TinyBridge User Manual

A Lightweight URL Shortening Service

Installation, Configuration, and Usage Guide

CS Group 8

Introduction to Software Engineering

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Contents

1   Introduction

1.1   About TinyBridge

TinyBridge is a lightweight, efficient URL shortening service designed for campus organizations, small enterprises and individual content creators. The platform transforms long, unwieldy URLs into concise, memorable short links while providing comprehensive analytics and customization features.

1.2   Key Features

TinyBridge offers the following core functionalities:

- **URL Shortening**: Convert long URLs into short, shareable links using a 6-character alphanumeric code
- **Custom Short Codes**: Create personalized short codes for better brand recognition
- **Click Analytics**: Track click counts, geographic distribution, device types, and traffic sources
- **QR Code Generation**: Automatically generate QR codes for each short link
- **API Access**: Programmatic access via RESTful API with key-based authentication

1.3   System Requirements

Before installing TinyBridge, ensure your system meets the following requirements:

Component	Requirement
Node.js	Version 20.19.0 or higher
Yarn	Version 1.22.0 or higher
Operating System	Windows 10+, macOS 10.15+, or Linux
Disk Space	Minimum 500 MB
RAM	Minimum 2 GB

Table 1: System Requirements

2   Installation Guide

This chapter provides step-by-step instructions for installing and configuring TinyBridge on your local machine.

2.1   Prerequisites

2.1.1   Installing Node.js

Download and install Node.js from the official website: https://nodejs.org/

Verify the installation by running:

```
node --version
```

2.1.2 Installing Yarn

Install Yarn via corepack (bundled with Node.js 16.10+):

```
corepack enable
yarn --version
```

2.2 Backend Installation

2.2.1 Step 1: Clone the Repository

```
git clone https://github.com/BugUniversity-2024/2025-ITSE-
    Shortlinker.git
cd 2025-ITSE-Shortlinker/Backend
```

2.2.2 Step 2: Install Dependencies

```
yarn install
```

2.2.3 Step 3: Configure Environment Variables

Create a `.env` file in the Backend directory:

```
NODE_ENV=development
PORT=8000
DATABASE_URL="file:./dev.db"
JWT_SECRET=your-secret-key-here
JWT_EXPIRES_IN=24h
CORS_ORIGINS=http://localhost:5173
```

Important: Replace `your-secret-key-here` with a secure random string for production use.

2.2.4 Step 4: Initialize the Database

```
yarn db:push
```

This command creates the SQLite database and initializes all required tables.

2.2.5 Step 5: Start the Backend Server

For development:

```
yarn dev
```

The backend server will start at `http://localhost:8000`.

2.3 Frontend Installation

2.3.1 Step 1: Navigate to Frontend Directory

```
cd ../Frontend
```

2.3.2   Step 2: Install Dependencies

```
yarn install
```

2.3.3   Step 3: Start the Development Server

```
yarn dev
```

The frontend application will be available at `http://localhost:5173`.

2.4   Verifying Installation

After starting both servers, open your browser and navigate to `http://localhost:5173`. You should see the TinyBridge login page as shown in Figure 1.
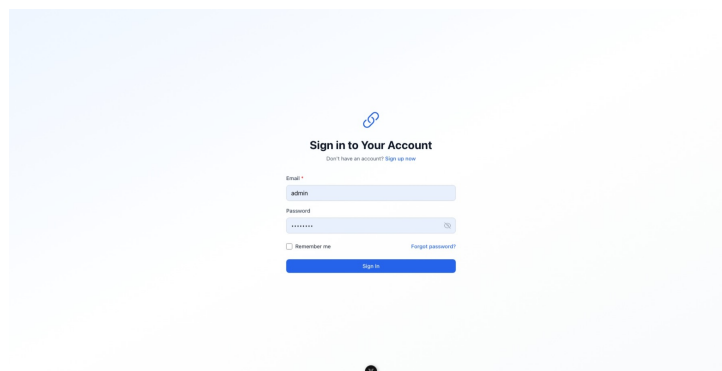

Figure 1: TinyBridge Login Page

3   Quick Start Guide

3.1   Step 1: Create an Account

1. Open TinyBridge in `http://localhost:5173`
2. Click "Register now" on the login page
3. Fill in the registration form:
   - Username (3-20 characters)
   - Email address
   - Password (minimum 8 characters)
4. Click "Create Account"

3.2   Step 2: Log In

1. Enter your email address and password. Click "Sign In".

3.3   Step 3: Create Your First Short Link

1. Click "Create Link". Enter the original URL you want to shorten
2. (Optional) Customize the short code, add a description or set an expiration time
3. Click "Generate Short Link".Copy the generated short link to share

3.4   Step 4: Test the Short Link

Open a new browser tab and paste your short link. You should be redirected to the original URL.

