|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Category | Job Titles | Income | Professional Expenses | Personal Expenses |
| Medical Practitioners | General Practitioners (GPs), Consultants, Registrars, Junior Doctors, Surgeons, Psychiatrists, Anaesthetists, Radiologists | Salary, Overtime, Private practice income, Bonuses, Grants, Teaching income, Research income | Indemnity insurance, Membership fees, CPD, Medical equipment, Travel, Licensing fees | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Nursing Staff | Registered Nurses, Nurse Practitioners, Midwives, Health Visitors, Specialist Nurses (e.g., oncology, paediatrics) | Salary, Overtime, Shift allowances, Bonuses, Teaching income | Uniforms, NMC fees, CPD, Travel, Indemnity insurance | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Allied Health Professionals | Physiotherapists, Occupational Therapists, Speech and Language Therapists, Radiographers, Dietitians, Paramedics, Podiatrists, Orthoptists | Salary, Overtime, Private practice income, Teaching income | Registration fees, CPD, Equipment, Travel, Indemnity insurance | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Healthcare Scientists | Biomedical Scientists, Clinical Scientists, Audiologists, Geneticists, Microbiologists | Salary, Overtime, Research income, Teaching income | Registration fees, CPD, Lab equipment, Travel, Indemnity insurance | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Pharmacy Staff | Pharmacists, Pharmacy Technicians | Salary, Overtime, Private sector income, Teaching income | GPhC fees, CPD, Indemnity insurance, Travel | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Administrative and Clerical Staff | Medical Secretaries, Receptionists, Medical Records Staff, Human Resources Staff, IT Support Staff | Salary, Overtime | CPD, Office supplies, Travel | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Management and Leadership | Hospital Managers, Department Heads, Clinical Directors, Operational Managers | Salary, Performance bonuses, Consulting fees | CPD, Association fees, Travel | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Support Staff | Healthcare Assistants, Porters, Cleaning Staff, Catering Staff, Maintenance Staff | Salary, Overtime | Uniforms, CPD, Travel | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Public Health and Community Health Workers | Public Health Consultants, Community Nurses, School Nurses | Salary, Overtime, Grants | CPD, Travel, Registration fees | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Mental Health Professionals | Clinical Psychologists, Counsellors, Psychiatric Nurses, Psychotherapists | Salary, Overtime, Private practice income, Teaching income | Registration fees, CPD, Indemnity insurance, Travel | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Dental Staff | Dentists, Dental Hygienists, Dental Nurses, Orthodontists | Salary, Private practice income, Teaching income | GDC fees, CPD, Dental equipment, Indemnity insurance | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |
| Research and Development Staff | Clinical Researchers, Research Nurses, Laboratory Technicians | Salary, Research grants, Consulting fees | Research materials, CPD, Association fees, Travel | Housing, Utilities, Groceries, Food, Transportation, Childcare, Loans, Insurance (health, life, car, home), Entertainment, Savings, Clothing, Internet/Phone bills, Personal care, Education (school fees) |

### "Payslipify: Track Every Penny, Save Every Pound" Key Features:

1. **Manual Entry Option:**
   * **Simple Interface:** Provide users with an easy-to-use interface to manually enter their income and expenses.
   * **Custom Categories:** Allow users to create and manage custom categories for better organization.
2. **Automated Extraction from SMS and Email:**
   * **AI Integration:** Use AI and machine learning models to automatically extract financial data from SMS and email notifications.
   * **User Consent:** Ensure users explicitly consent to allow the app to access and process their SMS and email data.

**Implementation Steps:**

**1. User Consent and Permissions:**

* **Transparent Consent:** Clearly inform users about the feature and obtain explicit consent to access SMS and email data.
* **Granular Permissions:** Allow users to selectively enable SMS and/or email monitoring based on their comfort level.

**2. Data Security and Privacy:**

* **Encryption:** Encrypt all data, both in transit and at rest, to ensure security.
* **Privacy Policy:** Update your privacy policy to include details on how SMS and email data are handled.

**3. SMS and Email Access:**

* **SMS Access (Android):** Use appropriate permissions (e.g., READ\_SMS) to access SMS messages on Android devices.
* **Email Access (Cross-Platform):** Utilize APIs like Gmail API or Microsoft Graph API to securely access email data.

**4. AI and Machine Learning Models:**

* **NLP Techniques:** Employ Natural Language Processing (NLP) to analyze and extract relevant financial information from the content of SMS and emails.
* **Training Data:** Gather a diverse set of financial notifications to train your machine learning models for higher accuracy.
* **Continuous Improvement:** Implement feedback loops where users can correct extracted data, and use this information to improve model accuracy over time.

**5. User Interface and Experience:**

* **Notification Monitoring:** Develop background services to continuously monitor incoming SMS and email notifications.
* **Data Extraction:** Automatically extract transaction details (amount, date, merchant) from the notifications and present them to the user for confirmation.
* **Manual Adjustments:** Allow users to easily confirm, edit, or delete auto-extracted entries to ensure accuracy.

**6. Testing and Validation:**

* **Accuracy Testing:** Test the AI models rigorously to ensure high accuracy in data extraction.
* **User Feedback:** Collect feedback from users to identify areas for improvement and enhance the feature based on real-world use.

