**COM668 Computing Project**

Assessment Task 2 – Challenge Definition Report

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| Project title: | "C & C" – Class & Craft, an e-commerce platform for handmade products |

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1. Introduction
   1. Brief description of the agreed concept.

This project aims to launch an e-commerce platform named "C&C," short for "Classic and Craft," symbolizing the platform's commitment to both preserving traditional cultural heritage and celebrating the artistry of handcrafted works. As a C2C (customer-to-customer) marketplace, C&C will provide a dynamic space for the exhibition and sale of China's vast and diverse intangible cultural heritage, with a particular focus on time-honored handicrafts. The platform will feature an array of iconic products, including round fans, cheongsams, tenon and mortise joinery, paper cuttings, lacquerware, wood carvings, and other traditional crafts that have been passed down through generations.

What differentiates C&C from other e-commerce platforms is its unwavering dedication to promoting only genuine, handmade, and original products. In contrast to mass-market platforms that often prioritize mass-produced items, C&C will focus on curating a marketplace that highlights the distinctiveness and authenticity of each handcrafted piece. Every item listed on the platform will undergo a meticulous review process to ensure it meets the highest standards of craftsmanship, maintaining the integrity of traditional artistry and honoring the cultural legacy behind each creation.

In addition, C&C will foster an engaged community of artisans, collectors, and enthusiasts who share a passion for Chinese culture and craftsmanship. The platform will not only serve as an e-commerce marketplace but also as a space for cultural exchange, education, and interaction. By highlighting the cultural significance of traditional handicrafts, C&C aims to bridge the gap between modern consumers and ancient craft techniques, ensuring that these valuable traditions are both preserved and adapted to contemporary needs.

Ultimately, C&C seeks to become a leading platform for traditional Chinese handicrafts, both within China and internationally. By tapping into the growing demand for authentic cultural products, C&C will play a key role in advancing the global recognition and appreciation of Chinese craftsmanship, ensuring that these timeless treasures continue to thrive in the modern world. Through its efforts, C&C aspires to make a lasting impact on the cultural landscape, raising the profile of traditional Chinese arts and crafts on the global stage.

* 1. Aim

The goal of this project is to design and implement a comprehensive e-commerce platform that provides consumers with a convenient channel to discover and purchase handicrafts that embody traditional Chinese characteristics. In addition to providing an online market, the platform also aims to actively contribute to the preservation, protection, and innovative inheritance of traditional Chinese handicrafts. By showcasing high-quality handmade products, we seek to raise people's awareness of the cultural value and craftsmanship of these items.

Our vision is to enhance the shopping experience by offering carefully selected authentic and culturally significant products. In addition, the platform will support the development of a community that values originality, craftsmanship, and the artistic quality of handmade products. This community will promote a deeper appreciation of the rich heritage of traditional Chinese arts and crafts, while encouraging innovation and creativity among craftsmen. Ultimately, we aim to provide both consumers and creators with a platform that not only celebrates these cultural treasures but also ensures their continued relevance in the modern world.

* 1. Objectives

1. Design and develop an e-commerce platform that focuses on handmade products and original designs;
2. Provide a convenient online market that gathers traditional Chinese handicraft merchants and consumers;
3. Realize customized needs, support communication between users and craftsmen, and customize personalized handmade products;
4. Develop a platform review and regulatory mechanism to ensure the originality of products and the quality of handmade production, and prevent the emergence of counterfeit products.
   1. Scope

The scope of this project includes the design, development, and online operation of the platform, covering the following key aspects:

* Development of the website's front-end and back-end;
* Implementation of core functionalities such as the user module, product module, shopping cart module, and payment module (using microservices and the latest technologies);
* Display and transaction of customized services and personalized products;
* Establishment of a review mechanism and protection measures for original creations; The platform will initially target the Chinese market, with the potential for future expansion into international markets, supporting cross-border e-commerce.
  1. Brief description of intended outcome

The expected outcome is to create a traditional handicraft e-commerce platform with Chinese characteristics, helping consumers better understand and purchase handmade products, while providing customized services to meet personalized needs. The platform will ensure the originality of products through a strict review process and build a handicraft market with a sense of community, promoting the inheritance and innovation of traditional crafts. In the end, the platform will become a popular e-commerce platform, promoting the globalization of traditional Chinese handicrafts.

