**Tech Sessions Details**

**Overview**

* **Total Duration:** 45 to 50 hours of classroom teaching focused on backend development using Python and Django.
* **Projects:** Collaborative building of two advanced projects—an **ERP (Enterprise Resource Planning) software** and a **CRM (Customer Relationship Management) software**.
* **Hands-On Practice:** Each module includes practical exercises to reinforce learning.
* **Industry-Level Experience:** Students will gain experience in project collaboration and development practices akin to industry standards.
* **Certification:** Participants will receive an experience certificate acknowledging their project contributions.
* **Project-Based Learning:** Emphasis on applying theoretical knowledge to real-world projects.
* **Team Structure:** Students will be organized into domain-specific teams (Frontend, Backend, Design, etc.) to simulate a professional development environment.

**Course Structure and Estimated Time**

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| Sr. No. | Topic | Duration (In Hours) |
| 1 | Introduction of the Session and Content Brief | 2 Hours |
| 2 | Python | 6 to 8 Hours |
| 3 | Git and GitHub - Version Control | 2 Hours |
| 4 | Web Technology | 2 to 3 Hours |
| 5 | Database Management Systems (DBMS) | 3 to 4 Hours |
| 6 | Django Framework | 12 Hours |
| 7 | ERP and CRM Project Explanation | 4 Hours |
| 8 | Final Project Building | 12 to 15 Hours |
|  | **Total Hours** | **43 To 50 Hours** |

**Final Projects**

**ERP & CRM Software Project Planning**

**Project 1: College ERP System**

**Modules:**

1. **User Management**
   * Admin, Faculty, and Students registration and login
   * Role-based access control
2. **Course Management**
   * Create, update, delete courses
   * Student enrollment and course assignments
3. **Attendance Management**
   * Track student attendance
   * Faculty can update and view attendance records
4. **Examination Module**
   * Store student grades
   * Generate reports and transcripts
5. **Notifications System**
   * Announcements from admin and faculty to students
6. **Timetable and Scheduling**
   * Faculty can create and manage class schedules
   * Students can view their timetables
   * Automatic conflict resolution (e.g., overlapping classes)
   * Special events scheduling (e.g., seminars, workshops)
7. **Report and Analytics Dashboard**
   * Visualize student performance (attendance, grades)
   * Faculty workload and efficiency reports
   * Fee collection and financial reports for admins
   * Attendance analytics for detecting patterns (e.g., low attendance)

**Project 2: CRM for College Management**

**Modules:**

1. **Contact Management**
   * Manage leads for admissions
   * Contact details and interaction tracking
2. GFM Module
   * GFM student management
   * Student profile management
   * Meetings scheduling and tracking
   * Parent contact management and follow-up tracking
3. **Admission Tracking**
   * Track students from inquiries to admissions
   * Automate follow-ups
4. **Student Feedback System**
   * Feedback collection from students
   * Report generation for admin and faculty review
5. **Alumni Management**
   * Database of past students
   * Interaction and events for alumni
6. **Document Management**
   * Upload and store important documents (e.g., application forms, ID proofs)
   * Generate automated forms for admissions, course selections, etc.
   * Secure file sharing between departments

**Budget**

* **Teaching Fee:** ₹1,000 per hour for approximately 50 hours.
* **Batch Size:** 30 to 40 students to ensure quality hands-on practice.
* **Project Management Fee:** Additional ₹10,000 for overseeing project development outside of classroom teaching.
* **Total Estimated Budget:** **₹60,000**

**Justification**: The budget accounts for comprehensive teaching hours, ensuring each student receives personalized attention and support. The additional project management fee covers the extra time and resources required to facilitate successful project completion, including mentorship, code reviews, and team coordination.

**Detailed Course Content**

**1. Introduction of the Session and Content Brief (2 Hours)**

* **Course Overview:**
  + Outline of topics to be covered.
  + Setting expectations and goals.
* **Importance of Backend Development:**
  + Role in web applications.
  + Career opportunities.
* **Software Development Lifecycle:**
  + Stages from planning to deployment.

**2. Python (6 to 8 Hours)**

* **Syntax and Basics:**
  + Variables, data types, and operators.
* **Control Structures:**
  + Conditional statements and loops.
* **Functions and Modules:**
  + Creating and importing modules.
* **Object-Oriented Programming:**
  + Classes, objects, inheritance, and polymorphism.
* **Exception Handling:**
  + Try, except, and finally blocks.
* **Hands-On Exercises:**
  + Mini-projects and problem-solving tasks.

**3. Git and GitHub - Version Control (2 Hours)**

* **Introduction to Git:**
  + Installing and setting up Git.
* **Basic Commands:**
  + Clone, commit, push, pull, branch, and merge.
* **GitHub Collaboration:**
  + Forking repositories, pull requests, and code reviews.
* **Best Practices:**
  + Writing meaningful commit messages.

**4. Web Technology (2 to 3 Hours)**

* **Web Fundamentals:**
  + How the internet works.
  + Client-server architecture.
* **HTTP Protocol:**
  + Request and response cycle.
* **Frontend Overview:**
  + HTML, CSS, and JavaScript basics.
* **RESTful APIs:**
  + Principles and design.

**5. Database Management Systems (DBMS) (3 to 4 Hours)**

* **Database Concepts:**
  + Relational databases vs. NoSQL databases.
* **SQL Basics:**
  + CRUD operations (Create, Read, Update, Delete).
* **Database Design:**
  + Normalization and ER diagrams.
* **Integration with Python:**
  + Using libraries like SQLite3 or MySQL-client.

**6. Django Framework (12 Hours)**

* **Getting Started:**
  + Setting up a virtual environment and Django project.
* **MVC/MVT Architecture:**
  + Understanding Django's structure.
* **URL Routing and Views:**
  + Mapping URLs to views.
* **Templates:**
  + Creating dynamic HTML pages.
* **Models and ORM:**
  + Defining models and interacting with the database.
* **Forms and Validation:**
  + Handling user input securely.
* **Authentication:**
  + User login, logout, and registration.
* **Deployment Basics:**
  + Introduction to deploying Django applications.

**7. ERP and CRM Project Explanation (4 Hours)**

* **Project Overview:**
  + Detailed explanation of ERP and CRM systems.
* **Requirements Gathering:**
  + Defining features and functionalities.
* **Team Formation:**
  + Assigning roles based on domains.
* **Project Planning:**
  + Setting milestones and deadlines.

**8. Final Project Building (12 to 15 Hours)**

* **Development Phase:**
  + Coding sessions with mentor guidance.
* **Integration:**
  + Combining frontend and backend components.
* **Testing:**
  + Unit tests and debugging.
* **Review Sessions:**
  + Code reviews and optimization.
* **Final Presentation:**
  + Demonstrating the completed projects.

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| Sr. No. | Topic | Duration (In Hours) | Expected Date |
| 1 | Introduction of the Session and Content Brief | 2 Hours | 07-10-2024 |
| 2 | Python | 6 to 8 Hours | 08-10-2024 to  11-10-2024 |
| 3 | Git and GitHub - Version Control | 2 Hours | 14-10-2024 |
| 4 | Web Technology | 2 to 3 Hours | 15-10-2024 |
| 5 | Database Management Systems (DBMS) | 3 to 4 Hours | 16-10-2024 to  17-10-2024 |
| 6 | Django Framework | 12 Hours | 18-10-2024 to  23-10-2024 |
| 7 | ERP and CRM Project Explanation | 4 Hours | 24-10-2024 |
| 8 | Final Project Building | 12 to 15 Hours | After Diwali |
|  | **Total Hours** | **43 To 50 Hours** |  |