**INSTRUCTIONS TO STUDENTS**

**Timeline**

Start Date: 18-03-2025

Submission Deadline: 16-05-2025

Final Demonstration Date: between 17-05-2025 and 23-05-2025

**Project Guidelines**

**Project Selection:**

Each student must select one project title from the provided list.

**Development Requirements:**

Implement the chosen API effectively within your project.

Use appropriate frameworks and tools (e.g., Spring Boot for backend).

Ensure the application is functional, user-friendly, and aligns with the project objectives.

**1. API Integration**

Carefully read the chosen API's documentation to understand its endpoints, request formats, and response structures.

Use appropriate HTTP methods (GET, POST, PUT, DELETE) as per the API's requirements.

Implement error handling for cases like API downtime, invalid requests, or rate limits.

Secure API keys or tokens safely (e.g., via environment variables rather than hardcoding).

**2. Framework and Tools Selection**

**Backend Framework:** Spring Boot is recommended for its simplicity and robust API handling features.

**Frontend Development:** Use technologies like React, Angular, or simple HTML/CSS with JavaScript for better UI.

**Database Management:** For data persistence, choose a suitable database such as MySQL, MongoDB, or PostgreSQL.

**API Testing Tools:** Postman, Swagger, or Insomnia are highly recommended for testing your API endpoints.

**3. Application Functionality**

Ensure your application fulfills the project's core objective as described in the selected title.

Implement essential CRUD (Create, Read, Update, Delete) operations if applicable.

Maintain proper data flow between the frontend, backend, and API.

Develop meaningful features like search, filtering, and sorting where appropriate.

**4. User Interface and Experience (UI/UX)**

Design an intuitive and responsive interface.

Provide clear navigation and easy access to key features.

Ensure proper validation of user inputs to avoid errors or data corruption.

Implement meaningful error messages and user feedback mechanisms.

**5. Code Quality and Best Practices**

Follow coding standards such as proper naming conventions, indentation, and modular coding.

Use comments to explain complex logic or functions.

Avoid redundant code by implementing reusable methods.

Store API keys securely and never expose them in public repositories.

**6. Testing and Debugging**

Test your application for common issues like broken links, API failures, or UI bugs.

Perform unit testing for core functionality and integration testing for API endpoints.

Document the testing process and outcomes in your project report.

**7. Deployment**

Deploy your application on a suitable platform like Heroku, AWS, or Google Cloud for live demonstration.

Ensure deployment configurations (e.g., port settings, environment variables) are correctly set up.

**Tips for Excellence**

* Add additional features like notifications, data visualization, or dynamic content if feasible.
* Prioritize scalability and performance optimizations.
* Maintain proper version control using GitHub or GitLab.

**Documentation Requirements:**

**Students must submit a comprehensive project report that includes: [Minimum 15 pages]**

Title Page: Project title, student name, roll number, and course details.

Introduction: Overview of the chosen API and project goal.

Technical Details: Description of technologies used, system architecture, and API integration.

Code Explanation: Key code snippets with explanations.

Testing and Results: Screenshots, output results, and error handling methods.

Conclusion and Future Scope: Summary of learning outcomes and potential project improvements.

**Final Demonstration:**

Students will present their project, demonstrate its functionality, and answer queries.

The demonstration should highlight key features, challenges faced, and solutions applied.

**Marking Scheme (Total: 60 Marks)**

**Project Implementation:** 25 Marks- (Functionality, correctness, and effective API usage)

**Code Quality & Documentation:** 15 Marks-(Clean code, comments, and comprehensive report)

**UI/UX Design:** 10 Marks- (User interface design, navigation, and responsiveness)

**Creativity and Innovation**: 5 Marks- (Unique features, additional functionalities, etc.)

**Final Demonstration & Presentation:** 5 Marks- (Clear explanation, understanding of the project, and effective communication)

**Important Notes**

✅ Regularly update your progress with the faculty. [ 5th Floor – 536 faculty office]

✅ Seek guidance if you face technical difficulties.

✅ Late submissions may incur penalties unless prior approval is obtained.

✅ Ensure your project aligns with ethical standards and data privacy guidelines.

**Contact for Doubts**

For any queries or doubts, you can visit my cabin (**5th Floor – 536 faculty office**) during working hours. Kindly avoid contacting me via phone calls or WhatsApp.

