

# EntryTestGuru - Project Specification

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## Elevator Pitch

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EntryTestGuru is a comprehensive exam preparation platform that helps students master critical admission tests (ECAT, MCAT, CCAT, GMAT, GRE, SAT) through intelligent practice, precise analytics, and adaptive learning. With over 10,000+ MCQs, real-time performance tracking, ARDE probability insights, and personalized study plans, we transform high-stakes exam preparation from stressful cramming into confident, data-driven success.

## Problem Statement

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Students preparing for once-yearly admission exams face three critical challenges:

1. **High Stakes, No Second Chances:** Most exams (ECAT, MCAT, CCAT) offer only one attempt per year with no retakes
2. **Lack of Targeted Practice:** Generic study materials don't identify individual weaknesses or optimize time allocation based on actual exam patterns
3. **Poor Time Management Under Pressure:** Students struggle with time constraints and exam anxiety without realistic practice environments and strategic question prioritization

Current solutions are either too generic (standard textbooks) or too expensive (private tutoring), leaving a gap for intelligent, affordable, personalized preparation that leverages real exam data.

## Target Audience

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### Target Audience Segmentation

Primary Segments:

- **High School Graduates (16-18 years):** Preparing for ECAT, MCAT, GMAT, GRE, SAT

- **Middle School Students (12-14 years):** Preparing for CCAT (7th-8th graders)

#### Geographic Focus:

- Primary: Pakistan (ECAT, MCAT, CCAT)
- Secondary: International students (GMAT, GRE, SAT)

#### User Tiers:

- **Anonymous Users:** Trying the platform (20 MCQs + 2 explanations daily, 1 SE, 1 half-length SRE, device-specific limits with no cross-device sync)
- **Free Users:** 2-week trial with enhanced limits (50 daily MCQs + 4 explanations daily with AI tutoring, 4 SEs, 2 SREs, max 3 devices with cross-device sync)
- **Paid Users:** Unlimited access with premium features (unlimited MCQs + explanations + sprint exams + simulated real exams + fair usage based unlimited AI follow-up tutoring for answer explanations, max 3 devices with cross-device sync)

## Unique Selling Points (USP)

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1. **ARDE Intelligence:** Questions tagged with actual exam appearance probability and historical frequency data
2. **Precision Analytics:** Track time-per-question, attempt patterns, and topic mastery with surgical precision
3. **Adaptive Question Variations:** Dynamic question variants that test true understanding, not memorization
4. **Realistic Exam Simulation:** Perfect replicas of actual exam conditions, timing, and marking schemes
5. **Strategic Study Plans:** Time-compressed curricula that prioritize high-probability questions based on ARDE dates
6. **Expert-Created Content:** 10,000+ questions with step-by-step explanations, video tutorials, and ARDE probability insights
7. **Affordable Access:** Comprehensive preparation at a fraction of private tutoring costs

## Target Platforms

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- **Primary:** Flutter mobile app (iOS/Android)
- **Secondary:** Web application (responsive design)
- **Backend:** Python FastAPI with Firebase infrastructure

## Features List

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### Authentication & Onboarding

- ☐ As a user, I can continue as anonymous, sign up with Google/Facebook/Phone/Email, or login to existing account
- ☐ As a new user, I can select my target exam category (ECAT, MCAT, CCAT, GMAT, GRE, SAT) during onboarding
- ☐ As a user, I can view my current tier limitations and usage statistics
- ☐ As an anonymous user, I am gracefully prompted to upgrade when I exhaust my limits
- ☐ As an anonymous user, my usage limits are tied to my current device only with no cross-device sync
- ☐ As a free/paid user, I can login on up to 3 devices maximum (tracked via device fingerprinting)
- ☐ As a free/paid user, my progress and session data syncs across all my connected devices
- ☐ As a user, I can view and manage my connected devices in account settings
- ☐ As a user, I receive notifications when attempting to login on a 4th device with options to replace an existing device

### Question Bank & Content Management

- ☐ As a user, I can access 10,000+ MCQs across all supported exam categories
- ☐ As a content creator, I can add question variations with different variable values and arrangements
- ☐ As a user, I can view detailed explanations (text/video) for each question after attempting (subject to tier limits)

- ☐ As a user, I can access AI-powered follow-up tutoring for conceptual discussions (subject to explanation limits)
- ☐ As a system, I track question popularity to prioritize variation creation
- ☐ As a system, I enforce daily explanation limits: 2 for anonymous, 4 for free, unlimited for paid users
- ☐ As a user, I can see ARDE probability indicators for each question to understand exam relevance
- ☐ As a user, I can view historical frequency data showing how often questions appeared on real exams