1. Contextual research
   1. Academic/Commercial context

The intersection of e-commerce and cultural preservation represents a unique opportunity to blend modern technology with the safeguarding of intangible cultural heritage (ICH). In recent years, global interest in sustainable and culturally significant products has surged, driven by both consumer awareness and government policies. This trend forms the foundation for "C&C," a platform dedicated to promoting traditional Chinese handicrafts in the digital era.

**E-commerce Trends**

E-commerce has grown exponentially, with the global market projected to exceed $7.4 trillion by 2025 (Statista, 2023). Within this domain, niche markets such as handmade and culturally significant products have gained traction. Research indicates that consumers are increasingly drawn to authentic, high-quality goods that reflect their values, including sustainability, craftsmanship, and cultural appreciation (Deloitte, 2022). Platforms specializing in niche products, such as Etsy and Amazon Handmade, have capitalized on this demand by connecting artisans with global audiences.

However, challenges persist, particularly around ensuring authenticity and maintaining cultural integrity. Many existing platforms lack robust mechanisms for verifying product quality and origin, leading to consumer mistrust and market dilution. By implementing strict quality control measures, "C&C" aims to establish itself as a trusted marketplace for traditional crafts.

**The Role of ICH in Economic and Cultural Development**

ICH, as defined by UNESCO, encompasses "practices, representations, expressions, knowledge, and skills that communities recognize as part of their cultural heritage" (UNESCO, 2003). Traditional handicrafts are a significant component of ICH, reflecting the creativity, history, and identity of their creators. The preservation of ICH is critical not only for maintaining cultural diversity but also for fostering economic opportunities in artisan communities.

China, with its rich history and diverse cultural traditions, has taken significant steps to safeguard ICH. Government initiatives such as the *China National Intangible Cultural Heritage List* and funding programs for artisan development have created a favorable environment for integrating traditional crafts into modern markets. According to the Ministry of Culture and Tourism, over 1,500 items are currently recognized as national-level ICH, spanning crafts such as porcelain, embroidery, wood carving, and lacquerware (People's Daily, 2022). These efforts align with global trends in heritage preservation, highlighting the potential for e-commerce to serve as a bridge between traditional artisans and contemporary consumers.

**Microservices and UX in E-Commerce**

On the technological front, advances in microservices architecture and user experience (UX) design are reshaping e-commerce platforms. Microservices allow for modular development, enabling platforms to scale efficiently and adapt to changing user needs (Newman, 2021). This approach is particularly valuable for a platform like "C&C," which aims to support diverse functionalities, including product customization, artisan-buyer communication, and secure transactions.

UX design is equally critical. Studies show that user-friendly interfaces and personalized shopping experiences significantly enhance customer satisfaction and conversion rates (Nielsen Norman Group, 2020). By integrating features such as virtual craft workshops, detailed product stories, and community engagement tools, "C&C" can create an immersive and culturally enriching shopping experience.

**The Cultural and Economic Potential of "C&C"**

The convergence of these factors—growing consumer interest in cultural products, advancements in e-commerce technology, and increasing support for ICH preservation—positions "C&C" as a timely and impactful initiative. The platform not only addresses consumer demand for authentic and meaningful products but also contributes to the sustainability and innovation of traditional crafts.

* 1. Review of Similar Solutions

Analyzing existing platforms provides valuable insights into best practices and areas for improvement. While several e-commerce platforms focus on handmade or niche products, few are dedicated exclusively to cultural preservation and education, creating a unique opportunity for "C&C."

**1. Etsy**

Etsy is one of the most prominent platforms for handmade and vintage goods, with a community-driven approach that supports millions of artisans worldwide. Its success lies in fostering a sense of trust and community while offering robust tools for sellers, such as analytics and marketing support (Etsy Annual Report, 2022). However, Etsy's broad focus can dilute its commitment to authenticity, as it permits semi-handmade and mass-produced items under certain conditions. "C&C" differentiates itself by exclusively featuring traditional Chinese handicrafts, backed by rigorous quality assurance and storytelling.

**2. Taobao Craftsman Channel**

Taobao, a subsidiary of Alibaba, launched the Craftsman Channel to promote traditional crafts and connect artisans with consumers. This initiative aligns closely with "C&C's" mission, but its integration within a broader mass-market platform limits its visibility and impact. Taobao’s approach also lacks dedicated educational content, which is a core feature of "C&C." By focusing solely on traditional crafts and incorporating cultural education, "C&C" aims to create a more engaging and specialized marketplace.