**Example Workflow:**

1. **User Onboarding:**
   * During onboarding, explain the feature and obtain consent for SMS and email access.
   * Allow users to enable/disable the feature anytime from the settings.
2. **Monitoring Notifications:**
   * Continuously monitor incoming SMS and email notifications for relevant financial information.
   * Use NLP to extract transaction details such as amount, date, and merchant.
3. **Data Integration:**
   * Present extracted data to the user in a review screen within the app.
   * Allow users to confirm, edit, or discard the extracted entries.
4. **Manual Entry Support:**
   * Provide a simple interface for users to manually enter transactions not captured by notifications.
   * Ensure manual entries are seamlessly integrated with auto-extracted data for comprehensive tracking.

**Tools and Technologies:**

* **NLP Libraries:** Use libraries such as SpaCy, NLTK, or TensorFlow for building the NLP models.
* **APIs for Email Access:** Google Gmail API, Microsoft Graph API for accessing email data.
* **Mobile Development:** Android and iOS SDKs for handling permissions and notifications.
* **Data Encryption:** Use standard encryption libraries to secure data.

**Considerations:**

* **User Trust:** Build trust by clearly communicating how data is handled and ensuring robust security measures.
* **Legal Compliance:** Ensure compliance with data protection laws and regulations (e.g., GDPR, CCPA).
* **Scalability:** Design the system to handle varying volumes of data and ensure smooth performance.

By implementing this approach, Payslipify can offer users a powerful tool to automatically track their financial activities from SMS and email notifications, reducing manual entry efforts and providing a more comprehensive financial management experience.

4o

Break this project based on mvc

ChatGPT

To structure the project based on the Model-View-Controller (MVC) architecture, we'll break down the key components and responsibilities into three main layers: Model, View, and Controller. This architecture helps in organizing the code and maintaining a clean separation of concerns, which enhances maintainability and scalability.

**1. Model**

The Model layer is responsible for managing the data and business logic of the application. It handles data retrieval, storage, and manipulation.

**Components of the Model Layer:**

* **Data Models:**
  + **Transaction Model:** Represents financial transactions, including fields for amount, date, category, and source (SMS, email, or manual).
  + **User Model:** Represents user information, including consent status for SMS and email access.
  + **Category Model:** Represents expense and income categories created by users.
* **Data Processing:**
  + **NLP Processing Module:** Processes SMS and email content to extract financial transaction details using Natural Language Processing (NLP).
  + **Data Extraction Module:** Extracts relevant transaction information from parsed notifications and emails.
* **Database Interaction:**
  + **Database Schema:** Defines the structure of the database tables for transactions, users, and categories.
  + **ORM (Object-Relational Mapping):** Facilitates interaction with the database using an ORM like SQLAlchemy for Python, Hibernate for Java, or Core Data for iOS.

**2. View**

The View layer is responsible for displaying the data to the user and capturing user interactions. It consists of the user interface elements.

**Components of the View Layer:**

* **User Interface:**
  + **Dashboard:** Displays a summary of financial transactions, balances, and budget information.
  + **Transaction List:** Shows a detailed list of transactions with options to filter by date, category, or source.
  + **Transaction Entry Form:** Allows users to manually add new transactions.
  + **Settings Page:** Provides options for users to enable/disable SMS and email monitoring and manage categories.
  + **Review Screen:** Displays extracted transaction details from SMS and email notifications for user confirmation or editing.
* **Notification Interface:**
  + **SMS and Email Notification Handling:** Interface to capture and display incoming notifications for user review and processing.

**3. Controller**

The Controller layer acts as an intermediary between the Model and View layers. It handles user input, updates the Model, and refreshes the View.

**Components of the Controller Layer:**

* **Transaction Controller:**
  + **Add Transaction:** Handles the logic for adding new transactions, either manually or automatically extracted from notifications.
  + **Edit Transaction:** Manages the editing of existing transactions based on user input.
  + **Delete Transaction:** Handles the deletion of transactions.
* **Notification Controller:**
  + **Process SMS Notification:** Extracts transaction data from incoming SMS notifications and updates the Model.
  + **Process Email Notification:** Extracts transaction data from incoming email notifications and updates the Model.
* **Settings Controller:**
  + **Manage Consent:** Handles user consent for accessing SMS and email data and updates user preferences.
  + **Category Management:** Allows users to create, edit, and delete categories.

**Example Workflow in MVC Architecture:**

1. **User Interaction (View):**
   * User enables SMS and email monitoring in the settings page.
2. **Controller Action (Controller):**
   * Settings Controller updates user consent status in the User Model.
   * Notification Controller listens for incoming SMS and email notifications.
3. **Data Processing (Model):**
   * Upon receiving a new SMS, the Notification Controller invokes the NLP Processing Module to extract transaction details.
   * The extracted transaction data is saved to the database via the ORM.
4. **Data Display (View):**
   * The View layer updates the dashboard and transaction list with the new transaction.
   * User reviews the auto-extracted transaction in the Review Screen and confirms or edits the details.

**Implementation Considerations:**

* **Technology Stack:**
  + **Backend:** Python (Django, Flask), Node.js, or Java (Spring Boot) for server-side processing and data handling.
  + **Frontend:** React, Angular, or Vue.js for building dynamic user interfaces.
  + **Mobile:** Swift for iOS, Kotlin/Java for Android, or Flutter/React Native for cross-platform development.
  + **Database:** PostgreSQL, MySQL, or SQLite for data storage.
* **Security and Privacy:**
  + Implement secure data storage and transmission practices.
  + Ensure compliance with data protection regulations.
* **Testing:**
  + Unit tests for individual components in the Model, View, and Controller layers.
  + Integration tests to ensure the entire workflow functions correctly.