Department of Computer Science and Engineering

Bachelor of Computer Science and Engineering (BCSE)

Practicum along with

Complex Engineering Problem (CEP) and Complex Engineering Activities (CEA)

- Course Code and Title: CSC 490 - Practicum
- Title of the Practicum: Auraluxe: A Single Vendor E commerce Application for Luxury Building Materials
- Student Name: Md. Moniruzzaman
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- Supervisor Name: Dipta Mohon Das
- Which P's are addressed (Requirements: P1 and at least two from P2 to P7)?

Name of CEA	Addressed or Not Addressed
P1: Depth of Knowledge	Addressed: The project required the application of advanced software engineering principles, specifically NestJS (Modular Architecture) for backend logic and Next.js for server-side rendering. It involved implementing robust Prisma ORM relationships (linking Projects, Materials, and Brands) and enforcing strict Zod validation, demonstrating a deep understanding of full-stack development.
P2: Conflicting Requirements	Addressed: The system manages conflicting needs between high-fidelity visual presentation (crucial for luxury materials) and low-latency page performance. Balancing rigorous security checks (for Payment Gateway integration) with a frictionless User Experience (UX) required strategic technical trade-offs in the checkout flow.
P3: Depth of Analysis	Addressed: Analysis was performed using Function Point Analysis (approx. 157 FP) to quantify project scope and effort. Detailed data modeling was conducted through Entity Relationship Diagrams

	(ERD) to normalize complex dependencies between BrandType, Brand, and Product hierarchies.
P4: Familiarity of Issues	Not Addressed
P5: Extent of Applicable Codes	Addressed: The application adheres to industry-standard software codes, including SOLID design principles, RESTful API conventions, and strict security protocols (JWT, bcrypt) for protecting user data and financial transactions via SSLCommerz.
P6: Extent of Stakeholders	Addressed: Not Addressed
P7: Interdependence	Not Addressed

- Which A's are addressed (Requirements: At least two from A1 to A5)?

CEA [Only Relates to PO(j)]	
Name of CEA	**Addressed or Not Addressed**
A1: Range of Resources	Addressed: The project utilized a wide range of technical resources, including SSLCommerz for financial transactions, PostgreSQL for relational data storage, and the NestJS ecosystem for dependency injection, coordinating these into a unified web application.
A2: Level of Interaction	Addressed: There is a high level of interaction between disparate system components, such as the Payment Gateway (SSLCommerz) triggering immediate order status updates via webhooks, and the Inventory System automatically deducting stock quantities upon successful checkout.
A3: Innovation	Not Addressed

A4: Consequences to Society and Environment	Addressed: The project promotes Environmental Sustainability by replacing physical material catalogs and paper-based ordering processes with a completely digital "Showroom" workflow, reducing paper waste and streamlining the supply chain.
A5: Familiarity	Not Addressed

Comments: The Auraluxe application effectively transitions from a theoretical concept to a functional E-commerce platform. It addresses the complex engineering problem of managing a "Project-to-Product" inspiration workflow and secure financial transactions by leveraging modern API integrations and a rigorous Modular Layered Architecture. The documentation provided confirms that the system meets the criteria for both Complex Engineering Problems and Activities.