**3. Amazon Handmade**

Amazon Handmade provides global artisans with a platform to sell handmade products but faces criticism for its lack of community engagement and emphasis on cultural authenticity (Chen et al., 2021). Amazon’s focus on scalability often comes at the expense of storytelling and heritage promotion. "C&C" addresses this gap by integrating interactive features such as virtual workshops, artisan interviews, and detailed product histories, fostering a deeper connection between consumers and crafts.

**4. JD.com Intangible Cultural Heritage Initiative**

JD.com has partnered with local governments and artisans to promote ICH products, showcasing crafts such as ceramics, embroidery, and shadow puppets. While these efforts are commendable, they are often limited to short-term campaigns rather than sustained initiatives. Additionally, JD.com’s platform lacks the infrastructure to create a cohesive community of artisans and consumers. "C&C" seeks to fill this gap by offering year-round support for artisans and building a vibrant community around traditional crafts.

**5. ArtFire**

ArtFire is a smaller platform that connects independent creators with buyers. Despite its niche focus, ArtFire has struggled to compete with larger platforms due to limited marketing resources and brand recognition. This highlights the importance of building a strong brand identity and offering unique features, such as cultural storytelling and customization, which are central to "C&C’s" strategy.

**Key Differentiators of "C&C"**

The "C&C" platform stands out in the competitive landscape of e-commerce for traditional crafts through a set of unique features and strategies that emphasize its commitment to authenticity, cultural preservation, and community engagement. Unlike global platforms such as Etsy or domestic initiatives like Taobao's Craftsman Channel, "C&C" positions itself as a specialized marketplace for original, handcrafted Chinese traditional products. This focus is reinforced by its stringent quality assurance processes, innovative features, and cultural storytelling, making it distinct in both international and domestic contexts.

**1. Focus on Chinese Traditional Crafts**

"C&C" specializes exclusively in traditional Chinese handicrafts, highlighting the rich cultural heritage and artistic value of these creations. Unlike Etsy, which offers a wide range of handmade and vintage products from diverse global sources, "C&C" is dedicated to promoting China’s intangible cultural heritage. The platform's product categories include iconic crafts such as cheongsams, tenon and mortise joinery, paper cutting, lacquerware, and wood carvings. Each product is carefully selected to showcase the creativity and history behind Chinese artisanal traditions, ensuring that the platform becomes synonymous with the preservation and promotion of these crafts.

This unique cultural focus not only differentiates "C&C" from international platforms but also positions it as a leader in bringing traditional Chinese crafts to a global audience. By creating a marketplace centered on cultural heritage, "C&C" aims to elevate the global profile of Chinese artistry and attract consumers seeking authentic, culturally significant products.

**2. Commitment to Originality and Handmade Production**

While many domestic platforms, such as Taobao or JD.com, have channels dedicated to traditional crafts, they often allow semi-handmade or mass-produced items to enter the marketplace. "C&C" sets itself apart by adhering strictly to originality and craftsmanship. The platform only features products that are entirely handmade and authentically reflect traditional techniques. Artisans must demonstrate the cultural and artistic value of their work, ensuring that each item embodies a unique story and the highest standards of quality.

To reinforce its commitment to originality, "C&C" has implemented a robust review mechanism. This system involves a thorough examination of each product's materials, production process, and cultural significance. By preventing the inclusion of counterfeit or mass-produced items, the platform builds trust with consumers and ensures that every purchase supports the preservation of traditional craftsmanship.

**3. Stringent Quality Assurance Process**

One of the most critical differentiators of "C&C" is its rigorous product review and regulatory mechanism. Unlike platforms such as Etsy, which rely on community reporting or self-declared authenticity from sellers, "C&C" employs a dedicated team of experts to assess the craftsmanship, cultural value, and authenticity of each item before it is listed. This ensures that only high-quality, genuinely handmade products are available for sale, protecting the integrity of the marketplace.

This stringent process not only benefits consumers but also helps artisans by providing them with a platform where their work is valued and protected. By establishing a standard of excellence, "C&C" cultivates an ecosystem where authenticity and quality are paramount, fostering long-term trust and loyalty among buyers and sellers alike.