## Practice Mode

- ☐ As a user, I can practice MCQs by subject, topic, difficulty level, ARDE probability, and performance history
- ☐ As a user practicing, I get immediate feedback and up to 3 attempts per question
- ☐ As a user, I can view step-by-step solutions and video explanations after each attempt (subject to tier limits)
- ☐ As a user, I can access AI-powered follow-up tutoring for conceptual discussions (subject to explanation limits)
- ☐ As a user, I can bookmark difficult questions for later review
- ☐ As a user, I can filter questions by "High ARDE Probability" or "Frequently Asked on Real Exams"
- ☐ As a user, I can prioritize practice sessions based on question importance for actual exams
- ☐ As an anonymous user, I'm limited to 20 daily practice MCQs and 2 answer explanations per day
- ☐ As a free user, I get 50 daily practice MCQs and 4 answer explanations per day for 2 weeks
- ☐ As a paid user, I have unlimited daily practice access and unlimited answer explanations

## Sprint Exams (SE)

- ☐ As a user, I can create custom sprint exams with 5-50 questions and configurable time limits

- ☐ As a user, I can select specific topics, difficulty distributions, and ARDE probability levels for my sprint
- ☐ As a user taking a sprint, I don't see answer feedback until completion
- ☐ As a user, I receive detailed scorecards and analytics after sprint completion
- ☐ As a system, I track precise timing for each question attempt during sprints
- ☐ As a user, I can create "High-Probability" sprints focusing on questions most likely to appear on ARDE
- ☐ As an anonymous user, I'm limited to 1 sprint exam before requiring signup
- ☐ As a free user, I get 4 sprint exams total during my 2-week trial
- ☐ As a paid user, I have unlimited sprint exam access

## **Simulated Real Exams (SRE)**

- ☐ As a user, I can take full-length simulated exams matching actual ARDE conditions
- ☐ As a user, I experience exact timing, question count, marking schemes, and break intervals
- ☐ As a user, I receive comprehensive performance analysis after SRE completion with ARDE probability insights
- ☐ As a user, I can see what percentage of my SRE focused on high-probability vs. low-probability questions
- ☐ As an anonymous user, I get 1 half-length SRE before requiring signup
- ☐ As a free user, I get 2 full-length SREs during my trial period
- ☐ As a paid user, I have unlimited SRE access

## **Analytics & Performance Tracking**

- ☐ As a user, I can view detailed analytics on my question attempt patterns
- ☐ As a user, I can see time-to-first-answer, total attempts, and accuracy rates per topic
- ☐ As a user, I can identify my strongest and weakest subject areas
- ☐ As a user, I can track my improvement over time with historical performance data

- ☐ As a system, I maintain separate databases for learning analytics vs. general app usage
- ☐ As a user, I can export my performance data for external analysis
- ☐ As a user, I can see what percentage of my practice time focuses on high-ARDE-probability questions
- ☐ As a user, I can view my performance specifically on questions that frequently appear on real exams
- ☐ As a user, I can get strategic recommendations on which question types to prioritize based on ARDE data

## Business Intelligence & Analytics

- ☐ **User Engagement Metrics:** Track page/feature time spent, feature usage frequency, session duration & frequency, and user flow analysis for funnel optimization
- ☐ **Conversion & Business Metrics:** Monitor tier progression rates, churn analysis, feature adoption patterns, and revenue per user by acquisition channel
- ☐ **Content Performance:** Analyze question popularity, explanation usage patterns, AI tutoring interaction topics, and error rates across question bank
- ☐ **Product Optimization:** Performance monitoring for API response times and crash rates, A/B testing framework for pricing/UI changes, and seasonal usage pattern analysis for capacity planning

## Study Plans & Curriculum

- ☐ As a user, I can access multi-week structured study plans based on my target ARDE date
- ☐ As a user, I can accelerate my study plan when time is limited before my exam
- ☐ As a user, I receive daily goals and progress tracking within my study plan
- ☐ As a paid user, I can access personalized recommendations based on my weak areas and ARDE probability data
- ☐ As a user, I can compare my current performance against my historical baseline

- ☐ As a user with limited time, I can access "Strategic Mode" that prioritizes high-ARDE-probability questions
- ☐ As a user, my study plan automatically adjusts to focus more on high-probability topics as my ARDE date approaches

