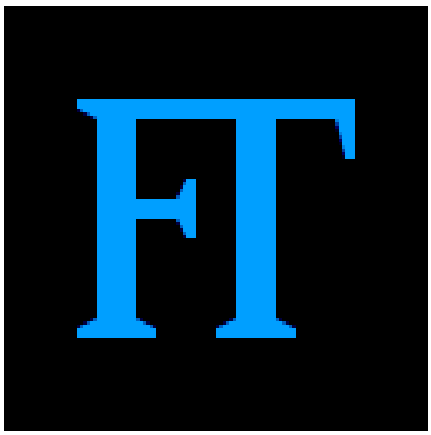
Google Summer of Code

Update FreeType's build systems



Project Proposal

BY

Nitish Jha

My BIO

Hello there,

I'm Nitish Jha, a first-year B.Tech student majoring in computer science and engineering, with a fervent passion for technology and a knack for problem-solving. Hailing from Darbhanga, Bihar (India), I've been deeply intrigued by computer systems since an early age, constantly seeking to understand their inner workings.

My journey into programming began with languages like C, Java, JavaScript, Python, and Ruby, but it was my discovery of C, particularly its applications in system programming, that truly captivated me. I found myself drawn to the intricacies of build systems like CMake, GNU make, and Meson, realizing their crucial role in software development.

As I transitioned into college, I delved deeper into the world of build systems and their optimization. I actively engaged with projects utilizing these systems, seeking to understand their nuances and improve their efficiency.

Here's why I believe I'm a strong candidate for the proposed project:

- Proficiency in C programming language, coupled with a deep understanding of system programming concepts, equipping me with the necessary skills to navigate and optimize build systems effectively.

- Extensive experience with build systems like CMake, GNU make, and Meson, demonstrated through my involvement in projects requiring their utilization.

I am eager to leverage my skills and enthusiasm for system programming and build systems to drive meaningful enhancements to FreeType's build systems, ultimately contributing to the project's success and the broader software development community.

Contributor Contact Information

Name : Nitish Jha

Postal address : Kuleshra , greater noida , Uttar Pradesh INDIA (postal code : 201306)

Telephone(s): +91-7678303875

E-mail: nitishj221102@gmail.com

Alternate Email: nitishjhaacademics@gmail.com

Other communications channels : Linkedin

Contributor affiliation

Institution: Function Up School of Technology

Program: B.Tech Computer Science

Stage of completion: 1st Year (2nd semester)

Contact to verify :-
E-mail : sahil.devgan@functionup.org , pritesh@functionup.org

Abstract

FreeType's build systems, while functional, require modernization to meet the evolving needs of developers and users. With the project utilizing various build systems, including GNU make, cmake, and meson, alongside support for multiple platforms, there is a pressing need to streamline and optimize these systems. This proposal outlines a comprehensive plan to revamp FreeType's build systems, addressing existing issues, enhancing usability, and ensuring seamless integration across platforms and environments.

Problem Statement

FreeType's current build systems present several challenges:

1. Lack of User-Friendliness: The complexity of the existing build systems can be daunting for newcomers, hindering their ability to contribute effectively.

2. Compatibility Issues: Issues within the cmake support and discrepancies across platforms result in compatibility issues, impacting the project's reliability and usability.

3. Inefficient Integration: The current build systems lack the flexibility and adaptability needed to seamlessly integrate with modern development workflows and tools.

Proposed Solution

This project aims to modernize and optimize FreeType's build systems to address the aforementioned challenges. The proposed solution includes:

1. Comprehensive Analysis and Planning: Conduct an in-depth analysis of FreeType's existing build systems, identifying strengths, weaknesses, and areas for improvement. Engage with the community and project maintainers to gather feedback and prioritize updates.

2. Development and Testing: Develop solutions to address compatibility issues within the cmake support, focusing on improving functionality and ensuring consistency across platforms. Test the updated build systems rigorously in diverse environments to ensure stability and reliability.

3. Integration and Feedback: Integrate the updated build systems into FreeType's codebase and CI/CD pipelines. Gather feedback from users and developers to assess the effectiveness of the changes and identify any remaining issues.

4. Documentation and Finalization: Document the updated build systems comprehensively, providing detailed installation instructions, configuration options, and best practices. Make final adjustments based on community feedback and prepare for the official release.

Implementation Plan

Phase 1: Analysis and Planning (Weeks 1-3)

- Conduct a thorough analysis of FreeType's existing build systems, including GNU make, cmake, and meson.

- Identify compatibility issues, user experience pain points, and areas for optimization.

- Engage with the community and project maintainers to gather feedback and prioritize updates.

Phase 2: Development and Testing (Weeks 4-7)

- Develop solutions to address compatibility issues within the cmake support, focusing on improving functionality and ensuring consistency across platforms.

- Implement optimizations and enhancements to streamline the build process and improve usability.

- Test the updated build systems rigorously in diverse environments to ensure stability and reliability.

Phase 3: Integration and Feedback (Weeks 8-11)

- Integrate the updated build systems into FreeType's codebase and CI/CD pipelines.

- Gather feedback from users and developers to assess the effectiveness of the changes and identify any remaining issues.

- Iterate on the improvements based on community feedback, making necessary adjustments for optimal performance and usability.

Phase 4: Documentation and Finalization (Weeks 12-14)

- Document the updated build systems comprehensively, providing detailed installation instructions, configuration options, and best practices.

- Create tutorials and guides to assist developers in utilizing the updated build systems effectively.

- Make final adjustments based on community feedback and prepare for the official release.

Expected Outcomes

- Modernized and user-friendly build systems for FreeType, improving integration and usability across platforms and environments.

- Resolved compatibility issues within the cmake support, ensuring consistency and reliability.

- Comprehensive documentation and guides to assist developers in utilizing the updated build systems effectively.

Experience and Background

With prior experience in open-source contributions and familiarity with build systems, I am well-equipped to do this project. My background in programming, and project management provides a strong foundation for successfully modernizing FreeType's build systems, I am regularly contributing to open-source while working on my own c project , here's my open source contributions :-

1. Scarpe
2. data.table

Why This Project

Updating FreeType's build systems is essential for the project's long-term sustainability and growth. By enhancing usability and integration, we can attract more contributors and streamline the development process, ultimately benefiting the entire FreeType community.

Availability

I am wholeheartedly committed to this project, and I am available for the entirety of GSoC 24. My dedication extends to investing ample time and effort into ensuring the project's successful completion within the allocated timeframe. My ultimate aim is to deliver substantial enhancements that will have a positive and lasting impact on FreeType's development process.

Conclusion

This project aims to revitalize FreeType's build systems, making them more user-friendly and adaptable to modern development practices. Through careful planning, implementation, and community collaboration, I am confident that we can achieve our goal of enhancing FreeType's usability and integration for years to come.