Objectives:

1. Advance R&D requirements and explore new library integration.

2. Survey and document the installation methods for SDL libraries (Simple DirectMedia Layer).

3. Compare SFML, GLFW + GLAD, and SDL libraries to identify their suitability for various applications.

4. Present main internship tasks to the faculty supervisor during an industrial visit.

5. Troubleshoot and resolve configuration issues with SDL, ImGui, and GLEW libraries for the project.

Activities:

- **Library Installation and Testing:**

    o Installed SDL libraries using the vcpkg package manager.

    o Drafted a detailed installation and linking manual for SDL, ImGui, and Boost.Signals2 libraries.

    o Resolved issues with missing headers, incorrect configurations, and library bindings for SDL2 and ImGui.

- **Comparison of Libraries:**

    o Studied the features and use cases of SFML, GLFW + GLAD, and SDL libraries:

        ▪ **SFML:** Simplified 2D game development, object-oriented, quick prototyping.

        ▪ **GLFW + GLAD:** High-performance, custom graphics engines, full control over rendering.

        ▪ **SDL:** Versatile, robust, and ideal for cross-platform commercial applications.

- **Presentation to Faculty Supervisor:**

o   Delivered a presentation showcasing main tasks and achievements using slides and project UI via Qt during the industrial visit.

- **Code Migration and Troubleshooting:**

o   Transformed existing GLFW + GLAD-based code to utilize SDL libraries.

o   Debugged and resolved GLEW library issues by verifying installation paths, include directories, and project properties.

o   Updated the project and tested successfully after making necessary changes.

Achievements:

1. Successfully installed and configured SDL libraries using vcpkg.

2. Created a comprehensive manual for installing and linking SDL, ImGui, and Boost.Signals2 libraries.

3. Presented key internship deliverables effectively during the industrial visit.

4. Resolved all configuration issues, including missing headers, library bindings, and GLEW errors.

5. Transformed the project codebase to work seamlessly with SDL libraries.

Problems and Solutions:

1. **Problem:** Missing SDL2 and ImGui headers and libraries during the initial configuration.

    o   **Solution:** Reinstalled libraries via vcpkg with all necessary features and corrected include and library paths in Visual Studio.

2. **Problem:** ImGui SDL2 implementation files were not initially found.

    o   **Solution:** Ensured installation of ImGui SDL2 bindings via vcpkg and verified file presence in the directory structure.

3. **Problem:** GLEW library issues during the SDL migration.

- o **Solution:** Verified GLEW installation, updated project properties to include necessary directories, and performed clean rebuilds.

4. **Problem:** Errors persisted after initial troubleshooting.

   - o **Solution:** Manually cross-verified directory structures, ensured environment variables were set correctly, and updated the manual with additional notes and precautions.