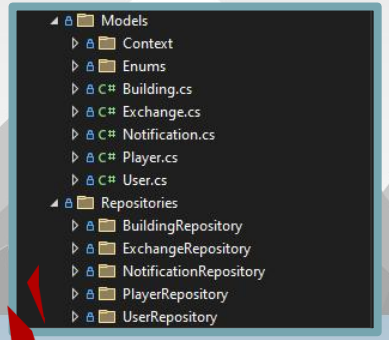
Mysql
Model first
Entity framework
5 tables





Backend





ASP .NET 6.0 Web API

3 layer architecture

Dependency Injection Design Pattern

Async

Mailkit

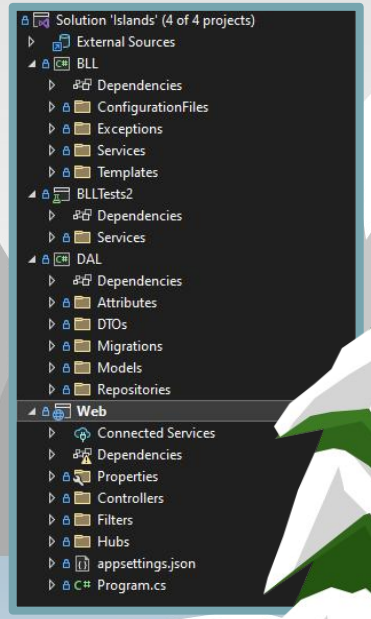
Websocket (SignalR)

JSON Web Tokens (JWT)

Password encryption

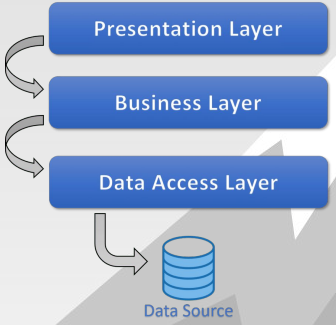
Entity Framework

Json files for static datas



Norbert Backend

- 3 layer architecture
  - Data Access Layer, Business Logic Layer, Presentation Layer
  - Advantages over traditional design patterns: easy to read, maintainable, easier to test
- Dependency Injection Design Pattern
  - Interface, as a dependency - the implementation can be easily changed without changing the behavior of the class to other parts of the code

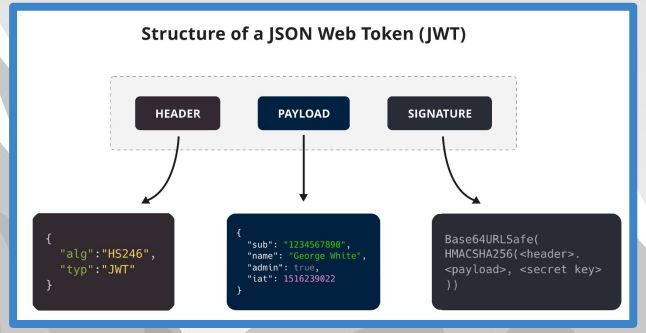


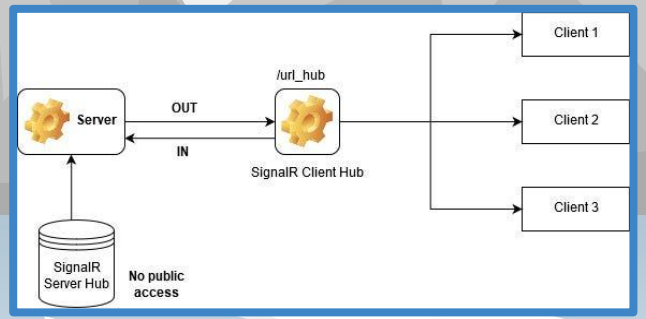

```
namespace DAL.Repositories.UserRepository
{
    6 references
    public interface IUserRepository
    {
        4 references
        Task<User> GetUserByUsernameAsync(string username);
        3 references
        Task<User> GetUserByEmailAsync(string email);
        2 references
        Task<User> GetUserByValidationTokenAsync(string token);
        2 references
        Task AddUserAsync(User user);
        5 references
        Task UpdateUserAsync(User user);
        2 references
        Task<DateTime> GetEmailValidationDateByUsernameAsync(string username);
    }
}
```

