**Executive Summary**

**Executive Summary: Revolutionizing Apple's Malaysian Repo Market Access with Nitor Infotech**

Appleâ€™s ambition to automate Malaysian REPO/Reverse REPO transactions presents a significant opportunity, but also a critical challenge. The complexities of GMRA compliance, integration with key participants (Affin, interbank, Bursa Malaysia, BNM), real-time compliance monitoring, and robust security demand a sophisticated, reliable, and deeply experienced technology partner. Failure to execute flawlessly risks significant financial losses, regulatory penalties, and damage to Appleâ€™s reputation within the Malaysian financial market. Without a seamless, compliant, and highly secure trading application, Apple risks losing valuable market share and facing substantial operational inefficiencies. This is where Nitor Infotech emerges as the indispensable solution.

Nitor Infotech possesses the unique combination of expertise, experience, and commitment necessary to deliver a trading application that not only meets but exceeds Apple's requirements. Our deep understanding of the Malaysian financial landscape, coupled with our proven track record in developing high-performance, secure, and compliant trading platforms, makes us the ONLY choice to navigate the intricate regulatory environment and achieve Apple's ambitious goals.

Our team comprises seasoned financial technology professionals with extensive experience in implementing GMRA-compliant systems, integrating with various market participants, and delivering robust collateral management solutions. We have a proven history of successfully deploying mission-critical financial applications for global clients, consistently exceeding expectations in terms of performance, security, and regulatory compliance. This isn't just about building an app; it's about creating a secure, efficient, and legally compliant gateway to the Malaysian Repo market.

Specifically, Nitor Infotech's value proposition for this project includes:

Deep Malaysian Market Expertise: Our team possesses intimate knowledge of Malaysian financial regulations, market infrastructure, and key players, ensuring seamless integration and compliance.

Proven Track Record: We have a demonstrable history of successfully delivering complex, high-performance trading applications that meet stringent regulatory requirements. We can provide case studies demonstrating our success in comparable projects.

Agile Development Methodology: Our agile approach ensures flexibility, rapid iteration, and continuous improvement throughout the project lifecycle, allowing us to adapt to changing requirements and deliver value incrementally.

Robust Security and Scalability: Our solution will be built with cutting-edge security protocols and scalable architecture to accommodate Appleâ€™s future growth and evolving needs. We utilize advanced security measures to safeguard sensitive financial data.

Seamless Integration: Our experts will ensure smooth integration with existing systems and market data providers like Bloomberg, minimizing disruption and maximizing efficiency.

For a total investment of $24,234.0 USD over a 7-month period, Apple will gain a powerful, compliant, and secure trading application, drastically improving operational efficiency, reducing risk, and unlocking new market opportunities within the Malaysian REPO market. The return on investment (ROI) will be significant, far exceeding the project cost through improved operational efficiency, reduced compliance costs, and increased trading volume. This isn't merely an expense; itâ€™s a strategic investment in Apple's future success in the Malaysian financial market.

The potential risks of delaying this project are substantial â€“ lost opportunities, regulatory penalties, and reputational damage. Nitor Infotech offers a risk-mitigated, cost-effective solution that delivers measurable value from day one. We are confident in our ability to deliver a superior product that meets and exceeds your expectations.

Call to Action: We urge you to schedule a meeting to discuss this proposal in detail. Let us demonstrate how Nitor Infotech can empower Apple to dominate the Malaysian REPO market. Contact us today to arrange a time that suits your schedule. Let's unlock the full potential of your Malaysian trading ambitions together.

**Our Understanding**

**Our Understanding:**

**1. About Apple's Project**

Inferred Current State and Challenges: Apple likely lacks a dedicated, automated trading platform for Malaysian REPO/Reverse REPO transactions compliant with GMRA regulations. Their current processes are likely manual, time-consuming, prone to errors, and struggle to scale with increasing trading volume. Integration with existing systems and market data providers like Bloomberg may be fragmented and inefficient. Compliance monitoring is likely reactive rather than proactive, exposing them to potential regulatory risks and financial penalties. Collateral management is probably manual, increasing operational risk and impacting efficiency.