By focusing on these differentiators, "C&C" positions itself as a unique and innovative marketplace that not only facilitates the sale of traditional crafts but also contributes to their preservation and evolution. Its commitment to authenticity, quality, and cultural education ensures that it stands out in a crowded e-commerce landscape, creating lasting value for both consumers and artisans.

1. Methodology

The methodology chosen for the development of the "C&C" platform is Agile Development, specifically the Scrum framework, which complements the project’s microservices architecture and the use of distributed technologies such as distributed transactions, RabbitMQ, and distributed locks. Agile’s iterative and flexible nature aligns well with the goals of modular development, continuous improvement, and user-centric design, making it ideal for this independent development project.

* 1. Research and Planning Phase

The foundation of the methodology involves a detailed research and planning phase to ensure the project is grounded in user needs and technical feasibility.

1. **Requirement Analysis:**

* Conducted surveys to identify user expectations for authentic handmade products and customization features.
* Collaborated with cultural experts to define the scope of traditional crafts to be featured.

1. **Technology Evaluation:**

* Assessed modern technologies for building the microservices architecture, selecting Spring Boot for backend services, RabbitMQ for message queuing, and Redis for distributed locks.
* Explored frameworks for distributed transaction management, such as Seata.

1. **Defining MVP (Minimum Viable Product):**

* Established the MVP to focus on core functionalities: user registration, product browsing, shopping cart, payment integration, and a review mechanism for product authenticity.
* Deferred advanced features (e.g., blockchain-based authentication) for later iterations.
  1. Agile Development and Iterative Process

The Agile methodology was selected because of its flexibility, modular approach, and suitability for managing the independent development of a complex, distributed system.

1. **Sprint-Based Iterative Development:**

* Each sprint lasts 2-3 weeks, focusing on delivering a functional increment of the platform.
* Example sprint goals include:
  + Sprint 1: Implement user registration and authentication with **Spring Security**.
  + Sprint 2: Develop product listing and search functionality with **Elasticsearch**.
  + Sprint 3: Integrate **RabbitMQ** for asynchronous order processing.

1. **Scrum Framework:**

* Roles: As an independent developer, you take on the roles of Product Owner, Scrum Master, and Development Team.
* Artifacts:
  + Product Backlog: Lists tasks such as implementing distributed locks, integrating a payment gateway, and optimizing microservices communication.
  + Sprint Backlog: Focuses on the tasks selected for each sprint, ensuring manageable and prioritized workloads.

1. **Daily Stand-ups and Retrospectives:**

* Conduct daily self-assessments to evaluate progress and address obstacles.
* After each sprint, reflect on achievements and challenges to improve future planning and execution.
  1. Microservices and Technical Considerations

The technical architecture of the project revolves around a microservices-based architecture, where each service is independently developed and deployed.

1. **Service Modularity:**

* Core services include:
  + User Service: Handles authentication and profile management.
  + Product Service: Manages product listings and search.
  + Order Service: Processes orders and handles distributed transactions.
  + Review Service: Supports the authenticity review process.

1. **Technology Stack:**

* Backend: **Spring Boot** for modular microservices.
* Frontend: **Vue.js** for a responsive and user-friendly interface.
* Messaging: **RabbitMQ** for decoupled communication between services.
* Data Management: **MySQL** for structured data and **MongoDB** for unstructured product information.

1. **Key Features Implemented:**

* Distributed transactions to ensure data consistency across services during payment and order processing.
* Distributed locks (using Redis) to prevent race conditions in high-concurrency scenarios.
  1. Testing and Quality Assurance

1. **Unit Testing:**

Test each microservice independently to ensure functionality. For example, validate user registration and product addition modules.

1. **Integration Testing:**

Test interactions between microservices to verify seamless data flow and correct implementation of RabbitMQ-based messaging.

1. **Load and Performance Testing:**

Simulate high-traffic scenarios to test the scalability of distributed systems, ensuring the platform can handle peak loads.

1. **User Acceptance Testing (UAT):**

Engage a small group of users to evaluate the platform’s usability, identifying areas for refinement before deployment.

* 1. Deployment and Maintenance

1. **Soft Launch:**

Deploy the MVP to a limited audience to gather initial feedback and address potential issues in real-world conditions.

1. **Continuous Monitoring:**

Use monitoring tools (e.g., Prometheus, Grafana) to track system performance and identify bottlenecks.