## **Social Accountability & Competition**

- ☐ As a user, I can view leaderboards showing top performers in my exam category
- ☐ As a user, I can create or join study groups with friends or other students
- ☐ As a user, I can view my group members' performance and progress (with their consent)
- ☐ As a user, I can compete in weekly/monthly challenges with other users
- ☐ As a user, I can share my achievements and milestones on social platforms
- ☐ As a group member, I can see comparative analytics showing my performance vs. group average
- ☐ As a user, I receive motivational notifications about peer achievements and challenges
- ☐ As a user, I can set group study goals and track collective progress
- ☐ As a user, I can see how my group performs on high-ARDE-probability questions compared to other groups

## **Content Quality & User Support**

- ☐ As a content creator, I am responsible for question accuracy and quality control
- ☐ As a user, I can report incorrect questions or submit answer corrections through in-app system
- ☐ As a user, I can access in-app help system and customer support phone number with human assistance
- ☐ As an admin, I can review and process user-submitted question corrections
- ☐ As a system, I track user reports to identify problematic content for review

## Admin & Content Creator Tools

- ☐ As an admin, I can access a comprehensive dashboard for managing questions and variations
- ☐ As a content creator, I can view analytics on question performance and user interaction
- ☐ As an admin, I can bulk upload, edit, and manage question bank content
- ☐ As a content creator, I can track which questions need more variations based on popularity
- ☐ As an admin, I can manage user accounts, subscriptions, and support requests
- ☐ As a content creator, I can update ARDE probability and frequency data for questions
- ☐ As an admin, I can analyze which high-probability questions are underrepresented in the question bank

## Learning Center & Expert Content

- ☐ As a paid user, I can access video content, written guides, and interactive lessons
- ☐ As a user, I can browse tips and tricks from subject matter experts
- ☐ As a user, I can search for specific topics or question types in the learning center
- ☐ As a user, I can bookmark and organize learning center content
- ☐ As a user, I can access strategic guides on prioritizing study time based on ARDE probability data

## Monetization & Subscription Management

- ☐ As a user, I can upgrade from anonymous to free tier seamlessly
- ☐ As a user, I can upgrade from free to paid tier through Paddle.com integration
- ☐ As a free user, I see ads after every 5 practice MCQs (time excluded from tracking)
- ☐ As a paid user, I see minimal ads (every 5 practice MCQs) and only one ad per simulated real exam or sprint exam (time excluded from tracking)



- ☐ As an admin, I can manage subscription tiers and pricing through Paddle.com

## UX/UI Considerations

### Onboarding Flow

- ☐ **Welcome Screen:** Clean, exam-focused design with clear tier explanations and ARDE intelligence highlights
- ☐ **Exam Selection:** Visual exam category selector with brief descriptions and ARDE data availability indicators
- ☐ **Anonymous vs. Signup:** Prominent anonymous option with clear upgrade path and ARDE feature previews

### Practice Interface

- ☐ **Question Display:** Clean MCQ layout with timer, progress indicator, attempt counter, explanation limit indicator, and ARDE probability badge
- ☐ **Answer Selection:** Clear visual feedback for selected answers
- ☐ **Immediate Feedback State:** Green/red highlighting with explanation panel (if explanations remaining)
- ☐ **Explanation Overlay:** Expandable panel with text/video content, AI chat option (subject to daily limits), and ARDE context
- ☐ **Explanation Limit Notification:** Gentle reminder when approaching daily explanation limit with upgrade suggestion
- ☐ **ARDE Probability Indicator:** Visual badges showing question importance (High/Medium/Low probability)
- ☐ **Strategic Filtering:** Easy-access filters for ARDE probability and historical frequency

### Sprint Exam Interface

- ☐ **Pre-Sprint Setup:** Intuitive configuration with visual question/time selectors and ARDE probability distribution controls
- ☐ **Sprint Mode:** Focused, distraction-free interface with prominent timer and optional ARDE probability indicators
- ☐ **Sprint Results:** Comprehensive scorecard with interactive performance breakdown and ARDE probability analysis

- ☐ **Question Review:** Post-sprint detailed review with filtering, search, and ARDE probability insights

### Analytics Dashboard

- ☐ **Performance Overview:** Chart-heavy dashboard with key metrics highlighted and ARDE probability performance tracking
- ☐ **Topic Breakdown:** Interactive subject/topic performance visualization with ARDE probability weighting
- ☐ **Historical Trends:** Time-series graphs showing improvement trajectories and strategic question focus
- ☐ **Recommendations Panel:** AI-driven suggestions with actionable next steps prioritized by ARDE probability
- ☐ **Strategic Insights:** Dedicated section showing ARDE probability performance and study time optimization