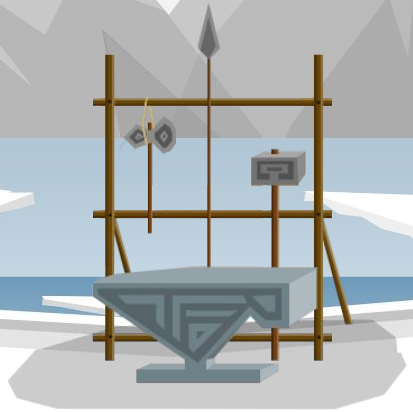
```
// Dependency injections
builder.Services.AddScoped<IAuthService, AuthService>();
builder.Services.AddScoped<IBattleService, BattleService>();
builder.Services.AddScoped<IBuildingService, BuildingService>();
builder.Services.AddScoped<IConfigurationService, ConfigurationService>();
builder.Services.AddScoped<IEmailService, EmailService>();
builder.Services.AddScoped<IExchangeService, ExchangeService>();
builder.Services.AddScoped<IExpeditionService, ExpeditionService>();
builder.Services.AddScoped<IIslandService, IslandService>();
builder.Services.AddScoped<INotificationService, NotificationService>();
builder.Services.AddScoped<IPlayerService, PlayerService>();
builder.Services.AddSingleton<IRandomProvider, RandomProvider>();

builder.Services.AddScoped<IBuildingRepository, BuildingRepository>();
builder.Services.AddScoped<IExchangeRepository, ExchangeRepository>();
builder.Services.AddScoped<INotificationRepository, NotificationRepository>();
builder.Services.AddScoped<IPlayerRepository, PlayerRepository>();
builder.Services.AddScoped<IUserRepository, UserRepository>();
```

Norbert Backend

- **JSON Web Tokens (JWT):**
  - It gives you a signed token after logging in, which the server certify after authorization
- **Websocket (SignalR):**
  - It allows a two-way communication between the server and the browser
  - It maintains connection (unlike HTTP)







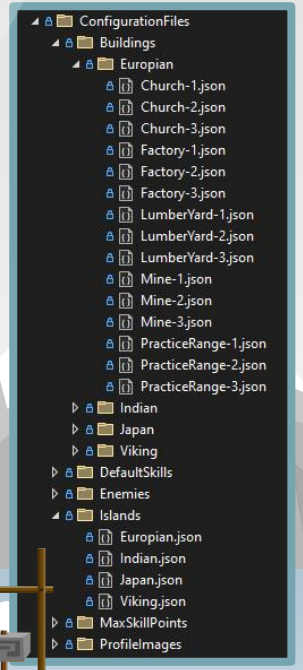
Edit Backend

Notifications

```
2 references
public async Task RemoveNotificationAsync(Notification notification)
{
    _context.Notifications.Remove(notification);
    await _context.SaveChangesAsync();
}
```

```
2 references
public async Task<List<NotificationDto>> GetAllNotificationsByUsernameAsync(string username)
{
    return await _context.Notifications
        .Include(notification => notification.Player)
            .ThenInclude(player => player.User)
        .Where(notification => notification.Player.User.Username == username)
        .Select(notification => new NotificationDto()
        {
            Id = notification.Id,
            Title = notification.Title,
            Message = notification.Message,
            Woods = notification.Woods,
            Stones = notification.Stones,
            Irons = notification.Irons,
            Coins = notification.Coins,
            Experience = notification.Experience,
            IsOpened = notification.IsOpened,
            CreateDate = notification.CreateDate,
        })
        .OrderByDescending(notification => notification.CreateDate)
        .ToListAsync();
}
```