1. **Iterative Updates:**

Based on user feedback and analytics, iteratively enhance features such as advanced search filters, user-to-craftsman messaging, and expanded customization options.

* 1. Justification for Agile Methodology

1. Flexibility: Agile’s iterative nature allows for continuous refinement of features and adaptation to evolving requirements.
2. Efficiency for Microservices: The modularity of microservices aligns with Agile’s focus on delivering functional increments.
3. Risk Mitigation: Regular testing and feedback reduce the likelihood of large-scale failures.
4. Suitability for Independent Development: Agile provides a structured yet lightweight framework, enabling effective time management and prioritization for a solo developer.

**Conclusion**

The adoption of Agile methodology ensures that the development process for "C&C" is structured, flexible, and user-focused. Its alignment with microservices architecture and distributed technologies enables efficient management of complexity and continuous improvement, ensuring the delivery of a high-quality e-commerce platform that meets both technical and cultural objectives.

1. Requirements and Risks

The "C&C" platform is designed to establish a premier e-commerce ecosystem that not only showcases traditional Chinese craftsmanship but also promotes cultural preservation and innovation in the digital age. By leveraging the growing global interest in unique, handcrafted items, the platform aims to offer a high-quality, user-centric experience for both artisans and consumers. This ambitious initiative strives to address the inherent challenges of balancing authenticity with modern e-commerce practices while ensuring smooth functionality across various technological touchpoints. The platform will create a space that allows users to engage with and purchase products that embody the rich cultural heritage of China, thus acting as a bridge between traditional craftsmanship and modern consumers.

To meet these ambitious objectives, the platform’s development must fulfill a range of business and technical requirements. On the business front, the "C&C" platform needs to facilitate a marketplace that prioritizes product authenticity, ensuring that every item listed is genuinely handmade and culturally significant. The platform will also offer customization services that enable customers to request personalized products, further enhancing the appeal of traditional crafts in the modern market. Additionally, a vibrant, engaged community of artisans, collectors, and consumers will be nurtured, encouraging cultural exchange and collaborative efforts in preserving traditional crafts.

From a technical perspective, the platform will be built on a microservices architecture to ensure flexibility, scalability, and resilience. This architecture will allow independent service modules to function autonomously while communicating seamlessly with one another. The use of cutting-edge technologies like Spring Security, JWT tokens, Nacos for service discovery, and OpenFeign for service-to-service communication will be integral in ensuring the platform’s security, scalability, and ease of maintenance. Furthermore, robust transaction management, utilizing tools such as Seata for distributed transactions, will be crucial in maintaining data integrity and consistency across the system.

In light of these requirements, the platform also faces a series of inherent risks, both on the business and technical fronts. From ensuring the authenticity of products to managing the complexity of distributed transactions, addressing these challenges effectively will be key to the platform's success. This section will explore both the core requirements for achieving the project goals and the risks associated with their implementation, offering insights into how these challenges will be mitigated.

* 1. Requirements
     1. Business Requirements

**Cultural Authenticity and Product Originality**

The platform’s cornerstone is its emphasis on authentic, handmade traditional crafts. Unlike generic e-commerce platforms, "C&C" aims to deliver products that preserve the cultural heritage of China while ensuring they are genuinely handcrafted.

1. **Verification of Authenticity**

* Sellers must provide evidence of handmade creation processes, including photographs, videos, or certifications from recognized institutions.
* Items will undergo manual review by cultural experts or platform-appointed auditors before approval.

1. **Challenges:**

* Ensuring thoroughness without creating barriers for artisans.
* Balancing strict standards with scalability as the number of sellers grows.

1. **Mitigation Strategies:**

* Leveraging AI tools to assist human reviewers in spotting signs of counterfeit goods.
* Introducing a tiered approval system, where high-trust sellers can list products with less oversight after a proven track record.

**Building an Engaged Community**

Beyond transactions, the platform aims to become a hub for cultural exchange and education.

1. **Community Features:**

* Blogs, forums, and video content showcasing the history and techniques behind traditional crafts.
* Interactive spaces for users to share experiences, reviews, and discussions about artisan products.

1. **Challenges:**

* Maintaining consistent user engagement in the community aspects.
* Preventing misuse, such as spamming or unproductive criticism.