### Social Features Interface

- ☐ **Leaderboards:** Clean, filterable rankings by exam type, timeframe, and performance metrics including ARDE-focused challenges
- ☐ **Group Dashboard:** Collaborative space showing group member progress and shared goals with strategic insights
- ☐ **Challenge Cards:** Engaging weekly/monthly competition displays with progress tracking and ARDE probability themes
- ☐ **Achievement Notifications:** Celebratory popups for personal and peer milestones including strategic study achievements
- ☐ **Comparative Analytics:** Side-by-side performance charts showing user vs. group/global averages with ARDE probability breakdowns

### Upgrade Prompts

- ☐ **Gentle Nudges:** Non-intrusive upgrade suggestions with clear value propositions emphasizing ARDE intelligence features
- ☐ **Limit Reached:** Friendly limit notifications with immediate upgrade options highlighting strategic study benefits
- ☐ **Feature Previews:** Sneak peeks of premium features including advanced ARDE probability tools

### Non-Functional Requirements

## Performance

- ☐ **Response Time:** API responses under 200ms for question loading including ARDE metadata
- ☐ **Image Optimization:** Standard compression for question images with lazy loading
- ☐ **Caching Strategy:** Intelligent question bank caching for frequently accessed content and ARDE probability data

## Scalability

- ☐ **Database Design:** Optimized for 10,000+ questions with complex querying including ARDE probability filtering
- ☐ **Auto-scaling:** Firebase Functions auto-scale during seasonal exam periods
- ☐ **CDN Integration:** Global content delivery for video explanations and images
- ☐ **Load Testing:** Support for concurrent users during peak exam seasons

## Security

- ☐ **Device Management:** 3-device limit per account tracked via Flutter device\_info\_plus package fingerprinting for registered users only
- ☐ **Anonymous User Tracking:** Device-specific session limits without cross-device sync or compromising privacy
- ☐ **Payment Security:** PCI-compliant payment processing through Paddle.com
- ☐ **API Security:** Rate limiting and authentication for all backend endpoints

## Accessibility

- ☐ **Screen Reader Support:** Full compatibility with accessibility tools
- ☐ **High Contrast Mode:** Alternative color schemes for visual impairments
- ☐ **Font Scaling:** Adjustable text sizes for improved readability
- ☐ **Keyboard Navigation:** Complete app functionality without touch/mouse input

## Technical Architecture

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## Frontend Stack

- **Framework:** Flutter with Dart
- **State Management:** Riverpod for reactive state management
- **Navigation:** Flutter's built-in routing with deep linking support
- **Local Storage:** Hive for limited offline question caching and user preferences
- **Device Identification:** device\_info\_plus package for device fingerprinting and multi-device management

## Backend Stack

- **API Framework:** Python FastAPI for high-performance REST APIs
- **Hosting:** Firebase Functions for serverless Python execution
- **Database:** Cloud Firestore for real-time data synchronization
- **File Storage:** Firebase Storage for video content and images
- **Authentication:** Firebase Auth with Google/Facebook/Phone/Email providers

## Third-Party Integrations

- **Analytics:** Google Analytics for app usage insights plus Firebase Crashlytics for error tracking
- **Payments & Subscriptions:** Paddle.com for complete payment processing
- **Advertising:** Google AdSense for monetizing free tier users
- **Content Delivery:** Firebase CDN for global content distribution

## Data Architecture

- **Question Bank:** Structured collections with tagging, difficulty metadata, per-user appearance tracking, appearance probability on ARDE, and reported frequency of appearance on ARDE
- **User Performance:** Separate analytical database for learning insights with ARDE probability performance tracking
- **Content Management:** Version-controlled system for question variations, explanations, and ARDE probability updates

# Monetization

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## Revenue Streams:

1. **Primary:** Monthly/Annual subscriptions through Paddle.com (PKR 2,000/month, PKR 20,000/year)
2. **Secondary:** Google AdSense revenue from free tier users

## Conversion Funnel:

- Anonymous users → Free users (through usage limits and ARDE feature previews)
- Free users → Paid users (through 2-week trial expiration and strategic study feature access)

## Customer Lifetime Value Strategy:

- High engagement through personalized study plans with ARDE intelligence
- Seasonal retention during exam periods with strategic preparation tools
- Word-of-mouth growth through exam success stories and improved scores

## Pricing Strategy:

- Competitive with private tutoring (1/10th the cost)
- Premium pricing justified by comprehensive analytics, expert content, and exclusive ARDE probability insights
- Regional pricing adjustments for developing markets