**Technology Stack Justification for HR-360**

The HR Assistant Software is designed as a modular and scalable system for managing job applications, interviews, attendance, payroll, performance, and exit processes. The selected technology stack is chosen to ensure reliability, performance, and ease of development. Below is the justification for each component of the technology stack used in this system:

**1. Frontend: React.js**

*Justification:* React.js is a powerful JavaScript library for building dynamic user interfaces. Its component-based architecture helps modularize the application for features like job listings, dashboards, and application forms.

* Supports reusable components.
* Enables real-time UI updates.
* Works well with RESTful APIs.
* Suitable for single-page applications (SPA) like HR dashboards.

**2. Backend: Node.js with Express.js**

*Justification:* Node.js allows server-side JavaScript development, and Express.js provides a lightweight framework for routing and middleware.

* Enables asynchronous operations (non-blocking I/O).
* Fast performance suitable for form submissions, scheduling interviews, etc.
* Scalable and widely supported for REST APIs.

**3. Database: MySQL**

*Justification:* MySQL is a relational database that is ideal for managing structured data like users, job posts, applications, payroll records, etc.

* ACID-compliant and transactional.
* Ideal for many-to-one and one-to-many relationships (e.g., applications to job posts).
* Supports complex joins and data integrity.

**4. Authentication: JWT (JSON Web Tokens)**

*Justification:* JWT allows stateless and secure user authentication.

* Suitable for role-based access (HR, Employee, Candidate).
* Easily integrated with React and Express.

**5. API Specification: OpenAPI (Swagger)**

*Justification:* OpenAPI provides a standard format for defining REST APIs.

* Human-readable and tool-compatible (Swagger UI, Postman).
* Auto-generates documentation.
* Supports backend-frontend collaboration.

**6. File Storage: Local File System (with option to upgrade to AWS S3)**

*Justification:* Resume and document uploads are stored locally for simplicity in academic version; can be upgraded to cloud for scalability.

* Simplifies access and download.

**7. Version Control: Git & GitHub**

*Justification:* Enables collaborative development, tracking changes, and project backup.

* Pull requests for team collaboration.
* GitHub Issues and Actions for project management.

**8. Deployment: Render / Vercel (Optional)**

*Justification:* Simple platforms for deploying full-stack applications.

* Free tier available for academic use.
* Supports Node.js and React.js directly.

**Conclusion:**  
This technology stack provides a balance of performance, scalability, and maintainability, making it well-suited for an academic HR Assistant System. All technologies are open-source and widely supported, ensuring longevity and upgradeability for future improvements.