

The web application is designed to facilitate the compilation of programs for 8-bit processors. Users can upload or edit C code files, set compiler options, and obtain compiled program output using the SDCC compiler. The application provides a user-friendly interface accessible via a web browser.

Features:

1. General View:

- The application's layout includes a menu bar, file selection area, program text display, code snippet display, and tabs for compiler options.
- The menu bar contains typical menu options like File, Edit, and Options.
- Users can select and upload C code files, which are displayed in a tree-like directory structure.
- The full code of the program is displayed in the program text area, with selected code fragments shown in the snippet area.
- Tabs categorize different compiler options, allowing users to choose processor type, source code standard, optimization settings, and processor-dependent options.

2. Data Model:

- The application incorporates a data model comprising entities such as Directory, File, File Section, Section Type, Section Status, and User.
- Each entity has specific attributes, including name, description, creation date, owner, availability status, modification date, and content.

3. User Interface:

- The file selection section displays the directory structure fetched from the database.
- Users can add files and directories, delete items (mark them as unavailable), and manage files associated with their account.
- The code snippet section shows the assembly code generated by the SDCC compiler based on the selected compiler options.
- Four tabs provide options for selecting code standards, optimization levels, processor types, and processor-dependent options.
- Users can initiate full compilation of the currently selected file, with the compiler output displayed in the program text area.

4. Enhancements:

- User authentication functionality has been added, allowing users to log in and manage their files.
- Improved user experience by implementing AJAX to avoid page reloads for file operations and menu actions.
- Users can manually add sections to the code by selecting a portion of the file.
- Error messages from the compiler are displayed in the code snippet area, with clickable hints indicating the affected lines in the source code.
- Users can toggle the visibility of all sections or individual sections in the assembly code display, with section headers always visible.

The web application provides a comprehensive environment for compiling C programs for 8-bit processors, with a user-friendly interface and enhanced functionality for code management and compilation.