Balázs Backend

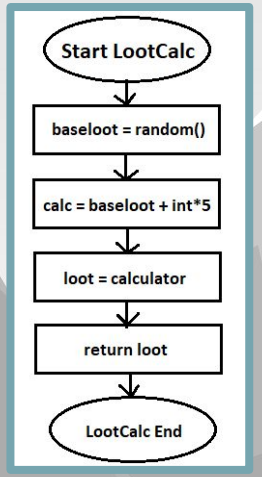


Battle and expedition base

Expedition service and controller

Config settings

Balance



Frontend

- node_modules
- public
- src
  - components
  - contexts
  - fonts
  - game-helper
  - models
  - pages
  - sounds
  - App.js
  - App.test.js
  - index.css
  - index.js
  - logo.svg
  - reportWebVitals.js
  - setupTests.js
- .gitignore
- package-lock.json
- package.json
- README.md

- contexts
  - GameFieldContext.js
  - HudContext.js
  - IslandContext.js
  - NotificationContext.js
  - UserContext.js
- fonts
- game-helper
- models
- pages
  - battle
  - email-verification
  - error
  - expedition
  - island
  - login
  - management
  - market
  - myprofile
  - notifications
  - pwreset
  - register
  - select-island
  - sell
  - single-notification
  - tutorial

React JS
Bootstrap
Rxjs
Axios
Moment
React-cookie
React-simple-animate
React-hook-form
Use-sound

- components
  - alert-modal
  - base-modal
  - expedition-interface
  - expedition-result-modal
  - experience-bar
  - float-alert
  - game-field
  - hud
  - islands-battle
  - layout
  - loading-screen
  - management-abilities
  - management-island
  - management-unbuilt-buildings
  - profile-image
  - resend-verify-email-form
  - unbuilt-building

Norbert Frontend

Island and choose an island

Buildings

Battle

Management

Login

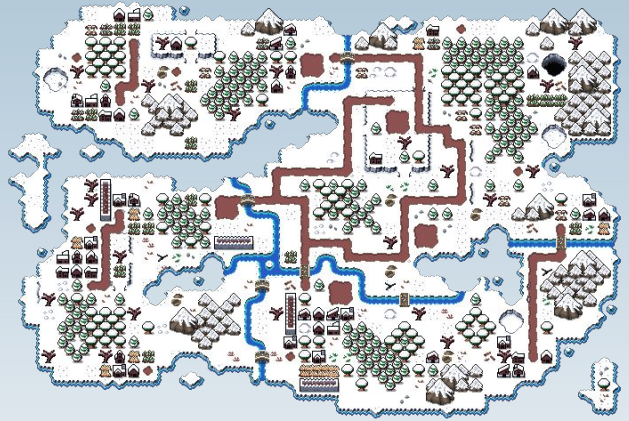
Email confirmation

Gamefield

Notifications

Animations

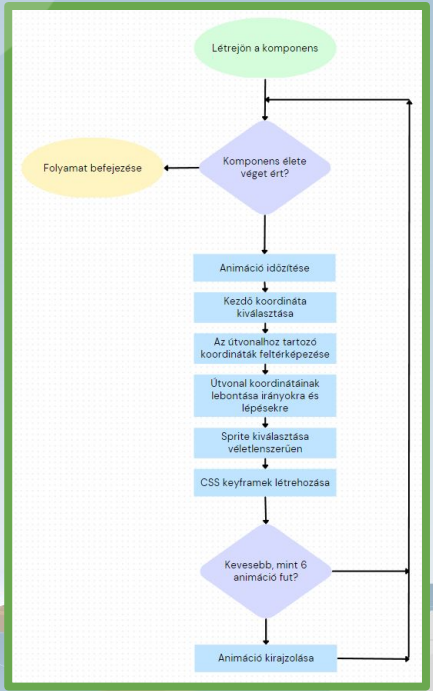
RXJS



Norbert Frontend

- Notifications:
  - websocket connection
  - new notifications arrive immediately (with an icon indication on hud)
  - detailed view
- Gamefield:
  - magnification , moving, touch events
  - animation rendering
  - showing objects in grid structure

