

OWCA Advanced FitchFork Coding Standards

1. Overview

This document defines the coding conventions, styles, and repository structure for the Advanced-FitchFork project. Consistent adherence ensures clarity, maintainability, flexibility, reliability, and efficiency across the entire codebase.

2. Repository Structure

- **Advanced-FitchFork/**
 - **backend/**
 - **api/** Main API server (Actix)
 - **code_runner/** Code execution microservice
 - **common/** Shared Rust libraries
 - **db/** Database models and logic
 - **marker/** Automated marking logic
 - **migration/** Database migrations
 - **seeder/** Database seeding scripts
 - **util/** Utility crates
 - **frontend/**
 - **public/** Static assets
 - **src/**
 - **components/** Reusable UI components
 - **context/** React context providers
 - **constants/** Application constants
 - **config/** API and app configuration
 - **hooks/** Custom React hooks
 - **layouts/** Layout components
 - **pages/** Page-level components
 - **routes/** Route definitions and guards
 - **services/** API service functions
 - **types/** TypeScript type definitions
 - **utils/** Generic utility functions
 - **index.html**
 - Configuration files (ESLint, Prettier, tsconfig, Vite, Tailwind)
 - **docs/** Architecture diagrams, design guides, PDFs
 - **.github/** Actions workflows, issue & PR templates
 - **README.md** Project overview, setup, and contribution guide
 - Additional top-level configuration (Dockerfiles, CI meta, etc.)

3. Frontend (TypeScript + React)

1. Linting & Formatting

- **ESLint** (`frontend/eslint.config.js`)
 - Plugins: React, Accessibility (jsx-a11y), Import order, Prettier integration
- **Prettier** (`frontend/.prettierrc`)
 - Rules: semicolons required, single quotes, print width = 100, tab width = 2, trailing commas = all

2. Scripts

- `npm run lint` - report lint issues
- `npm run lint:fix` - auto-fix lint violations
- `npm run format` - apply Prettier formatting

3. TypeScript Practices

- Strict mode enabled in `tsconfig.json`
- Types in `src/types/`, organised by feature
- Explicit interfaces/types for props, state, API responses

4. React Practices

- Functional components + hooks exclusively
- Context API for global state
- Presentational vs. container component separation

5. File & Naming Conventions

- Files/folders: kebab-case (e.g. `user-profile.tsx`)
- Components: PascalCase (e.g. `UserProfile`)
- Variables/functions: camelCase

4. Backend (Rust)

1. Workspace Layout

- Top-level `backend/` as a Cargo workspace
- Each subdirectory (`api`, `marker`, `db`, etc.) is its own crate

2. Module Organization

- Root modules via `mod.rs`; submodules grouped by feature
- Public APIs documented with `///` comments

3. Error Handling & Types

- Custom `MarkerError` for domain errors

- Use `Result<T, E>` and the `thiserror` crate for ergonomics

4. Formatting & Linting

- `rustfmt` (default) enforced in CI
- `Clippy` for lints, treat warnings as errors in CI

5. Dependencies & Versions

- Pin versions in each `Cargo.toml`; workspace-wide `.cargo/config.toml` for overrides
- Avoid wildcard versions; follow semver

5. Configuration Files

● Frontend

- `eslint.config.js` - lint rules and plugin list
- `.prettierrc` - formatting rules
- `tsconfig.json` - compiler strictness and module resolution
- `vite.config.ts` - build and dev server configuration
- `tailwind.config.ts` - design system tokens

● Backend

- `Cargo.toml` / `Cargo.lock` - dependency management
- `rustfmt.toml` - any custom formatting settings
- `clippy.toml` - lint overrides (if needed)
- `Makefile.toml` or `Justfile` - build, test, lint commands
- `Dockerfile` - production container build

6. Best Practices & Guidelines

- **Consistency**: follow naming, module layout, and style across all code.
- **Documentation**: every public function/type must have a doc comment.
- **Testing**: unit tests alongside code (`#[cfg(test)]`), integration tests in `tests/`.
- **Code Reviews**: no merges without peer review. Focus on correctness, style, and readability.
- **CI/CD**: enforce formatting, linting, and test suite on every commit to `main`.
- **Security**: sandbox student code; TLS for all communications; do not commit secrets.

7. Maintenance & Evolution

This document is a living artefact. As technologies, frameworks, or project needs evolve, these standards will be updated to keep the codebase healthy and maintainable.