OpenHID Lab: CodeVR 1.0
VIP Senior - Spring 2018
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Purpose
- Visualization of CS concepts & fundamentals
- Programming Languages are complex and can seem daunting to learn to beginners
- Hard to trace relationships and functionality between different programming structures

Solution
- 3D visual interactive programming application with domain specific CodeVR language
- Creation and manipulation of virtual programming language constructs
- My Contribution: CodeVR Language Design and source-to-source compiler

Current Status
- Language application runs successfully
- Successful execution of Lexical Analysis on source input
- Generation of CodeVR Parse Tree via token stream
- High-level source-to-source translation from CodeVR Language to Python

Requirements
- Token stream generation via Lexical Analysis
- Parser validates token stream syntax structure
- Valid parse tree is generated for source-to-source language application
- Traversal of parse tree nodes via parse tree walker
- Generation and export of Python source code via parse tree listener

System Design
- CodeVR Source Code
  - Lexer
    - Token Stream
  - Parser
    - Parse Tree
  - Source-to-Source Language Application
    - Translated Python Source Code

Future Work
- Expansion of CodeVR Lexer & Parser Grammar Rules
- Integration with 3D application to allow generation and export of CodeVR source code
- Expand compiler support for translation into additional high level languages - C++, Java, JavaScript
- Importation of premade CodeVR source code into 3D environment

Implementation
- Implementation of 3D interactive blocks-based programming application
- Implementation of CodeVR compiler and source-to-source language application

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