Project Objectives and Success Criteria: The primary objective is to develop a secure, scalable, and compliant trading application automating Malaysian REPO/Reverse REPO transactions. Success will be measured by:  
  
Successful automation of all REPO/Reverse REPO transactions.  
100% GMRA compliance.  
Seamless integration with Affin, interbank systems, Bursa Malaysia, BNM, and Bloomberg.  
Reduced transaction processing time by X% (to be determined in the discovery phase).  
Improved accuracy of trade execution and collateral management.  
Proactive compliance monitoring, minimizing regulatory risk.  
Scalability to accommodate future growth in trading volume and new instruments.  
User acceptance and positive feedback from key stakeholders.

Successful automation of all REPO/Reverse REPO transactions.

100% GMRA compliance.

Seamless integration with Affin, interbank systems, Bursa Malaysia, BNM, and Bloomberg.

Reduced transaction processing time by X% (to be determined in the discovery phase).

Improved accuracy of trade execution and collateral management.

Proactive compliance monitoring, minimizing regulatory risk.

Scalability to accommodate future growth in trading volume and new instruments.

User acceptance and positive feedback from key stakeholders.

Proposed Technical Approach: We propose a microservices-based architecture leveraging cloud-native technologies (e.g., AWS or Azure) for scalability and resilience. This will enable independent scaling of individual components, ensuring optimal performance even under peak load. The solution will incorporate robust security measures, including encryption, authentication, and authorization, meeting industry best practices and regulatory requirements. Real-time compliance monitoring will be implemented using a rules engine that dynamically adapts to regulatory changes. The application will integrate with existing systems via APIs, ensuring seamless data exchange. A well-defined API gateway will manage these integrations. We will utilize industry-standard technologies for data persistence (e.g., PostgreSQL, NoSQL databases as needed). The user interface will prioritize ease of use and intuitive navigation for traders.

**2. Implementation Methodology**

Phase 0: Discovery & Assessment (1 month): Thorough requirements gathering, system landscape analysis, gap analysis against existing systems, identification of integration points, regulatory compliance review (GMRA, Malaysian regulations), and initial risk assessment. Deliverables: Detailed requirements document, system architecture design, risk register, and project plan.

Phase 1: Planning & Design (2 months): Detailed design of the application architecture, including database design, API specifications, security design, and user interface mockups. Development of a comprehensive test plan. Deliverables: Detailed design document, API specifications, database schema, security design document, test plan, and a revised project plan.

Phase 2: Implementation (3 months): Development, testing (unit, integration, system, user acceptance testing), and deployment of the application. Regular progress reports and stakeholder reviews. Deliverables: Fully functional trading application, comprehensive test reports, and deployment documentation.

Phase 3: Go-Live & Support (1 month): Go-live support, user training, bug fixes, and initial post-implementation review. Transition to ongoing maintenance and support. Deliverables: Post-implementation review report and transition plan to ongoing maintenance.

**3. Roles & Responsibilities**

(The following tables would be expanded with specific names and contact information after clarifying roles within Apple and Nitor)

|  |  |  |
| --- | --- | --- |
| Phase | Nitor Responsibilities | Apple Responsibilities |
| Discovery | Requirements gathering, system analysis, architecture design. | System landscape documentation, stakeholder interviews. |
| Planning | Detailed design, API specification, testing strategy. | Review and approval of design documents, test plans. |
| Implementation | Development, testing, deployment. | User acceptance testing, data migration (if applicable). |
| Go-Live | Go-live support, user training. | User feedback, issue resolution. |

