MICRO SERVICE ARCHITECTURE

In a microservices architecture for an online examination portal, the system is decomposed into a set of independent, modular services, each responsible for a specific business capability. Below is a list of basic microservices that could be part of an online examination portal:

1. **User Service:**
    - Responsible for managing user accounts.
    - Handles user registration, authentication, and authorization.
    - Manages user roles (e.g., student, admin).
2. **Exam Service:**
    - Manages the creation, editing, and deletion of exams.
    - Handles the association of questions with exams.
    - Provides information about available exams.
3. **Question Service:**
    - Manages a repository of questions.
    - Handles the creation, editing, and deletion of questions.
    - Supports different question types (e.g., multiple-choice, true/false, short answer).
4. **Exam-Taking Service:**
    - Manages the process of taking exams.
    - Tracks the progress of an exam for each student.
    - Handles submission and grading of exams.
5. **Result Service:**
    - Manages the storage and retrieval of exam results.
    - Calculates and stores student scores.
    - Provides statistical information about exam results.
6. **Authentication Service:**
    - Handles user authentication and session management.
    - Generates and validates authentication tokens.
    - Ensures secure user logins.
7. **Notification Service:**
    - Sends notifications and alerts to users.
    - Notifies students about upcoming exams or changes in exam status.
    - Sends notifications to admins for system events.

8. **Analytics Service:**
    - Collects and analyzes data related to user interactions and system usage.
    - Provides insights into user behavior and system performance.
    - Supports decision-making for system improvements.
9. **Security Service:**
    - Implements security measures across services.
    - Enforces data encryption and secure communication.
    - Manages access control and authorization.
10. **Configuration Service:**
    - Manages configuration settings for the entire system.
    - Allows dynamic configuration updates without service interruption.
    - Centralizes configuration information.
11. **Logging and Monitoring Service:**
    - Handles centralized logging for all microservices.
    - Monitors the health and performance of microservices.
    - Generates alerts for abnormal system behavior.
12. **Gateway Service:**
    - Acts as an entry point for client requests.
    - Routes requests to appropriate microservices.
    - Provides load balancing and caching.
13. **Notification Service:**
    - Sends notifications to users about important events (e.g., exam start, result availability).
    - Supports various notification channels (e.g., email, SMS).
14. **Feedback Service:**
    - Manages the collection and storage of feedback from users.
    - Provides a mechanism for users to submit suggestions or report issues.
    - Supports analysis of feedback data.
15. **Storage Service:**
    - Manages the storage of various types of data (e.g., user profiles, exam details).
    - Ensures data consistency and integrity.

These microservices work together to form a modular and scalable online examination portal. Each service focuses on a specific business capability, promoting independent development, deployment, and maintenance. The choice of microservices depends on the specific requirements and complexity of the online examination portal. Additionally, integration patterns, communication protocols, and service orchestration mechanisms should be carefully designed based on the needs of the system.