THE GEEK INSTITUTE
OF CYBER SECURITY

(Building Futures Through Digital Knowledge and Innovation)

Laravel Framework (03 Months)

Syllabus

01: Introduction to Laravel

- ✓ What is Laravel?
- ✓ Features of Laravel
- ✓ Laravel vs other PHP frameworks
- ✓ Understanding the MVC architecture
- ✓ Installing Laravel via Composer
- ✓ Setting up local development (XAMPP, Laravel Valet, Laravel Homestead)
- ✓ Laravel folder structure explained
- ✓ Artisan CLI overview

02: Routing and Controllers

- ✓ Defining basic routes (GET, POST, PUT, DELETE)
- ✓ Route parameters and constraints
- ✓ Route groups and middleware
- ✓ Named routes
- ✓ Creating and using controllers
- ✓ Resource controllers and route-resource binding

03: Blade Templating Engine

- ✓ Blade syntax and templating rules
- ✓ Template inheritance (@extends, @yield, @section)
- ✓ Displaying data ({{ }} and escaping)
- ✓ Control structures (@if, @foreach, @switch)
- ✓ Components and Slots
- ✓ Blade includes and partials

04: Laravel Models and Eloquent ORM

- ✓ Introduction to Eloquent ORM
- ✓ Creating models and migrations
- ✓ Schema builder: Creating and modifying tables
- ✓ Database seeding and factories
- ✓ CRUD operations with Eloquent
- ✓ Query builder vs Eloquent

- ✓ Relationships:
  - o One to One
  - o One to Many
  - o Many to Many
  - o Has Many Through
  - o Polymorphic relationships

05: Forms, Requests, and Validation

- ✓ Creating and handling HTML forms
- ✓ CSRF tokens
- ✓ Request lifecycle and validation
- ✓ Laravel's built-in validation rules
- ✓ Custom validation messages and rules
- ✓ Form Request classes
- ✓ Old input and error handling

06: Authentication and Authorization

- ✓ Laravel Breeze, Jetstream, or Laravel UI
- ✓ User registration and login
- ✓ Password hashing and resets
- ✓ Middleware for route protection
- ✓ Role-based access control (RBAC)
- ✓ Gates and policies for advanced authorization
- ✓ Email verification

07: Email and Notifications

- ✓ Email configuration (SMTP, Mailtrap, Sendmail)
- ✓ Sending emails with Mail::to()
- ✓ Creating and using Mailable classes
- ✓ Markdown-based emails
- ✓ Sending notifications (database, mail, SMS, Slack)
- ✓ Notification channels

8: Laravel Middleware

- ✓ Creating custom middleware
- ✓ Registering global and route middleware
- ✓ Using middleware to protect routes
- ✓ Parameters in middleware

09: File Uploads and Storage

- ✓ Handling file uploads with validation
- ✓ Storing files locally or in cloud (S3)
- ✓ File download and deletion
- ✓ Storage facade and symbolic links
- ✓ Image manipulation with packages (e.g., Intervention Image)

10: Laravel APIs and JSON

- ✓ Creating RESTful APIs with Laravel
- ✓ API routes and versioning
- ✓ JSON responses and request parsing
- ✓ Resource collections and API Resource classes
- ✓ Authentication for APIs (Laravel Sanctum or Passport)
- ✓ CORS and rate limiting

11: Database and Advanced Eloquent

- ✓ Eager Loading vs Lazy Loading
- ✓ Scopes (global and local)
- ✓ Accessors and Mutators
- ✓ Attribute casting
- ✓ Soft deletes and timestamps
- ✓ Query logging and debugging

12: Laravel Events and Queues

- ✓ Understanding event-driven architecture
- ✓ Creating and listening to events
- ✓ Queuing events for background processing
- ✓ Laravel Queue system
- ✓ Queue workers, failed jobs, and retries
- ✓ Job batching and rate limiting

13: Task Scheduling and Artisan Commands

- ✓ Defining scheduled tasks in app/Console/Kernel.php
- ✓ Running cron jobs
- ✓ Creating custom Artisan commands
- ✓ Automating maintenance tasks

14: Testing in Laravel

- ✓ PHPUnit configuration in Laravel
- ✓ Writing unit tests
- ✓ HTTP and feature testing
- ✓ Database testing and factories
- ✓ Mocking and testing APIs

15: Security Best Practices

- ✓ CSRF and XSS protection
- ✓ SQL Injection prevention with Eloquent
- ✓ Authentication hardening
- ✓ Data encryption
- ✓ Security headers and HTTPS

16: Localization and Internationalization

- ✓ Setting up multiple languages
- ✓ Language files and switching locales
- ✓ Displaying translated content

17: Deployment and Optimization

- ✓ Environment configuration (.env management)
- ✓ Laravel Mix and assets compilation
- ✓ Caching: Routes, config, views, queries
- ✓ Using Redis or Memcached
- ✓ Deploying to shared hosting or cloud (cPanel, DigitalOcean, AWS)
- ✓ Using Git for version control

18: Final Project

- Full-stack project using Laravel (examples: Blog, E-commerce site, Admin panel, CMS)
- Project should include:
  - o Authentication
  - o Admin and user roles
  - o CRUD operations
  - o File uploads
  - o API integration (e.g., payment gateway or third-party API)
- Hosting the project live (optional)

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