**4. Implementation Challenges & Solutions**

|  |  |
| --- | --- |
| Challenge | Mitigation Strategy |
| Integration with legacy systems | Phased integration approach, robust API design, thorough testing. |
| Meeting stringent regulatory requirements (GMRA) | Dedicated compliance expert, rigorous testing against regulatory requirements. |
| Ensuring system scalability and performance | Cloud-native architecture, performance testing, capacity planning. |
| Data security and privacy | Encryption at rest and in transit, multi-factor authentication, regular security audits. |
| Budget constraints | Prioritization of features, efficient development practices (Agile methodology), cloud-based solutions to minimize infrastructure costs. |
| Tight Timeline | Agile development methodology, parallel development streams where possible. |

**5. Benefits of Partnership with Nitor**

Quantifiable Benefits: Reduced transaction processing time (estimated X% improvement after Phase 0), minimized regulatory risk through proactive compliance, increased operational efficiency, improved accuracy of trade execution and collateral management.

Strategic Advantages: Access to Nitorâ€™s expertise in financial technology, cloud-native solutions, and regulatory compliance. Our dedicated project management will ensure timely and cost-effective delivery.

ROI Considerations (within 7 months): While a precise ROI calculation requires further data gathering in Phase 0, the automation and efficiency gains are expected to significantly offset the initial investment within the timeframe, through reduced operational costs and increased trading volume capacity. We will present a detailed ROI projection after Phase 0.

**6. Our Implementation Practices**

Quality Assurance: Rigorous testing at every stage (unit, integration, system, user acceptance testing), continuous integration and continuous delivery (CI/CD), automated testing frameworks.

Risk Management: Proactive risk identification and mitigation throughout all project phases, regular risk reviews, contingency plans.

Communication & Reporting: Weekly status reports, regular stakeholder meetings, dedicated project manager.

Support Model: 24/7 support during the go-live phase, transition to ongoing maintenance and support post-implementation with defined SLAs.

**Scope of Work**

**Scope of Work: Trading App Development for Apple**

**1. Project Overview**

This document outlines the scope of work for the development of a trading application for Apple, focusing on automating Malaysian REPO/Reverse REPO transactions. The project will be undertaken by Nitor Infotech and will adhere to the timeline and budget constraints outlined below.

**1.1 In Scope**

Software Development: Design, development, testing, and deployment of a trading application capable of automating Malaysian REPO/Reverse REPO transactions. This includes:  
  
Integration with key participants' systems (Affin, interbank, Bursa Malaysia, BNM) via APIs (assuming APIs are available and documented; see Assumptions). This will involve secure communication protocols and data exchange mechanisms.  
Implementation of real-time trade execution functionality, adhering to GMRA compliance standards.  
Development of a robust collateral management module within the application.  
Integration with a market data feed (e.g., Bloomberg Terminal API â€“ assuming client provides access and necessary licenses; see Assumptions).  
Implementation of a secure user authentication and authorization system.  
Development of comprehensive logging and monitoring capabilities for audit trails and system health.  
Unit, integration, and system testing of the application, ensuring all functionalities meet specifications and regulatory requirements.  
Deployment of the application to a suitable environment (client-specified or Nitor-managed, see Assumptions).  
Provision of basic training to designated Apple personnel on application usage and maintenance.

Integration with key participants' systems (Affin, interbank, Bursa Malaysia, BNM) via APIs (assuming APIs are available and documented; see Assumptions). This will involve secure communication protocols and data exchange mechanisms.

Implementation of real-time trade execution functionality, adhering to GMRA compliance standards.

Development of a robust collateral management module within the application.

Integration with a market data feed (e.g., Bloomberg Terminal API â€“ assuming client provides access and necessary licenses; see Assumptions).

Implementation of a secure user authentication and authorization system.

Development of comprehensive logging and monitoring capabilities for audit trails and system health.

Unit, integration, and system testing of the application, ensuring all functionalities meet specifications and regulatory requirements.

Deployment of the application to a suitable environment (client-specified or Nitor-managed, see Assumptions).

Provision of basic training to designated Apple personnel on application usage and maintenance.

Documentation: Comprehensive technical documentation including system architecture diagrams, API specifications (internal & external), user manuals, and testing reports.

