FLIGHT MANAGEMENT SYSTEM FLIGHTY

Risk Management and Mitigation Matrix (RMMM)

Risk Summary	Risk Category	Probability	Impact (1-4)	Mitigation
Unauthorized access to booking system	Security	Medium	4	Implement role-based access control (RBAC), session timeout, secure admin authentication
Weak authentication (passwords or session hijacking)	Security	High	4	Enforce strong passwords, HTTPS encryption, implement 2FA for admin accounts
SQL Injection via booking forms	Security	Medium	4	Use parameterized queries, Flask-SQLAlchemy ORM, input validation
Payment processing security vulnerabilities	Financial	Medium	4	Use PCI-compliant payment gateway, tokenization, never store raw payment data
Server downtime during peak booking times	Operational	High	3	Auto-scaling setup, load balancing, performance testing before peak periods
Flight data inconsistencies	Data Integrity	Medium	3	Regular database validation checks, admin approval for flight changes
Email service failure for booking confirmations	Integration	Medium	3	Implement queue system for notifications, fallback SMS alerts, monitor service health
Poor UX leading to booking errors	User Experience	High	3	Conduct usability testing, implement clear booking flow, provide confirmation summaries

Double booking due to race conditions	System Logic	Medium	4	Implement database transactions, locking mechanisms, real-time seat availability checks
Third-party API failures (payment/airline)	Integration	Medium	3	Cache API responses, implement circuit breakers, maintain mock data for testing
Data loss due to failed backups	Operational	Low	4	Daily automated backups, offsite storage, test restoration procedures
Sudden flight changes by airlines	Business Continuity	High	3	Implement notification system, flexible rebooking options, clear cancellation policies
Developer knowledge gaps in critical systems	Human Resource	Medium	3	Document all systems, pair programming for critical components, cross-training