Norbert Frontend



- RXJS (javascript reactive programming library):
  - building production, events, reacting to HTTP requests
- Animations

```
const urls = [
  `${process.env.REACT_APP_API_BASE}/api/Island/GetIsland`,
  `${process.env.REACT_APP_API_BASE}/api/Building/GetAllBuildings`,
  `${process.env.REACT_APP_API_BASE}/api/Building/GetAllUnbuiltBuildings`,
];

const requests$ = urls.map((url) => from(axios.get(url)));

forkJoin(requests$).subscribe({
  next: (response) => {
    const island = response[0].data;
    const buildings = response[1].data;
    const unbuiltBuildings = response[2].data;

    this.setState((state) => ({
      ...state,
      isIslandInitialized: true,
      buildings: buildings,
      unbuiltBuildings: unbuiltBuildings,
      island: {
        spritePath: island.spritePath,
        buildableLocations: island.buildableLocations,
        npcRoutes: island.npcRoutes,
        npcSprites: island.npcSprites,
      },
    }));
  },
  error: () => {
    alert("Nem sikerült kapcsolódni a szerverhez!");
  },
});
```

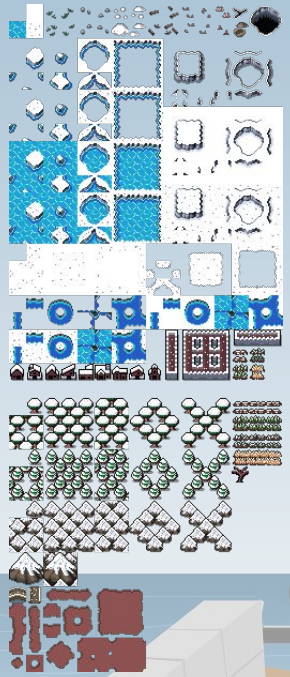
```
this.touchMove$ = new Subject();
this.touchStart$ = new Subject().pipe(
  switchMap(() =>
    this.touchMove$.pipe(
      pairwise(),
      map(([previousEvent, currentEvent]) => {
        const previousTouch =
          previousEvent.touches[0] || previousEvent.changedTouches[0];
        const currentTouch =
          currentEvent.touches[0] || currentEvent.changedTouches[0];
        const movementX = currentTouch.clientX - previousTouch.clientX;
        const movementY = currentTouch.clientY - previousTouch.clientY;

        return [movementX, movementY];
      })
    )
  )
);
```

Edit Frontend

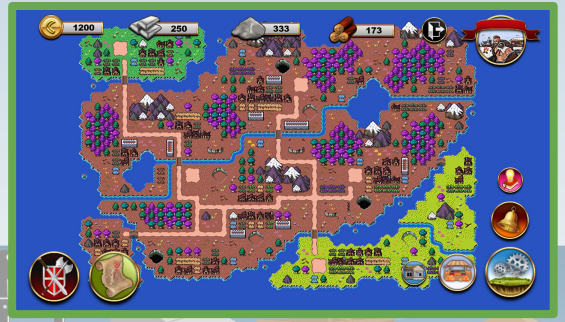
My profile
Tutorial
Expedition

```
  setConfirmPassword(event.target.value);
}

function submitHandler(event) {
  event.preventDefault();

  if (password !== confirmPassword) {
    setErrorMessage("Nem egyeznek a megadott jelszavak!");
    return;
  }

  axios
    .put("https://localhost:7276/api/Auth/ResetPassword", {
      password: password,
      confirmPassword: confirmPassword,
    })
    .then(() => {
      setUserLoggedOut();
      navigate("");
    })
    .catch(() => {
      setErrorMessage("Nem sikerült kapcsolódni a szerverhez.");
    });
}

useEffect(() => {
  setIsHudDisplayed(true);
}, []);

return (
  <Layout navigations={[]} title="Saját profil">
    <div className="myprofile-data flex-column">
      <div className="myprofile d-flex justify-content-center">
        <ProfileImage />
      </div>
      <div className="Profile d-flex justify-content-center">
        <form id="myprofile-form" className="row" onSubmit={submitHandler}>
          <div class="User justify-content-center">
            <h2>{user.username}</h2>
            <h2>{user.email}</h2>
            <div class="reset-passwordjustify-content-center bg-bleur">
              <h3 class="text-profile text-center">Jelszó módosítása:</h3>
              <label class="text-label col-sm-12 text-center">
                Új jelszó:
```