**List of Applications**

**Weather and Geolocation APIs**

1. Weather Forecast App (OpenWeatherMap API)

2. Air Quality Index Checker (Breezometer API)

3. Geo Location Finder (ipstack API)

4. Sunrise & Sunset Time Tracker (Sunrise-Sunset API)

5. Disaster Alert System (PDC API)

**News and Information APIs**

6. News Aggregator (NewsAPI)

7. Cryptocurrency Price Tracker (CoinGecko API)

8. Space Exploration Data Viewer (NASA API)

9. Historical Event Timeline (History API)

10. COVID-19 Statistics Dashboard (COVID19API)

**Finance and Currency APIs**

11. Currency Converter (ExchangeRate API)

12. Stock Price Tracker (Alpha Vantage API)

13. Budget Manager with Expense Tracking (Plaid API)

14. Financial News Aggregator (FMP API)

15. Loan EMI Calculator (Bank APIs)

**Social Media & Entertainment APIs**

16. Instagram Post Downloader (Instagram API)

17. Twitter Sentiment Analysis (Twitter API)

18. YouTube Video Search (YouTube Data API)

19. TikTok Video Viewer (TikTok API)

20. Spotify Playlist Creator (Spotify API)

**Health and Fitness APIs**

21. Fitness Tracker with Calorie Counter (Nutritionix API)

22. Medication Reminder App (Health API)

23. Mental Health Support Bot (BetterHelp API)

24. Sleep Pattern Analysis (SleepScore API)

25. Step Counter with Activity Suggestions (Fitbit API)

**Travel and Transportation APIs**

26. Flight Status Tracker (AviationStack API)

27. Hotel Booking System (Booking.com API)

28. Public Transport Route Planner (Transit API)

29. Restaurant Recommendation System (Zomato API)

30. Road Trip Planner with Gas Stations (Google Maps API)

**Gaming APIs**

31. Game Price Tracker (CheapShark API)

32. Chess Move Advisor (Chess.com API)

33. Gaming News Aggregator (Rawg API)

34. Esports Tournament Scheduler (Esports API)

35. Video Game Character Information App (IGDB API)

**Education and Learning APIs**

36. Dictionary and Thesaurus App (Merriam-Webster API)

37. Language Translator (Google Translate API)

38. Math Problem Solver (Wolfram Alpha API)

39. Coding Challenge Generator (Codewars API)

40. Exam Preparation Quiz App (QuizAPI)

**E-Commerce and Shopping APIs**

41. Amazon Product Price Tracker (Amazon API)

42. E-Commerce Product Review Aggregator (FakeStore API)

43. Clothing Size Recommendation System (BodyMetrics API)

44. Online Bookstore with Ratings (Google Books API)

45. Personalized Shopping Assistant (Shopify API)

**Food and Recipe APIs**

46. Recipe Finder by Ingredients (Spoonacular API)

47. Meal Planner with Calorie Calculation (Edamam API)

48. Food Delivery Tracker (Uber Eats API)

49. Grocery List Creator (Walmart API)

50. Vegan Recipe Finder (Yummly API)

**Music and Media APIs**

51. Lyrics Finder (Musixmatch API)

52. Podcast Discovery App (ListenNotes API)

53. Radio Streaming App (RadioBrowser API)

54. Concert Ticket Finder (Ticketmaster API)

55. Music Genre Analyzer (Deezer API)

**Productivity and Utility APIs**

56. Note-taking App with Search (Evernote API)

57. Task Manager with Reminders (Trello API)

58. Habit Tracker with Progress Visualization (Habitica API)

59. File Conversion Tool (CloudConvert API)

60. Text Summarizer (DeepAI API)

**Security and Identity APIs**

61. Email Validation System (Hunter.io API)

62. Password Strength Checker (HaveIBeenPwned API)

63. Digital Signature Verifier (DocuSign API)

64. CAPTCHA Verifier System (reCAPTCHA API)

65. Identity Verification Platform (Auth0 API)

**Finance & Banking APIs**

66. Crypto Portfolio Tracker (Binance API)

67. Tax Calculator with Deductions (TaxJar API)

68. Payment Gateway Integration (Stripe API)

69. Expense Tracking App with Charts (Plaid API)

70. E-wallet Manager (PayPal API)

**Fun and Creative APIs**

71. Meme Generator (Imgflip API)

72. Random Joke Generator (JokeAPI)

73. Movie Recommendation System (TMDB API)

74. Random Useless Fact Generator (UselessFacts API)