**Detail Project Plan – FYP24065**

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**BlockReceipt: A Blockchain-based receipt generator**

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## Project Background

Currently, corporate and consumer credit card transactions rely heavily on physical or digital receipts that are either issued by the seller or the payment provider. These traditional receipt systems have several limitations:

1. **Lack of Transparency**: Corporate purchases, especially those requiring taxation purposes, often face challenges in ensuring the authenticity and traceability of transactions.
2. **Receipt Storage Issues**: Consumers frequently misplace or discard physical receipts, and current digital receipt storage solutions are fragmented and inconsistent.
3. **Environmental Impact**: The reliance on paper receipts contributes to unnecessary waste, even as businesses and consumers shift towards digital solutions.
4. **Prone to altering**: Traditional receipt systems are vulnerable to tampering, misreporting, or alteration, particularly in corporate environments where financial transparency is essential.

Blockchain technology offers a promising solution by enabling immutable, transparent, and secure storage of transaction data. As there currently isn't an open API to receive credit card transactions, **Stripe API** will be used, a widely used payment processing platform, and utilizing blockchain, this project seeks to develop a blockchain-based credit card receipt generator that enhances transparency for corporate purchases, simplifies tax reporting, and offers consumers a better way to store their credit card receipts digitally.

Although there currently are services that utilize Blockchain technology to replace traditional receipts, namely a Dubai-based application called **kilpit**, there currently aren't any services/products that fully utilize blockchain's unique advantage of immutability and transparency.

## Project Objective

The objective of this project is to design and develop a **blockchain-based credit card receipt generator** that:

1. **Improves Transparency for Corporations**: By using blockchain, corporations can generate and store receipts that are tamper-proof and fully traceable. This is particularly useful for tax audits and compliance.
2. **Lower the possibility of fraudulent activity**: Although unlikely, traditional receipts including paper and digital receipts are prone to be changed, especially if it is the only prove of payment. Utilizing Blockchain can limit fraudulent activity.
3. **Reduces Paper Usage**: The project aims to cut down on the use of physical paper receipts by providing a secure, blockchain-based alternative, contributing to environmental sustainability.
4. **Ensures Trust and Security**: Blockchain will provide an immutable ledger of all transactions, assuring all parties of the authenticity and integrity of the receipts.

## Project Methodology

The following will be the how the project will be implemented.

1. **Blockchain Implementation**:
   o Set up a local blockchain using **Ganache**.
   o Develop smart contracts in **Solidity** to automate the receipt generation process after transactions are completed.
   o Implement blockchain nodes on the virtual machine for receipt validation.
2. **Stripe API Integration**:
   o Use the **Stripe API** to collect real-time transaction data for both corporate and consumer purchases.
   o Ensure the system can handle the full purchase workflow, from Stripe payment to receipt creation.
3. **Backend and Frontend Development**:
   o **Backend (Node.js/Express)**: Develop APIs to connect the Stripe data, blockchain receipt generation, and user interface. Manage authentication, user data, and receipt access.
   o **Frontend (React/Vue.js)**: Build a user-friendly interface where users can view and download their blockchain-based receipts.

## Project Schedule and Milestones

### Phase 1: Inception (Expected Learning Hours: 12 Hours)

- **Duration**: October 1, 2024
- **Deliverables**:
    - **Detailed Project Plan**: Outline the background, objectives, methodology, and schedule for the project.
    - **Project Web Page**: Set up a web page to document the project progress and information.

### Phase 2: Elaboration (Expected Learning Hours: 144 Hours)

- **Duration**: January 26, 2025
- **Deliverables**:
    - **Preliminary Implementation**:
        - Develop initial versions of the core components (e.g., blockchain setup, Stripe API integration, basic receipt generation).
        - Design and build the system architecture.
    - **Detailed Interim Report**: Provide a report outlining the progress, any initial results from the preliminary implementation, and adjustments to the plan.

### Phase 3: Construction (Expected Learning Hours: 144 Hours)

- **Duration**: April 21, 2025
- **Deliverables**:
    - **Finalized and Tested Implementation**:
        - Complete the development of the project, ensuring all functionalities (receipt generation, verification, blockchain immutability) are implemented and tested.
    - **Final Report**: Summarize the results of the project, including the outcomes, challenges faced, and future directions.