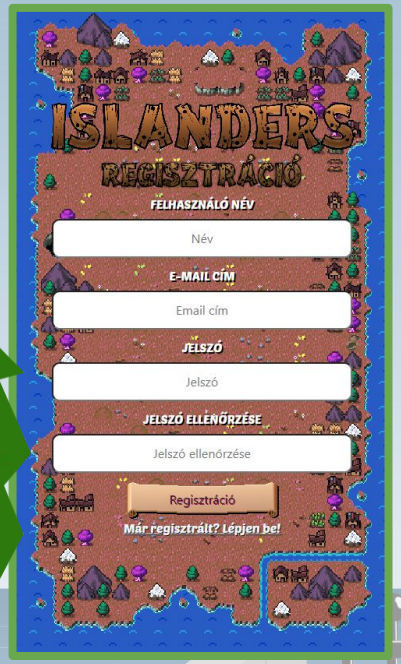
Balázs Frontend



UI / UX
Register
Password reset
Login
Market
Notifications
Music / sounds



Balázs Frontend



Register
React-hook-form
Error handling

```
<div className="justify-content-center form-group row pb-1">
  <label className="col-form-label text-center register-label">
    JELSZÓ
  </label>
  <input
    className="register-input"
    name="password"
    type="password"
    placeholder="Jelszó"
    id="password"
    {...register("password", {
      required: true,
      max: 40,
      min: 8,
      maxLength: 40,
      pattern:
        /^(?=.*\d)(?=.*[a-z])(?=.*[A-Z])(?=.*[a-zA-Z]).{8,40}$/i,
    })}
  />
  {errors.password?.type === "pattern" && (
    <span className="reg-error-msg text-center">
      A jelszónak 8 - 40 karakter hosszúnak kell lennie.
    </span>
  )}
  {errors.password?.type === "pattern" && (
    <span className="reg-error-msg text-center">
      A jelszó tartalmazzon egy kisbetűt, egy nagybetűt és egy
      számot.
    </span>
```

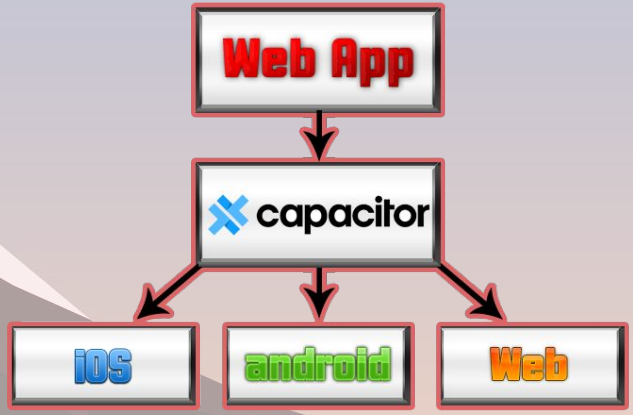
Balázs Frontend

- Market
  - Show exchanges
  - Managing own exchanges
  - Posting an exchange
- Music / sounds
  - Playing sounds
  - Playing music

```
import useSound from 'use-sound';

import boopSfx from '../../sounds/boop.mp3';

const BoopButton = () => {
  const [play] = useSound(boopSfx);

  return <button onClick={play}>Boop!</button>;
};
```