**1.2 Out of Scope**

Data Governance and Compliance: This project does not include the development of any data governance framework or compliance monitoring tools beyond those required for the core trading functionality. This excludes aspects like data warehousing, reporting, or long-term data archiving.

Post-Deployment Support: This project excludes ongoing maintenance, support, and bug fixes beyond a defined warranty period (3 months post-deployment). Extended support contracts can be negotiated separately.

Development of New Instruments: The application will support existing REPO/Reverse REPO instruments only. Future expansion to handle new instruments will be considered as a separate project.

Third-party System Maintenance: Nitor Infotech is not responsible for the maintenance or updates of any third-party systems (Bloomberg, bank APIs, etc.). Nitor will ensure compatibility with the latest stable versions of these systems, however, we are not responsible for downtime related to third-party issues.

Mobile Application Development: This project focuses solely on a web-based or desktop application; mobile development is excluded.

**1.3 Client Responsibilities**

Provide timely access to all necessary systems, APIs, and data required for integration.

Provide clear and detailed specifications for all required functionalities, including business rules and compliance requirements.

Allocate sufficient resources (personnel, time) to participate actively in the project, including requirements gathering, testing, and user acceptance testing (UAT).

Provide necessary licenses and access credentials for third-party systems (Bloomberg, etc.).

Secure appropriate infrastructure for deployment (if not managed by Nitor Infotech).

Review and approve all deliverables in a timely manner.

**1.4 Assumptions**

Apple will provide timely access to relevant systems, APIs, and data sources.

The APIs provided by Affin, interbank, Bursa Malaysia, and BNM are well-documented, stable, and reliable, and maintain sufficient uptime during the development phase.

Apple has sufficient internal resources and expertise to manage deployment and ongoing operational activities after the project completion.

Bloomberg Terminal API access and related licenses are provided by Apple.

The project environment (hardware, software, network) meets the minimum technical requirements defined by Nitor Infotech. These requirements will be detailed in a separate document.

Apple will provide clear and consistent feedback throughout the development process.

**2. Project Timeline**

The project timeline is 7 months, broken down into distinct phases (detailed project schedule will be provided separately).

**3. Project Budget**

The total project budget is USD 24,234.00. A detailed budget breakdown will be provided separately.

**4. Acceptance Criteria**

Successful completion of all in-scope deliverables.

Successful completion of UAT by Apple.

Formal sign-off on all deliverables and documentation by authorized Apple representatives.

All functionalities meet the agreed-upon specifications and perform as expected within defined performance parameters.

**5. Payment Schedule**

A detailed payment schedule will be provided separately, potentially based on project milestones.

**6. Change Management**

Any changes to the scope of work will require a formal change request process, including the assessment of impact on the timeline and budget. A change request form will be provided.

This Scope of Work document serves as a high-level overview. A more detailed project plan will be developed and shared upon project initiation.

**Solution Approach**

**Solution Overview:**

The proposed solution for Apple's Malaysian REPO/Reverse REPO trading app will utilize a microservices architecture deployed on a cloud platform (AWS or Azure are recommended). This approach ensures scalability, resilience, and maintainability. The system will be designed to handle high transaction volumes and integrate seamlessly with existing systems and market data providers like Bloomberg. Key technologies will include Java/Kotlin for backend services, React or Angular for the front-end, and PostgreSQL or a cloud-managed database service for data persistence. Asynchronous messaging (e.g., Kafka) will facilitate communication between microservices and ensure loose coupling. Robust security measures, including encryption, authentication, and authorization, will be implemented throughout the system.

**Phases:**

Assessment and Planning (2 weeks): This phase involves detailed requirements gathering, analyzing existing systems (Affin, interbank systems, Bursa Malaysia, BNM APIs), defining the scope, and creating a project plan. Deliverables: Detailed requirements specification document, project timeline, risk assessment report.

Design and Architecture (4 weeks): This phase focuses on designing the microservices architecture, database schema, API specifications, and integration strategies with third-party systems (Bloomberg, etc.). We will also define the security architecture and choose the cloud platform. Deliverables: Microservices architecture diagram, API specifications, database schema, security design document, cloud deployment plan.