1. **Mitigation Strategies:**

* Offering incentives like discounts or access to exclusive content for active participants.
* Moderation tools and a code of conduct to ensure a positive community environment.

**Global Expansion Potential**

While initially targeting the domestic Chinese market, the platform will prepare for future international expansion.

1. **Key Features:**

* Options for buyers to specify materials, colors, or patterns during product selection.
* A messaging system to facilitate direct communication between buyers and artisans.

1. **Challenges:**

* Managing miscommunications between buyers and sellers, leading to dissatisfaction.
* Balancing the technical complexity of enabling customizations with ease of use.

1. **Mitigation Strategies:**

* Clear guidelines and templates for customization requests.
* Adding a "confirmation preview" step before orders are finalized.

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**2. Challenges:**

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* Offering incentives like discounts or access to exclusive content for active participants.
* Moderation tools and a code of conduct to ensure a positive community environment.

**Global Expansion Potential**

While initially targeting the domestic Chinese market, the platform will prepare for future international expansion.

**1. Key Considerations:**

* Multilingual interfaces and localized support for diverse global audiences.
* Compliance with international trade regulations for cross-border sales.

**2. Challenges:**

* Adapting cultural content for global audiences without diluting its authenticity.
* Managing logistics and international payment systems.

**3. Mitigation Strategies:**

* Partnering with cultural ambassadors and translators.
* Collaborating with global shipping and payment providers like PayPal and Stripe.

4.1.2 Technical Requirements

**Microservices Architecture**

The platform is designed as a microservices architecture to enhance modularity and scalability. Each module—such as authentication, product listings, order management, and payments—operates as an independent service, communicating through APIs.

**1. Key Technologies Used:**

* **Nacos**: For service discovery and configuration management.
* **OpenFeign**: For efficient inter-service communication.

**2. Challenges:**

* Ensuring seamless communication between services.
* Preventing bottlenecks or cascading failures across the system.

**3. Mitigation Strategies:**

* Implementing retries and fallback mechanisms for service calls.
* Using monitoring tools like Prometheus and Grafana for real-time performance tracking.

**Security Measures**

Given the sensitive nature of user data, robust security measures are essential.

**1. User Authentication and Authorization:**

* Implementing **Spring Security** for login and user session management.
* Securing data with **JWT** tokens, passed in **HTTP** headers for authentication.

**2. Data Protection:**

* Encrypting user credentials using industry-standard hashing algorithms like bcrypt.
* Ensuring payment data is securely transmitted using SSL/TLS protocols.

**3. Challenges:**

* Protecting against evolving cyber threats.
* Avoiding overly restrictive security measures that could hinder usability.

**4. Mitigation Strategies:**

* Regularly updating software dependencies.
* Conducting periodic security audits and penetration testing.

**Transaction Management**

Traditional single-transaction **ACID** properties are harder to maintain in microservices architectures, necessitating distributed transaction solutions.

**1. Distributed Transaction Framework:**

* Using tools like Seata to manage transactions across multiple microservices, ensuring consistency in scenarios such as inventory updates and order payments.

**2. Event-Driven Architecture:**

* Implementing eventual consistency models using message queues like RabbitMQ to synchronize services asynchronously.

**3. Challenges:**

* Handling partial failures during transactions.
* Balancing consistency with performance and availability.

**4. Mitigation Strategies:**

* Employing retry mechanisms and dead-letter queues to handle failed transactions gracefully.
* Designing services to handle eventual consistency where possible.

**Rate Limiting and Fault Tolerance**

To ensure stable performance under high traffic, the platform will use rate limiting and fault-tolerance mechanisms.

**1. Key Technologies:**

* **Sentinel** for limiting request rates and handling circuit breaking.
* Load balancers like **Nginx** to distribute traffic evenly across service instances.

**2. Challenges:**

* Accurately predicting traffic patterns and scaling appropriately.

**3. Mitigation Strategies:**

* Implementing auto-scaling to add or remove server instances based on demand.
* Conducting regular load testing to identify potential bottlenecks.
  1. Risk catalogue

4.2.1 Business Risks

**Authenticity and Counterfeit Detection**

The risk of counterfeit or substandard products undermines the credibility of the platform.

**1. Challenges:**

* Preventing counterfeit items from passing the review process.
* Balancing strict reviews with seller onboarding speed.

**2. Mitigation Strategies:**

* Training reviewers to identify counterfeits effectively.
* Using AI-based tools to flag potentially suspicious listings.

