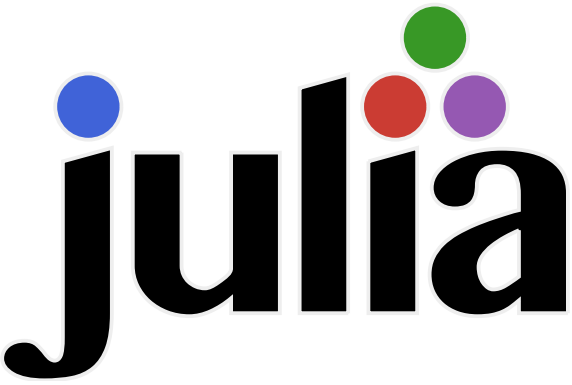
GSoC 2024

Project Proposal



Language Interoperability

CxxWrap.jl

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Google Summer of Code

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Through this project, I aim to expose a larger portion of the C++ standard library to Julia.

3.1. Primary Goals

3.1.1. Add STL Container Types

The following containers, along with their commonly used methods, will be added

- `std::set`
- `std::multiset`
- `std::stack`
- `std::priority_queue`
- `std::unordered_set`
- `std::unordered_multiset`
- `std::bitset`
- `std::list`
- `std::forward_list`

3.1.2. Add STL Algorithms

The following algorithms will be added

- `std::ranges::lower_bound`
- `std::ranges::upper_bound`
- `std::ranges::binary_search`
- `std::ranges::sort`
- `std::ranges::stable_sort`
- `std::ranges::max`
- `std::ranges::max_element`
- `std::;ranges::min`
- `std::ranges::min_element`
- `std::ranges::minmax`
- `std::ranges::minmax_element`
- `std::ranges::clamp`
- `std::ranges::equal`

3.1.3. Documentation

Currently, `StdVector` and `StdString` are documented. I will document the functionality

3.1.4. Unit Testing

3.1.5. Integration Testing

3.2. Stretch Goals

If time permits, I would like to make general improvements to the core of CxxWrap, and add more STL containers.

3.2.1. Investigate compilation bottlenecks

3.2.2. Add Iterator Support

3.2.3. Add more STL Container Types

These containers have been introduced in C++ 23

- `std::flat_set`
- `std::flat_multiset`

4. Project Details

5. Project Schedule

5.1. Pre-Project Phase

5.2. Project Phase

5.3. Post-Project Phase

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