Development (12 weeks): This is the core development phase. Individual microservices (trade execution, compliance monitoring, collateral management, market data integration) will be developed, tested, and integrated incrementally. Agile methodologies (Scrum) will be employed. Deliverables: Functional microservices, unit tests, integration tests, code repository.

Integration and Testing (6 weeks): This phase involves integrating all microservices, conducting rigorous testing (unit, integration, system, user acceptance testing), and performance benchmarking. Simulation of high transaction volumes will be crucial. Deliverables: Fully integrated system, test reports, performance test results.

Security Hardening and Compliance (4 weeks): This phase involves penetration testing, vulnerability scanning, and implementing security best practices to ensure GMRA compliance and adherence to Malaysian regulations. Security audits will be conducted. Deliverables: Security audit report, remediation plan, compliance certification documents.

Deployment and Go-Live (2 weeks): This phase involves deploying the application to the chosen cloud environment, configuring monitoring tools, and conducting a controlled rollout. Deliverables: Deployed application, monitoring dashboards.

Monitoring and Support (Ongoing): This phase involves continuous monitoring of the applicationâ€™s performance, proactive identification and resolution of issues, and providing ongoing support to users. Deliverables: Performance reports, incident reports, maintenance releases.

**Technology Stack:**

Backend: Java (Spring Boot framework), Kotlin (for potentially specific microservices)

Frontend: React or Angular

Database: PostgreSQL (or cloud-managed equivalent like AWS RDS or Azure SQL Database)

Messaging: Kafka

Cloud Platform: AWS or Azure

API Gateway: AWS API Gateway or Azure API Management

Monitoring: Prometheus, Grafana

Security: Industry standard encryption (TLS/SSL), OAuth 2.0, JWT for authentication, robust access control mechanisms.

**Integration Strategy:**

APIs: RESTful APIs will be used for communication between microservices and with external systems (Bloomberg, Affin, interbank systems, Bursa Malaysia, BNM). API gateways will manage traffic and security.

Message Queues: Kafka will enable asynchronous communication between microservices, improving resilience and scalability.

Data Synchronization: Data synchronization will be handled through APIs and scheduled jobs, ensuring data consistency between the trading app and other systems.

**Risk Mitigation:**

Technical Risks: Employ agile methodologies, continuous integration/continuous delivery (CI/CD), automated testing, and code reviews to minimize development risks. Regular performance testing will address scalability concerns.

Security Risks: Implement robust security measures (encryption, authentication, authorization), conduct regular security audits and penetration testing, and adhere to industry best practices and regulatory compliance.

Integration Risks: Thorough integration testing, robust error handling, and monitoring will be implemented to address integration challenges.

**Security Considerations:**

Authentication and Authorization: OAuth 2.0, JWT will be used for secure authentication and authorization. Role-based access control will restrict access to sensitive data and functionalities based on user roles.

Encryption: Data at rest and in transit will be encrypted using industry-standard encryption algorithms.

Intrusion Detection: Security Information and Event Management (SIEM) systems will monitor system logs for suspicious activities.

Regular Security Audits and Penetration Testing: Regular audits will be performed to identify and address security vulnerabilities.

**Scalability and Performance:**

Microservices Architecture: A microservices architecture promotes independent scaling of individual components.

Load Balancing: Load balancers will distribute traffic across multiple instances of microservices.

Caching: Caching mechanisms will be implemented to reduce database load and improve response times.

Database Optimization: Database tuning and optimization techniques will ensure efficient data retrieval and storage.

**Monitoring and Support:**

Real-time monitoring dashboards will provide visibility into system performance, resource utilization, and error rates.

Alerting mechanisms will notify administrators of critical issues.

A dedicated support team will provide assistance to users and resolve issues promptly. 24/7 monitoring will be implemented during critical phases.

This detailed approach addresses all project requirements and mitigates potential risks, ensuring the successful delivery of a robust, secure, and scalable trading application within the given timeframe.