**Market Demand Fluctuations**

The niche nature of traditional Chinese crafts could limit demand, particularly in international markets.

**1. Challenges:**

* Limited awareness of traditional crafts among younger demographics.
* Competition from mass-produced items at lower price points.

**2. Mitigation Strategies:**

* Collaborating with influencers to promote the platform.
* Offering limited-time discounts or exclusive collections to attract customers.

**Community Engagement Risks**

Maintaining an active and productive community is critical but challenging.

**1. Challenges:**

* Ensuring user-generated content aligns with platform values.
* Preventing toxic interactions in community forums.

**2. Mitigation Strategies:**

* Active moderation and user reporting systems.
* Incentivizing positive contributions through rewards or recognition.

4.2.2. Technical Risks

**Service Outages and Downtime**

Service interruptions due to technical failures can damage user trust and disrupt transactions.

**1. Challenges:**

* Preventing cascading failures across dependent services.
* Quickly restoring services during downtime.

**2. Mitigation Strategies:**

* Implementing circuit breakers with Sentinel to isolate failing services.
* Using redundancy and failover mechanisms to minimize downtime.

**Distributed Transaction Complexities**

Ensuring consistent and reliable data across services is a significant challenge.

**1. Challenges:**

* Handling failures in multi-service workflows.
* Ensuring scalability of distributed transaction frameworks.

**2. Mitigation Strategies:**

* Implementing saga patterns to manage long-running transactions.
* Regularly testing transaction workflows for edge cases.

**Scalability and Performance Risks**

The platform must scale effectively to handle increasing traffic as the user base grows.

**1. Challenges:**

* Avoiding bottlenecks in high-traffic scenarios.
* Ensuring database queries and API calls are optimized for speed.

**2. Mitigation Strategies:**

* Using distributed caching (e.g., Redis) to reduce database load.
* Regularly profiling and optimizing API endpoints.

**Cybersecurity Threats**

Hackers may target the platform to steal sensitive data or disrupt operations.

**1. Challenges:**

* Protecting against sophisticated cyberattacks.
* Ensuring compliance with evolving security standards.

**2. Mitigation Strategies:**

* Employing Web Application Firewalls (WAFs) to block malicious traffic.
* Regularly training the development team on secure coding practices.

1. Conclusion

The aim of this project is to develop the "C&C" e-commerce platform, a digital marketplace that centers around traditional Chinese handicrafts. The platform's core mission is to deliver a curated collection of authentic, high-quality handmade products while fostering a dynamic space for artisans to showcase and sell their creations. "C&C" stands out by its commitment to cultural heritage and craftsmanship, providing consumers with a trusted source for genuine artisanal goods. To achieve this, the platform incorporates a rigorous product review process, ensuring that each listing upholds the highest standards of authenticity and craftsmanship. This careful curation is paired with a cutting-edge technological architecture designed for optimal user experience and operational efficiency.

The development of the platform follows **agile methodologies**, enabling iterative progress, flexibility, and responsiveness to both user feedback and market trends. By employing a **microservices architecture**, the platform is designed to be scalable, modular, and resilient, allowing individual services to operate autonomously while communicating seamlessly with others. This structure ensures that the platform can easily adapt to growing demand and new technological advancements without compromising performance or user experience.

From a technical standpoint, the platform incorporates advanced mechanisms such as **distributed transactions** and **current-limiting circuit breakers** to enhance system stability and high availability. These technologies are critical to ensuring that transactions across multiple services remain consistent, even in the event of system failures or high user traffic. The use of **Spring Security** and **JWT tokens** guarantees secure user authentication, while tools like **Nacos** and **OpenFeign** support effective service communication and integration.

Throughout the development process, the project has identified several potential risks, including the threat of counterfeit products, intellectual property disputes, and challenges related to logistics and distribution. To mitigate these risks, the platform implements strong safeguards, including advanced verification procedures for product authenticity and intellectual property protections for artisans. Moreover, the platform is designed to ensure secure and reliable delivery options, ensuring that users receive their orders efficiently and safely.

Ultimately, the goal of the "C&C" platform is to provide a trusted, seamless, and enjoyable e-commerce experience that not only highlights the beauty and artistry of traditional Chinese crafts but also fosters a safe and supportive community for both artisans and consumers.

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