

RANCANG BANGUN SISTEM REPOSITORI DAN DEMONSTRASI KARYA MAHASISWA FIK UPNVJ BERBASIS *WEB* (PENGEMBANGAN *BACKEND* BERBASIS NODE.JS)

ANNISA DWI APRILIA

ABSTRAK

Tugas akhir mahasiswa Fakultas Ilmu Komputer UPN “Veteran” Jakarta tidak hanya menghasilkan dokumen akademik, tetapi juga artefak perangkat lunak berupa kode sumber, aplikasi, video demonstrasi, dan berkas pendukung lainnya. Namun, pengelolaan artefak tersebut masih membutuhkan sistem *backend* yang mampu menghubungkan proses unggah, peninjauan, validasi, penyimpanan repositori, dan demonstrasi karya dalam satu alur yang terintegrasi. Penelitian ini bertujuan untuk merancang dan membangun backend pada sistem repositori dan demonstrasi karya mahasiswa berbasis *web* yang dapat mendukung pendokumentasian tugas akhir secara digital, terpusat, dan terstruktur, sekaligus menyediakan mekanisme eksekusi karya agar hasil proyek dapat dijalankan serta ditinjau secara interaktif. Sistem dikembangkan menggunakan metode *Extreme Programming* dengan Node.js, Express.js, Prisma ORM, PostgreSQL, Gitea, dan pendekatan *Modular Monolith* agar fungsi backend dapat dipisahkan berdasarkan domain serta lebih mudah dipelihara. Backend yang dikembangkan menyediakan layanan autentikasi pengguna, pengelolaan *metadata* dan berkas tugas akhir, integrasi repositori kode melalui Gitea, penelusuran repositori, validasi oleh dosen dan koorprodi, serta demonstrasi karya melalui URL berbasis kontainer, video, *emulator mobile*, dan pengunduhan APK. Hasil pengujian menunjukkan bahwa 33 *file unit test* dan 337 *test case* berhasil dijalankan tanpa kegagalan. *User Acceptance Testing* pada peran dosen dan koorprodi menghasilkan tingkat kesesuaian 100% dari total 105 skenario. Pengujian beban menunjukkan rata-rata *response time* sebesar 26 ms, *response time* p95 sebesar 93 ms, *throughput* 123 *request/detik*, dan *error rate* 0%. Berdasarkan hasil tersebut, *backend* yang dikembangkan mampu mendukung pengelolaan repositori tugas akhir dan demonstrasi karya mahasiswa secara terintegrasi, terstruktur, andal, serta sesuai dengan kebutuhan pengguna.

Kata kunci: *backend*, repositori tugas akhir, demonstrasi karya mahasiswa, Gitea, *Modular Monolith*, *Extreme Programming*

**DESIGN AND DEVELOPMENT OF A WEB-BASED REPOSITORY AND
DEMONSTRATION SYSTEM FOR STUDENT ACADEMIC WORKS AT FIK
UPNVJ(BACKEND DEVELOPMENT USING NODE.JS)**

ANNISA DWI APRILIA

ABSTRACT

Final projects at the Faculty of Computer Science, Universitas Pembangunan Nasional “Veteran” Jakarta, produce not only academic documents but also software artifacts such as source code, applications, demonstration videos, and supporting files. However, managing these artifacts requires a backend system that can connect submission, review, validation, repository management, and project demonstration into a structured workflow. This study aims to design and develop the backend of a web-based student work repository and demonstration system to support effective and efficient final project repository management. The system was developed using the Extreme Programming method with Node.js, Express.js, Prisma ORM, PostgreSQL, and Gitea, while applying a Modular Monolith approach to separate backend functions by domain within a single application. The developed backend provides services for user authentication, final project metadata and file management, Gitea-based source code repository integration, repository browsing, validation by lecturers and study program coordinators, and student work demonstration through video, mobile emulator, and APK download. Testing results showed that 33 unit test files and 337 test cases were executed without failure. User Acceptance Testing for lecturer and study program coordinator roles achieved a 100% conformity rate from 105 scenarios. Load testing showed an average response time of 26 ms, a p95 response time of 93 ms, throughput of 123 requests per second, and an error rate of 0%. These results indicate that the developed backend can support final project repository management and student work demonstration in a structured, responsive manner and in accordance with user needs.

Keywords: *backend, final project repository, student work demonstration, Gitea, Modular Monolith, Extreme Programming*