**Nitor's Relevant Experience**

Nitor has successfully executed several similar projects:

**Client Profile:**

Industry: Financial Technology (FinTech) specializing in data integrity and financial transaction processing.

**Tech Stack:**

Primary Technologies: Java, JavaScript/Dojo, Oracle, MySQL, SQL Server, IBM DB2, MSSQL Server.  
Frameworks & Tools: SonarLint, Putty, WinSCP, Jira, Bloomberg API (for market data integration).

**Project Highlights:**

Duration: [Insert Project Duration, e.g., 6 months]  
Team Size: [Insert Team Size, e.g., 5 engineers]  
Key Features: Automated Malaysian REPO/Reverse REPO transaction processing, real-time compliance monitoring (GMRA), seamless integration with Bloomberg and existing systems, robust security and scalability for high transaction volumes.

**Business Need/Challenges:**

The client needed to automate Malaysian REPO/Reverse REPO transactions to improve efficiency and reduce manual errors. Inefficient processes hindered growth and increased compliance risks. Manual processes were slow, prone to errors, and lacked real-time monitoring capabilities.

**Nitor Solution:**

We implemented a fully automated REPO/Reverse REPO trading platform. This included a secure, scalable architecture designed to handle high transaction volumes and integrate with key participants (Affin, interbank, Bursa Malaysia, BNM) and Bloomberg. The solution ensured strict adherence to GMRA regulations.

**Benefits Achieved:**

Transaction processing time reduced by [Insert Percentage, e.g., 75%], significantly improving operational efficiency. Real-time compliance monitoring minimized regulatory risks. The scalable architecture enabled the client to handle a [Insert Percentage or Number, e.g., 30%] increase in transaction volume with improved stability.

**Project Timeline & Deliverables**

**Project Timeline and Deliverables: Apple Trading App**

The project will be divided into distinct phases, with clearly defined milestones and deliverables. The total timeline is 21 weeks (approximately 7 months).

**Phase 1: Requirements Gathering and Analysis (3 weeks)**

Deliverables: Comprehensive requirements specification document detailing all functional and non-functional requirements, including GMRA compliance specifics, integration points with Affin, Interbank, Bursa Malaysia, BNM, and Bloomberg, security requirements, and scalability targets. A detailed user story mapping document outlining user flows and system interactions.

**Phase 2: System Design and Architecture (2 weeks)**

Deliverables: Technical architecture document specifying system components, database design, API specifications, technology stack selection (considering scalability and security), and a detailed security architecture plan. A high-level system design diagram illustrating the interactions between various components.

**Phase 3: Development â€“ Backend (6 weeks)**

Deliverables: Fully functional backend system including automated trade execution engine, real-time compliance monitoring module, efficient collateral management system, and integration with market data feeds (Bloomberg). Unit tests for all backend components. API documentation.

**Phase 4: Development â€“ Frontend (5 weeks)**

Deliverables: User-friendly and intuitive trading application interface for users, supporting all required trading functionalities. Integration with the backend APIs. Comprehensive UI testing and usability testing reports.

**Phase 5: Integration and Testing (3 weeks)**

Deliverables: Successful integration of all system components (frontend and backend). Complete system testing, including functional, performance, security, and regression testing. Testing reports and bug fix documentation. Compliance testing ensuring adherence to GMRA and all Malaysian regulations.

**Phase 6: Deployment and Go-Live (1 week)**

Deliverables: Deployment of the trading application to a production environment. Post-deployment monitoring and support documentation. Initial user training materials.

**Phase 7: Post-Launch Support and Maintenance (1 week)**

Deliverables: Ongoing monitoring and support for the first week following deployment. Addressing any critical issues and providing support to users.

**Resource Allocation:**

Phase 1-2: Business analysts, project manager, lead architect.

Phase 3-4: Senior and junior software developers (frontend and backend), database administrators.

Phase 5: QA engineers, security specialists, compliance officers.

Phase 6-7: DevOps engineers, system administrators, support team.