4   Feature Guide

4.1   Dashboard Overview

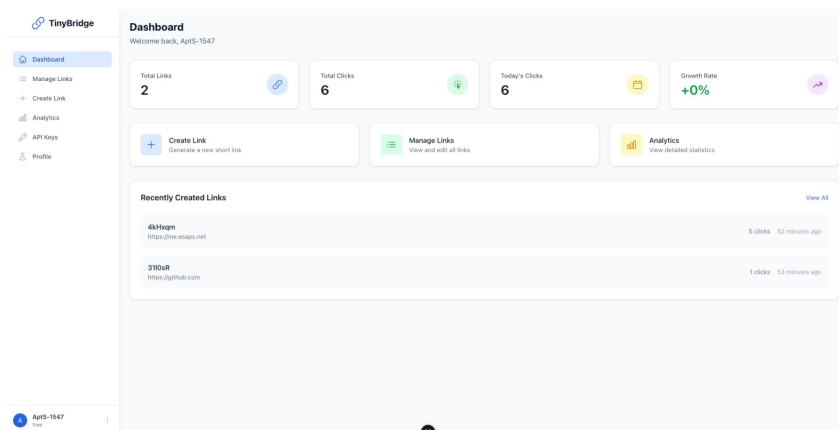The Dashboard provides a quick overview of your account activity.

Figure 2: TinyBridge Dashboard

The Dashboard displays:

- **Total Links**: Number of short links you have created
- **Total Clicks**: Cumulative clicks across all your links
- **Today Clicks**: Clicks received today
- **Click Trends**: Visualization of recent click activity
- **Quick Actions**: Shortcuts to create links, batch create or view analytics

4.2   Creating Short Links

Navigate to "Create Link" in the sidebar to access the link creation interface.

Figure 3: Create Short Link Interface

4.2.1 Required Fields

- **Original URL**: The full URL you want to shorten (must be a valid URL starting with http:// or https://)

4.2.2 Optional Fields

- **Custom Short Code**: Create a memorable code (4-20 characters, alphanumeric with hyphens and underscores)
- **Description**: Add a note to help you remember what this link is for

4.3 Managing Links

It displays all your short links in a searchable, sortable table.

Figure 4: Link Management Interface

4.3.1 Available Actions

- **Copy**: Copy the short link to clipboard
- **View Analytics**: See detailed statistics for this link
- **Edit**: Modify the link's description, tags, or expiration
- **Enable/Disable**: Toggle the link's active status
- **Delete**: Permanently remove the link

4.3.2 Link Status

- **Active** (green): Link is working and redirecting
- **Disabled** (red): Link has been manually disabled
- **Expired**: Link has passed its expiration date

4.4 Analytics Dashboard

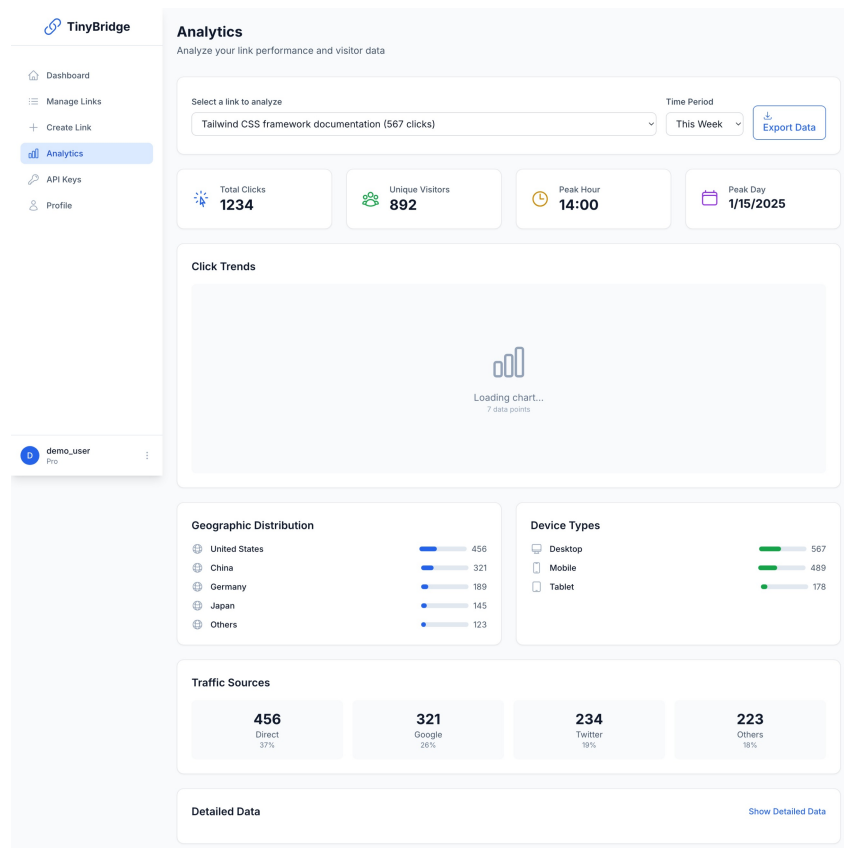The Analytics page provides detailed insights into your link performance.

