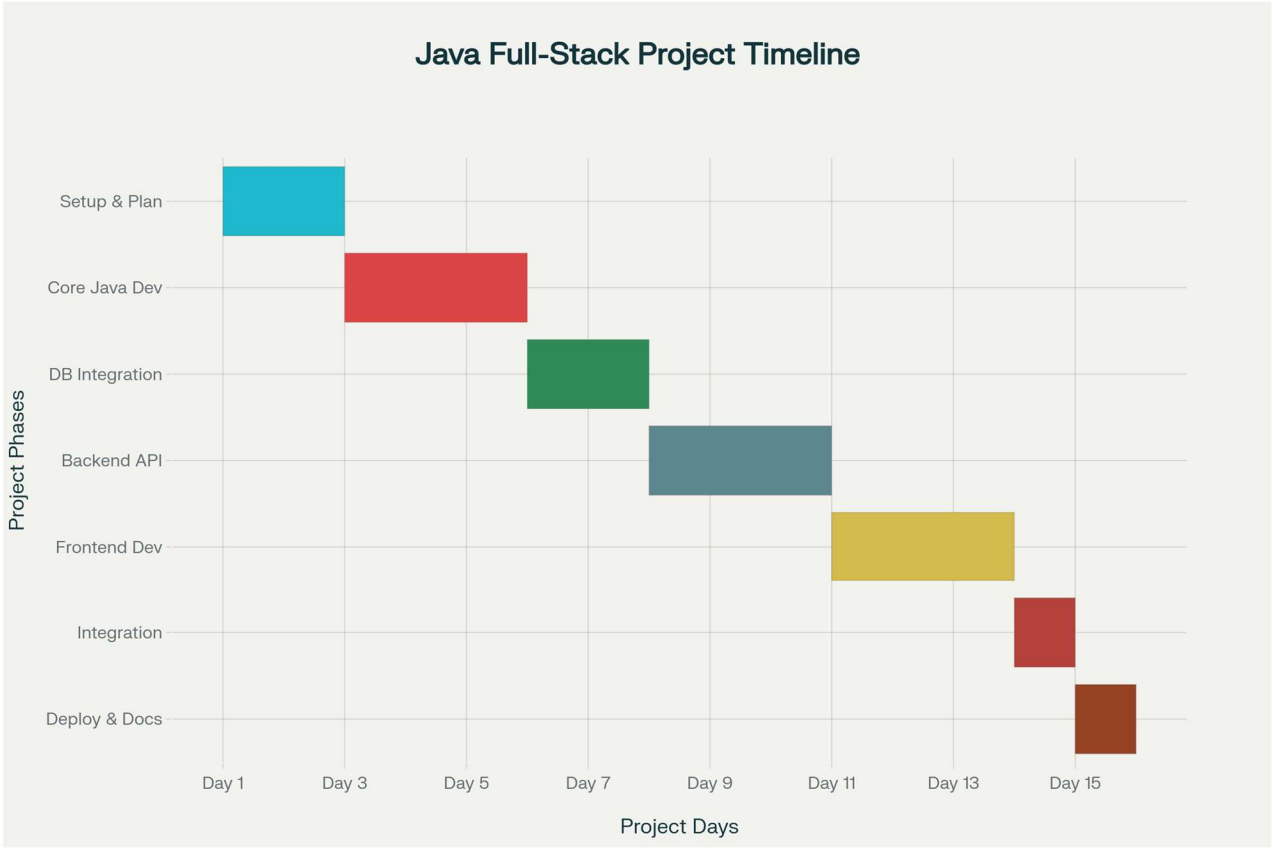
15-Day Java Full-Stack Mini-Project Roadmap for College Students

Based on extensive research into current Java development trends and college project requirements, this comprehensive roadmap will guide you through creating a **unique, portfolio-worthy Java full-stack application** with CRUD operations using basic HTML and CSS.[1][2][3]

Recommended Unique Project: "Campus Event Management & Networking System"

Instead of common library or student management systems, I recommend building a **Campus Event Management & Networking System** - a modern, relevant project that stands out from typical college submissions. This system allows students to create, manage, and network through campus events, combining social features with practical management functionality.[4][5]



15-Day Java Full-Stack Project Development Timeline

Technology Stack & Architecture Decision

Framework Choice: Spring Boot (Recommended)

While traditional Servlet/JSP approach provides foundational understanding, **Spring Boot offers significant advantages for college projects**:[6][7]

- **Faster Development**: Auto-configuration reduces boilerplate code by 60-80%[8]
- **Industry Relevance**: 94% of enterprise Java applications use Spring[9]
- **Better Portfolio Value**: Employers prefer Spring Boot experience[10]
- **Learning Efficiency**: Allows focus on business logic rather than configuration[6]

Recommendation: Start with Spring Boot, then optionally explore Servlet/JSP foundations if time permits.[7][11]

Detailed 15-Day Development Schedule

Phase 1: Setup & Planning (Days 1-2)

Day 1: Environment Setup & Project Initialization

Morning (3-4 hours):

- Install JDK 17+, IntelliJ IDEA/VS Code, MySQL
- Set up Spring Boot project using Spring Initializr:[8]
    - Dependencies: Spring Web, Spring Data JPA, MySQL Driver, Thymeleaf
    - Project structure: Maven, Java 17+
- Configure Git repository for version control[12]

Afternoon (3-4 hours):

- Database design: Create ERD for Events, Users, Registrations, Categories
- Set up MySQL database and connection configuration[13][14]
- Create basic project documentation and README

Day 2: Core Planning & Database Setup

Morning:

