

6. Hardware and Infrastructure Standards

- **CUDA & cuDNN Compliance (NVIDIA GPUs):**

The framework is optimized for CUDA-enabled devices and complies with NVIDIA's GPU acceleration protocols for efficient LLM inference.

- **Cross-Platform Support:**

Generated code ensures compatibility across Linux, macOS, and Windows environments.

1.7 Approved Objectives

Our objective is to build a **software system that automates the end-to-end generation of complete, production-ready software projects** based on user-defined natural language specifications. This system, titled **CodeCodez**, aims to integrate the intelligence of multiple specialized Large Language Models (LLMs) with a structured task decomposition strategy, ultimately streamlining the software development lifecycle.

Key Objectives:

- **To develop a system that interprets natural language requirements and converts them into full-fledged software projects**, including directory structures, configuration files, modular code, and documentation.
- **To implement a hierarchical task decomposition engine using tree and graph-based planning methods**, enabling systematic breakdown of complex software requirements into logically ordered subtasks.
- **To assign these subtasks to different specialized LLMs**, each focused on a particular domain such as frontend, backend, testing, or documentation, thereby enhancing output accuracy and consistency across the entire project.
- **To embed real-time testing and error correction mechanisms**, ensuring that the generated code is not only syntactically correct but also functionally valid and aligned with predefined specifications.
- **To auto-generate readable and maintainable documentation alongside each code module**, improving transparency, usability, and future handoff processes.
- **To design the platform architecture in a modular and scalable fashion**, allowing seamless integration of additional languages, frameworks, or AI capabilities with minimal reconfiguration.