Figure 5: Analytics Dashboard

4.4.1 Visualizations

- **Click Trends**: Line chart showing clicks over time
- **Traffic Sources**: Breakdown of direct visits, search engines and referrers
- **Total Clicks**: All clicks on the selected link
- **Peak Hour/Day**: The hour/date with most clicks

4.4.2 Exporting Data

Click "Export Data" to download analytics data in CSV format for further analysis.

4.5 API Key Management

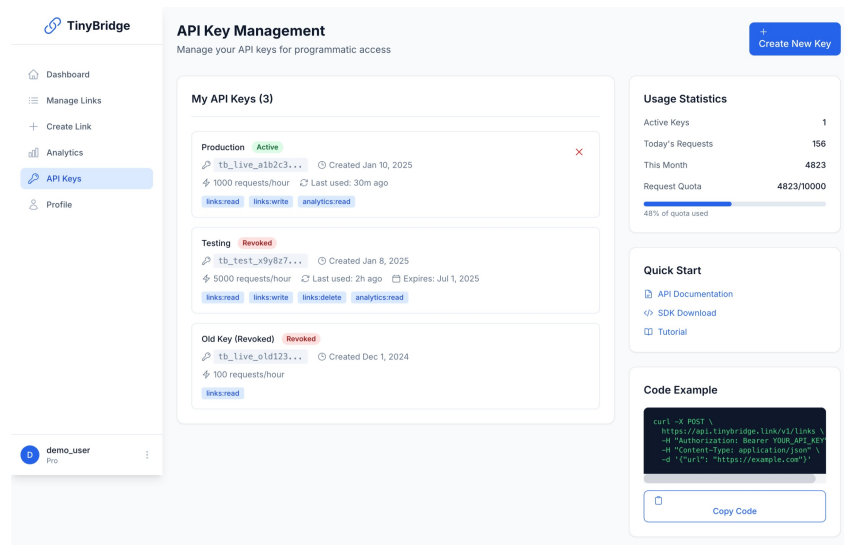For programmatic access, TinyBridge provides API key management.

Figure 6: API Key Management

4.5.1 Creating an API Key

1. Click "Create New Key"

2. Enter a name for the key (e.g., "Production", "Testing")

3. Select permissions: `links:read`, `links:write`, `links:delete`, `analytics:read`

4. Set rate limits and expiration (optional)

5. Click "Create"

6. **Important**: Copy the key immediately as it won't be shown again

4.5.2 Using the API

Include the API key in the Authorization header:

```
curl -X POST https://api.tinybridge.link/v1/links \
  -H "Authorization: Bearer YOUR_API_KEY" \
  -H "Content-Type: application/json" \
  -d '{"url": "https://example.com"}'
```

4.6 Profile Management

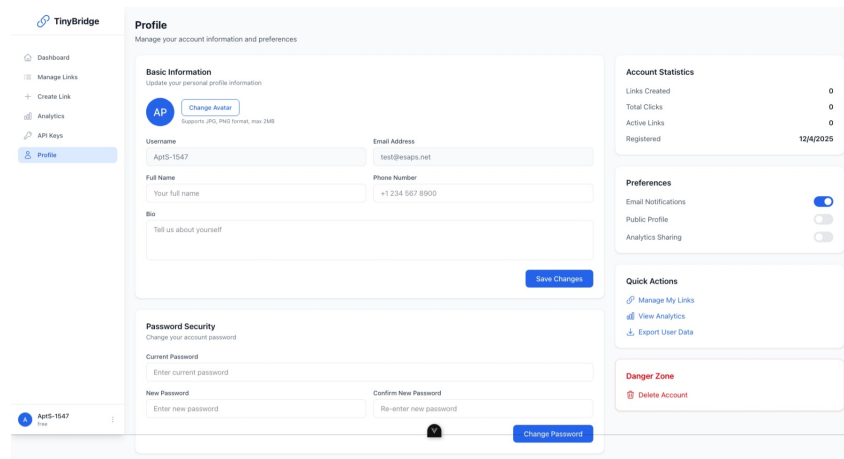Manage your account settings in the Profile section.

