API Survey - Hostel management system with food surplus distribution platform

API Name	Year of Release	Features (Project Context)	Paid/Unpaid
SendGrid API	2019	Email service for sending automated notifications for room allotments, complaints, or food surplus updates.	Free
Casbin API	2017	Role-based access control; ensures only authorized roles perform specific tasks.	Free
Firebase Authentication	2016	Manages login and registration with auto-generated student credentials.	Free(Limited)
JWT JSON Web Token	2015	Secure authentication for all user roles (Chief Warden, Warden, Student, Staff, NGO).	Free
Chart.js API	2014	Generates reports and visual charts for occupancy, complaints, and food surplus analytics.	Free
Node Cron API	2014	Automates daily tasks (auto-remove expired food posts, daily report generation).	Free
Multer API	2014	Handles image uploads (complaints and food surplus) from users to the server.	Free
Firebase Cloud Messaging	2014	Real-time push notifications to students, staff, or NGOs when food is posted or complaints resolved.	Free
Bcrypt API	2013	Hashes and secures all auto-generated passwords before storing in the database.	Free
Cloudinary API	2011	Cloud storage for photos (complaint before/after images, mess surplus food pictures).	Free up to 25GB
Moment.js API	2011	Handles date and time operations (complaint timestamp, food expiry tracking).	Free
NodeMailer API	2010	Free Node.js module for sending internal email notifications (e.g., password resets, complaints).	Free

Summary

In this project, several APIs are integrated to enhance automation, security, and efficiency across various hostel management operations. These APIs enable secure user authentication, automated email notifications, real-time alerts, and cloud-based image storage. They also support data visualization for reports and automate backend processes such as task scheduling and access control. Together, these APIs form the core of the Smart Hostel Management System, ensuring transparency, scalability, and smooth communication among all user roles