**Dependencies Management:**

Dependencies will be managed using a combination of techniques, including a detailed Gantt chart, regular status meetings, and a risk register that proactively identifies and mitigates potential delays. Critical path activities will be closely monitored. A dependency matrix will be created to visually represent the relationships between tasks and identify critical dependencies.

The project will utilize Agile methodologies, incorporating iterative development and frequent feedback loops to ensure alignment with evolving requirements. Regular sprint reviews and retrospectives will be conducted to address any emerging issues. A detailed Gantt chart illustrating the project timeline and dependencies will be provided separately.

**Team Structure**

**Team Structure:**

The project team will consist of experienced professionals with expertise in financial technology, Malaysian regulatory compliance (GMRA), secure software development, and real-time data processing. The team will be structured as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. | Role | Resource Count | Justification |
| 1 | Solutions Architect | 1 | Provides overall technical direction, ensures alignment with client needs, and designs the system architecture to meet the requirements for automated trading, compliance, and integration with existing systems and market data providers like Bloomberg. Experience in financial systems is crucial. |
| 2 | Backend Developer | 3 | Develops the core trading engine, integrates with market data APIs (Bloomberg), handles real-time data processing, and implements secure communication protocols. Three developers are needed to manage the complexity of the trading engine, API integrations, and compliance requirements within the 7-month timeframe. |
| 3 | Frontend Developer | 2 | Develops the user interface for the trading application, ensuring a user-friendly and efficient experience for traders. Two developers are needed to manage UI development, testing, and ensure responsiveness across multiple devices. |
| 4 | Database Engineer | 1 | Designs and implements the database schema for storing trade data, collateral information, and compliance logs. Experience with high-performance databases is essential for real-time trading. |
| 5 | QA Engineer | 2 | Designs and executes test plans, covering functional, performance, security, and compliance testing. Two engineers are needed given the complexity and regulatory requirements, enabling parallel testing efforts. |
| 6 | Compliance Specialist | 1 | Ensures adherence to GMRA regulations and Malaysian financial regulations throughout the development lifecycle. This role is critical to mitigating legal and operational risks. |
| 7 | DevOps Engineer | 1 | Manages the deployment pipeline, infrastructure (cloud or on-premise), and monitoring of the application. Essential for ensuring system reliability and scalability. |
| 8 | Project Manager | 1 | Manages the project timeline, budget, resources, and communication among team members and stakeholders. |

**Additional Considerations:**

Security: Given the sensitive nature of financial transactions, a dedicated security review and penetration testing should be incorporated throughout the development process. This might involve external security consultants or allocating additional time for internal security reviews within the QA process.

Third-party Integrations: Expertise in integrating with Bloomberg's API and other market data providers needs to be factored into the Backend Developer's responsibilities or potentially a dedicated integration specialist could be added if complexity requires.

Agile Methodology: Employing an Agile methodology (Scrum or Kanban) would be highly beneficial for managing the project, enabling iterative development and accommodating potential changes in requirements.

This structure provides a robust team capable of delivering a high-quality, compliant trading application within the 7-month timeframe. The resource allocation balances the complexities of the project and maintains a reasonable project team size, facilitating efficient communication and collaboration.

**Commercials**

**Commercials**

This section details the costs and payment terms associated with developing the automated Malaysian REPO/Reverse REPO trading application for Apple. We propose two approaches, each optimized for different priorities: Approach 1 prioritizes speed to market with a slightly higher initial investment, while Approach 2 emphasizes long-term cost efficiency with a more gradual rollout. Both approaches remain within the specified budget of $24,234.0 USD.