Figure 7: Profile Settings

4.6.1   Basic Information

- Update your username
- Update phone number

4.6.2   Preferences

- Enable/disable email notifications
- Toggle public profile visibility
- Control analytics sharing

4.6.3   Password Security

- Change your password by entering current and new passwords
- Passwords must be at least 8 characters

4.7   Landing Page Editor
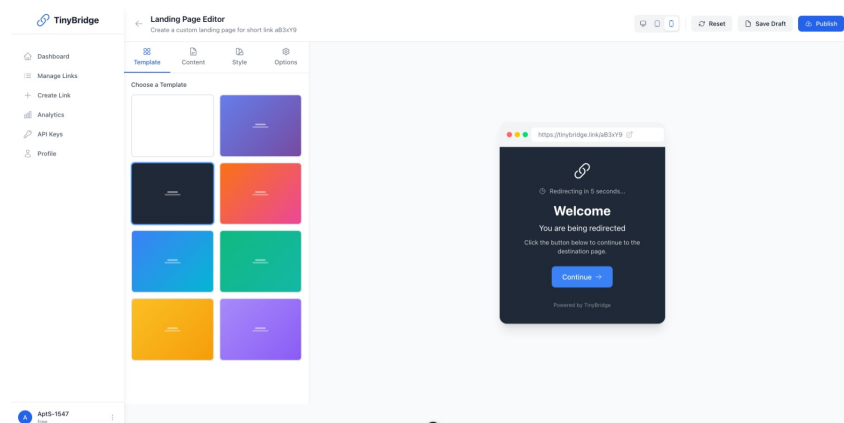
Create custom landing pages for your short links.

Figure 8: Landing Page Editor

4.7.1   Using Templates

1. Select a link to customize

2. Choose from available templates

3. Preview in desktop, tablet or mobile view

4.7.2 Customization Options

- **Template**: Choose from pre-designed layouts
- **Content**: Edit text and messages
- **Style**: Customize colors and fonts
- **Options**: Configure redirect delay and behavior

5 Frequently Asked Questions (FAQs)

Q1: What is TinyBridge?

A1: TinyBridge is a lightweight URL shortening service that transforms long URLs into short, memorable links with analytics and API access.

Q2: Is TinyBridge free to use?

A2: Yes, TinyBridge is completely free. All features including link creation, analytics, and API access are available at no cost.

Q3: How do I create a short link?

A3: Navigate to "Create Link", enter your URL, optionally customize the short code, and click "Generate Short Link".

Q4: Can I customize my short links?

A4: Yes, you can create custom short codes (4-20 characters, alphanumeric with hyphens and underscores).

Q5: How do I track link performance?

A5: Visit the "Analytics" page to view click counts, geographic distribution, device types, and traffic sources.

Q6: Is my data secure?

A6: Yes. All passwords are encrypted using industry-standard algorithms, and user data is only accessible to the account owner.

Q7: How do I use the API?

A7: Generate an API key from "API Keys" page, then use the header: `Authorization: Bearer YOUR_API_KEY`.

Q8: What browsers are supported?

A8: Chrome, Firefox, Safari, and Edge. We recommend using the latest version for optimal performance.

6   Troubleshooting

1. Unable to register or log in

Verify that email is valid and not already registered, password meets requirements (8+ chars), and network is stable. Try clearing browser cache if issues persist.

2. Short link not redirecting

Check that the link has not been disabled/deleted, has not expired, and the original URL is still accessible.

3. Analytics data not showing

Analytics may take a few minutes to update. Ensure you're viewing the correct link and that it has received clicks.

4. API requests returning errors

Verify your API key is valid, has appropriate permissions, and request format matches the documentation.

5. Page loading slowly

Check internet connection, clear browser cache, try a different browser, and ensure JavaScript is enabled.

— End of User Manual —