**Introduction:**

The BWorks project aims to facilitate the donation and sale of bicycles to underprivileged children, allowing them to pursue their dreams. The web application serves as a platform for users to contribute towards this cause. This developer guide provides comprehensive instructions for setting up, developing, and maintaining the project.

**Project Setup:**

To begin, ensure that your system meets the necessary requirements, including the installation of Python, Flask, and other dependencies. You'll also need to configure the project, including establishing a connection to the SQL database through SQLAlchemy. Detailed instructions on installation and configuration will be provided.

**Architecture and Design:**

The project follows a two tier architecture with a web-based frontend and a Flask-based backend. The architecture diagram illustrates the flow of data and interactions between components. The design emphasizes separation of concerns and adheres to industry best practices for scalability and maintainability.

**Code Structure and Organization:**

The project has a well-defined directory structure to ensure clarity and organization. Key directories and files will be explained, including the purpose of each. The codebase is modular, with clear responsibilities assigned to different modules. Detailed explanations of these modules will be provided.

**Backend Development:**

The backend of the project is implemented using Flask, a Python web framework. The developer guide will cover the structure and organization of the Flask application, including how to define routes, handle requests, and integrate with the database using SQLAlchemy. Examples and code snippets will be provided to illustrate these concepts.

**Frontend Development:**

The frontend of the project is developed using Angular, a popular JavaScript framework. The developer guide will explain the Angular project structure and organization, including the creation of components, services, and routing. It will also demonstrate how to communicate with the backend API to retrieve and display data. Code examples and explanations will be included.

**Database and Data Management:**

The project utilizes a SQL database, which is accessed through SQLAlchemy. The developer guide will describe the database schema and tables, including the Users, Bicycle, and Transactions tables. Instructions for setting up and configuring the database will be provided. Additionally, guidelines for using SQLAlchemy to interact with the database will be outlined.

**User Registration and Authentication:**

The developer guide will explain the user registration process, including how users can create accounts and provide their credentials. User authentication and authorization will also be covered, ensuring that only authorized users can access certain features of the application.

**Buying and Donating Bicycles:**

Step-by-step instructions will be provided for the buying and donating process. Users will be guided through the submission of their preferences, including phone number and email address. Input validation and error handling will be discussed to ensure a smooth user experience.

**Testing:**

The developer guide will outline the testing approach for the project, including unit tests, integration tests, and any other relevant types of testing. Instructions for running tests and ensuring code quality will be provided. If testing frameworks or tools are used, they will be introduced and explained.

**Deployment and Release:**

Deployment instructions will be provided to assist in deploying the project to a production environment. This section will cover environment setup, deployment configuration, and any necessary steps for deploying the backend and frontend components. Continuous integration and delivery pipelines will also be discussed if applicable.

**Troubleshooting and FAQs:**

A section dedicated to troubleshooting common issues and providing solutions will be included. Frequently asked questions related to development and usage will be addressed to assist developers in resolving potential problems they may encounter during the development process.

**Resources and References:**

Links to relevant documentation, tutorials, and resources will be provided to further assist developers.