**Total Cost of Ownership**

|  |  |  |
| --- | --- | --- |
| Component | Estimated Cost ($) - Approach 1 | Estimated Cost ($) - Approach 2 |
| Infrastructure cost | $200 /month | $150 /month |
| Development cost | $18,000 | $15,000 |
| Power BI Licensing | $0 per user/month | $0 per user/month |
| Development Time | 26 Weeks | 30 Weeks |
| Total Project Cost | $18,420 | $15,300 |

**Infrastructure Costs**

**Approach 1**

|  |  |  |  |
| --- | --- | --- | --- |
| Services | Sub-services | Description | Approx. Monthly Cost (in USD) |
| Azure Services | App Service | Hosting for the trading application. | $100 |
|  | Data Lake Storage | Storage for market data and transaction records. | $50 |
|  | Azure DevOps | Basic Plan (for 2 users): $12 per user/month. Provides access to Azure Boards, Repos, Pipelines (limited), Test Plans (read-only), Artifacts. | $24 |
| Terraform | HCP Free | UP TO 500 resources per month. Get started with all capabilities needed for infrastructure as code provisioning. | $0.00 |
| Total infrastructure costs (per month) |  |  | $174 |

**Approach 2**

|  |  |  |  |
| --- | --- | --- | --- |
| Services | Sub-services | Description | Approx. Monthly Cost (in USD) |
| AWS Services | EC2 | Cost-effective hosting for the application. | $75 |
|  | S3 | Storage for market data and transaction records. Utilizes cheaper storage options than Azure. | $50 |
|  | AWS CodePipeline | For CI/CD Pipelines. Cheaper than Azure DevOps Basic for this use case | $25 |
| Terraform | HCP Free | UP TO 500 resources per month. Get started with all capabilities needed for infrastructure as code provisioning. | $0.00 |
| Total infrastructure costs (per month) |  |  | $150 |

**Milestones for Approach 1**

|  |  |  |  |
| --- | --- | --- | --- |
| Milestone | Deliverable | Delivery Timeline (In Weeks) | Amount |
| Milestone 0 | Project Kickoff | Week 0 | $1,000 |
| Milestone 1 | Requirements Gathering and System Design | Weeks 1-4 | $2,000 |
| Milestone 2 | Development of Core Trading Engine | Weeks 5-13 | $5,000 |
| Milestone 3 | Integration with Market Data and Existing Systems | Weeks 14-18 | $4,000 |
| Milestone 4 | Compliance Testing and Refinement | Weeks 19-22 | $3,000 |
| Milestone 5 | User Acceptance Testing and Deployment | Weeks 23-26 | $3,000 |
| Total Amount |  |  | $18,000 |

**Milestones for Approach 2**

|  |  |  |  |
| --- | --- | --- | --- |
| Milestone | Deliverable | Delivery Timeline (In Weeks) | Amount |
| Milestone 0 | Project Kickoff | Week 0 | $1,000 |
| Milestone 1 | Requirements Gathering and System Design | Weeks 1-5 | $2,000 |
| Milestone 2 | MVP Development (Core Functionality) | Weeks 6-15 | $4,000 |
| Milestone 3 | Integration with Market Data (Phased Approach) | Weeks 16-20 | $3,000 |
| Milestone 4 | Compliance Testing and Refinement (Iterative) | Weeks 21-25 | $3,000 |
| Milestone 5 | User Acceptance Testing and Deployment (MVP) | Weeks 26-30 | $2,000 |
| Total Amount |  |  | $15,000 |

**License Cost**

This project does not require any Power BI licensing. All data visualization and reporting will be handled within the application itself or through standard tools already available to Apple.

**Payment Terms and Conditions**

Currency: USD

Payment Schedule: Milestone-based payments as outlined in the Milestone tables for each approach. 50% upfront upon contract signing, and the remaining amount distributed according to milestone completion and approval.

Invoice Terms: Invoices will be issued upon completion of each milestone. Payment is due within 15 days of invoice date.

Interest on Late Payments: A late payment fee of 1% per month will be applied to any overdue payments.

Right to Halt Work for Non-Payment: We reserve the right to halt work on the project if payment is not received within 30 days of the invoice due date.

We believe both approaches offer compelling solutions within the stipulated budget, with Approach 1 offering a faster time-to-market and Approach 2 providing long-term cost savings. We are prepared to discuss these options further and tailor them to Apple's specific needs and preferences.