Mobile App

Capacitor
Android studio
Responsive design

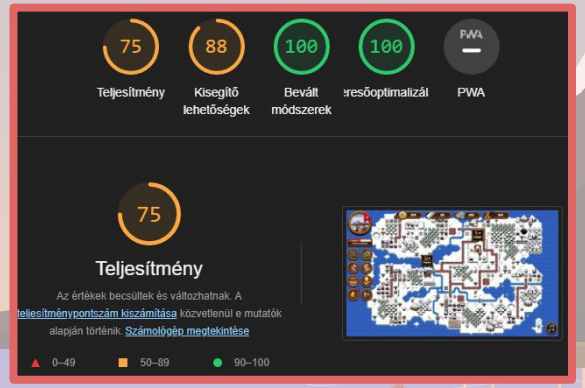


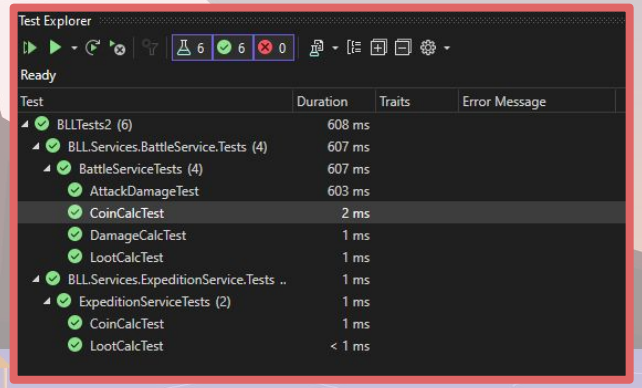
Testing

Functions of battle and expedition

Manual testing

Frontend testing (Lighthouse)

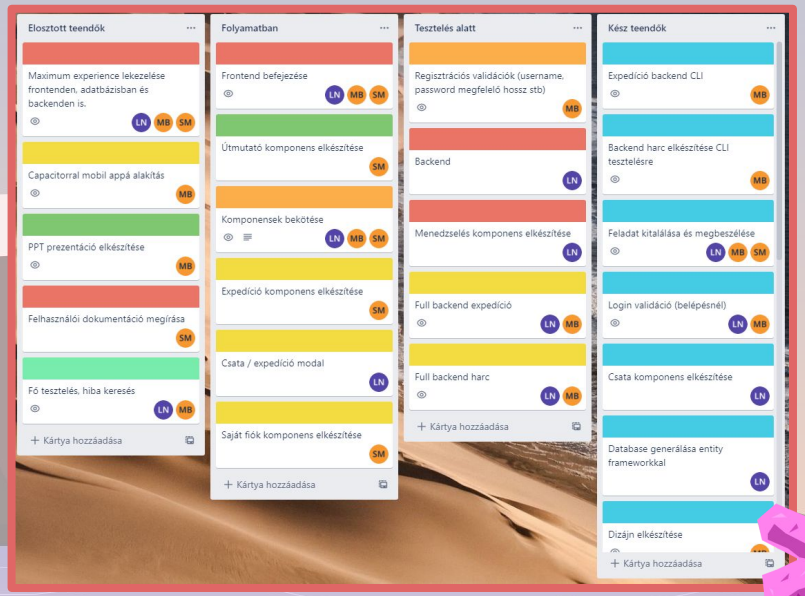




Teamwork

Github (2 repository)
Trello
Discord
Messenger
Google Drive

public	touch island moving	2 days ago
src	UnbuiltBuilding javítás	12 hours ago
.gitignore	Initialize project using Create React App	4 months ago
README.md	Initialize project using Create React App	4 months ago
package-lock.json	touch island moving	2 days ago
package.json	touch island moving	2 days ago



Publication

SharkASP.net
Firebase
Google Drive

Future development possibility

- Microtransactions
  - Battle / expedition rate acceleration
  - Changeable profile pictures, Ui elements / skins
- Normal mobile app development
  - Changing to react native
  - Rewrite the app with kotlin / java
- New features
  - More buildings
  - Build your own island
  - Collaborate with other islands (guilds) and travel to other peoples islands
  - Long expeditions (E.g. going through a cave with 4 small enemies and a boss)

ISLANDERS

Thank you for your attention!