JavaScript Documentation Generation

Ceasar Bautista, Adi Dahiya, Kyle Hardgrave, David Xu
Advised by Steve Zdancewic

Abstract

Our source code analysis tool seeks to provide JavaScript projects with automatically generated documentation through the identification of common design patterns.

Motivation

JavaScript is the most widely used and accessible programming language today according to Github... but a lot of it is undocumented. This creates many engineering problems for new developers.

System Architecture

Class definitions:
- Game (models/game, L12)
- Puzzle (models/puzzle, L24)
- Jigsaw (models/puzzle, L56)

Model-View-Controller:
- GameView (views/game, L10)
- PuzzleView (views/puzzle, L12)
- AppView (views/app, L5)
- AppController (app_controller, L17)

Singletons:
- App (app_controller, L10)

Input source code files
Module definition signatures
Class definition signatures
Singleton definition
Formatting, de-duplication, sorting
System config
Pattern matching for software design patterns
Documentation output

System Results

Readable, searchable documentation

docgen.js generates useful project outlines that help new developers dive into arcane code bases.

games.Jigsaw Class

example.js:19

Inherits:
- games.Puzzle example.js:8

Properties:
- none (inherited from games.Puzzle)
- name

Methods:
- placePiece() (inherited from games.Puzzle) example.js:10

Future Work

Catalog more JavaScript design patterns.

Expose the documentation in various formats.

Attempt to apply more research-based algorithms.