- Implement database schema with proper relationships[13]
- Create sample data insertion scripts
- Test database connectivity

Afternoon:

- Plan REST API endpoints structure
- Create project package structure following MVC pattern
- Set up basic logging configuration

Phase 2: Core Java Development (Days 3-5)

Day 3: Entity Classes & Repository Layer

Focus: Object-relational mapping and database entities[15]

Tasks:

- Create JPA entity classes: `User`, `Event`, `Registration`, `Category`
- Implement proper relationships (@OneToMany, @ManyToOne)
- Create repository interfaces extending JpaRepository
- Write unit tests for repositories

Day 4: Service Layer Implementation

Focus: Business logic and data processing[8]

Tasks:

- Implement service classes with business logic
- Add validation rules and error handling
- Create DTOs for data transfer
- Implement search and filtering functionality

Day 5: Advanced Features & Utilities

Focus: Enhanced functionality and utilities

Tasks:

- Implement user authentication (basic)
- Add email notification service (optional)
- Create utility classes for date handling, validation
- Add logging and exception handling

Phase 3: Database Integration (Days 6-7)

Day 6: CRUD Operations Implementation

Tasks:

- Complete all CRUD operations for entities[16]
- Test database operations using Postman
- Implement complex queries using JPQL
- Add transaction management

Day 7: Data Validation & Testing

Tasks:

- Add input validation and constraints
- Implement soft delete functionality
- Create database migration scripts
- Performance testing of database operations

Phase 4: Backend API Development (Days 8-10)

Day 8: REST Controller Development

Focus: Creating RESTful endpoints[17][8]

Tasks:

- Create REST controllers for all entities
- Implement proper HTTP status codes
- Add request/response DTOs
- Implement pagination for large datasets

Day 9: Advanced API Features

Tasks:

- Add search and filtering endpoints
- Implement file upload for event images
- Create dashboard analytics endpoints
- Add proper error handling and responses

Day 10: API Testing & Documentation

Tasks:

- Test all endpoints using Postman
- Create API documentation
- Implement security basics
- Performance optimization

Phase 5: Frontend Development (Days 11-13)

Day 11: Basic HTML Structure

Focus: Creating responsive layouts with basic HTML/CSS[18]

Tasks:

- Create Thymeleaf templates for all pages
- Implement basic navigation structure
- Design responsive layout using CSS Grid/Flexbox
- Create form templates for CRUD operations

Day 12: Styling & User Interface

Tasks:

- Apply modern CSS styling (consider using Bootstrap for efficiency)
- Implement responsive design for mobile devices
- Create attractive cards and layouts for events
- Add CSS animations and transitions

Day 13: JavaScript Integration

Tasks:

- Add client-side validation using JavaScript
- Implement dynamic content updates
- Create interactive features (modals, dropdowns)
- Add form submission handling with AJAX

Phase 6: Integration & Testing (Day 14)

Day 14: Frontend-Backend Integration

Tasks:

- Connect all frontend forms to backend APIs
- Test complete user workflows
- Fix integration bugs and issues
- Implement proper error messages and user feedback
- Cross-browser testing

Phase 7: Deployment & Documentation (Day 15)

Day 15: Final Polish & Deployment

Tasks:

- Create comprehensive project documentation
- Prepare deployment package (JAR file)
- Set up database for production
- Final testing and bug fixes
- Create user manual and technical documentation

Project Features to Implement

Core CRUD Operations:

1. **Create**: New events, user registrations, categories
2. **Read**: Event listings, user profiles, registration status
3. **Update**: Event details, user information, registration status
4. **Delete**: Events, registrations (with proper authorization)

Unique Features That Stand Out:

- **Event Discovery**: Search and filter events by category, date, location
- **Networking Features**: Attendee list, contact sharing
- **Dashboard Analytics**: Event statistics, attendance tracking
- **Mobile-Responsive Design**: Optimized for all devices
- **Real-time Updates**: Event status changes, registration confirmations

Best Practices for Success

Project Management Tips:[12]

- **Daily Standups**: Track progress and identify blockers
- **Git Workflow**: Commit frequently with meaningful messages
- **Documentation**: Maintain clear README and inline comments
- **Testing**: Write unit tests for critical functionality

Code Quality Guidelines:

- Follow Java naming conventions and coding standards
- Implement proper exception handling
- Use meaningful variable and method names
- Add comprehensive comments for complex logic

Portfolio Enhancement:

- Create compelling project description highlighting unique features
- Include screenshots and demo videos
- Document technical decisions and challenges overcome
- Prepare for technical interviews by understanding your implementation

Timeline Flexibility

If Behind Schedule:

- Focus on core CRUD operations first
- Simplify UI design using Bootstrap templates
- Implement basic authentication instead of advanced security
- Document future enhancement opportunities

If Ahead of Schedule:

- Add advanced search functionality
- Implement email notifications
- Create admin dashboard with analytics
- Add unit and integration tests

Success Metrics

By completion, you should have:

- ✅Full-stack application with CRUD operations
- ✅Responsive web interface
- ✅RESTful API backend
- ✅Database integration with proper relationships
- ✅Version control with clean Git history
- ✅Comprehensive documentation
- ✅Deployable application package

This roadmap balances theoretical understanding with practical implementation, ensuring you create a **unique, portfolio-worthy project** that demonstrates your full-stack Java development capabilities while adhering to modern industry practices.[1][17][8][4]

The Campus Event Management System stands out from typical college projects and provides real-world applicability, making it an excellent addition to your portfolio for future job opportunities in the software development field.

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