

Migrating Mifos X Field Officer App to Kotlin Multiplatform

*Includes preview of Mifos Pay's Generic Modules
& Auto-Pay Support*

C4GT Midterm Showcase 2025 | Biplab Dutta

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What is the Mifos Initiative?

Open Source for Financial Inclusion



Mifos Initiative

Mifos stands for **Microfinance Open Source** — an open-source initiative started to support microfinance institutions.

Today, Mifos powers inclusive digital financial services across **40+ countries**.

It supports **microfinance institutions, fintechs, digital banks**, and cooperatives.

Backed by a global community of **developers, implementers, and financial inclusion advocates**.

Mission

"To create a world of 3 billion Maries — where everyone has access to the financial tools they need to create a better life."

<https://mifos.org/>



The Mifos Tech Stack (and Apache Fineract)

Core Components & Key Applications



Core Components

Apache Fineract – Core banking engine (donated to Apache).

Mifos X – Modular platform built on top of Fineract.

Key Applications

Field Officer App – For field staff; now being migrated to **Kotlin Multiplatform**.

Mifos Pay App – Reference wallet & merchant payments.

Mobile Banking App – For customers to access account, loans, and services.

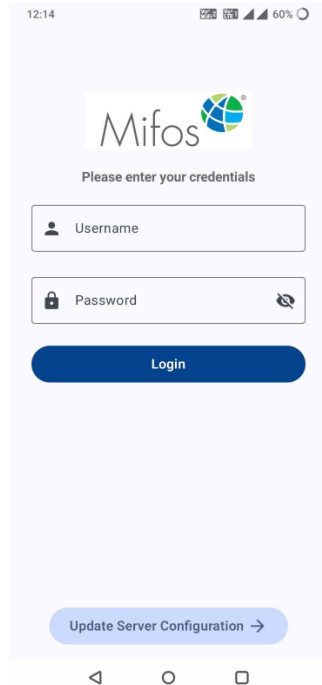


Apache Fineract

Mifos



<https://mifos.org/>



Migrating Mifos X Field Officer App to Kotlin Multiplatform



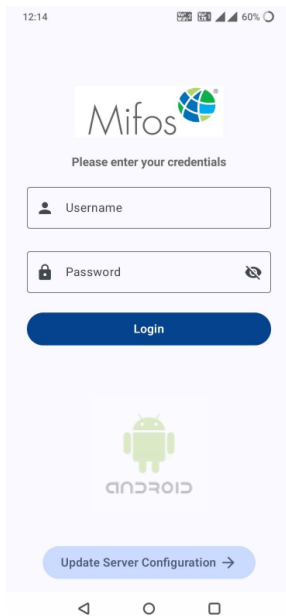
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Helping Field Officers On the Go



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Used by field officers for client onboarding, loans, repayments, path tracking, client pinpoint

Built with Kotlin + Jetpack Compose for Android only

Existing: Android-only
(development branch)



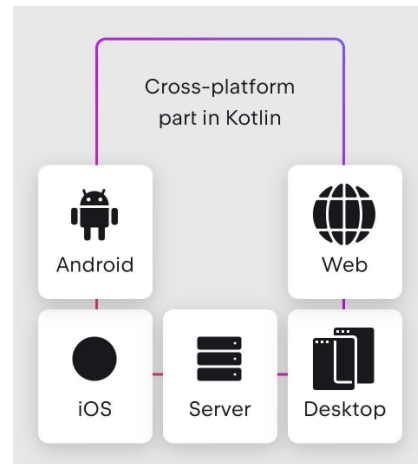
 Kotlin



One Codebase → Many Platforms?



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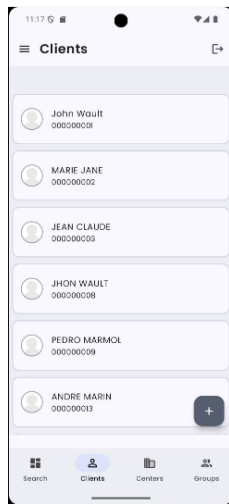
Goal: reuse core business logic and UI everywhere with Kotlin Multiplatform + Compose Multiplatform



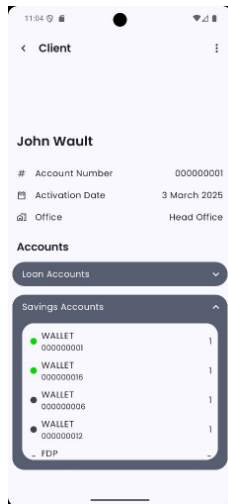
Modules Migrated So Far



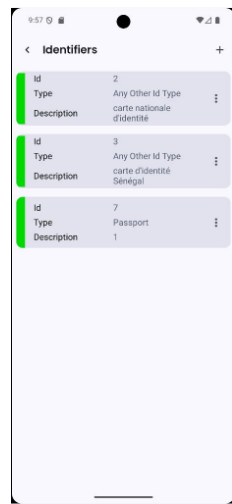
Client Module



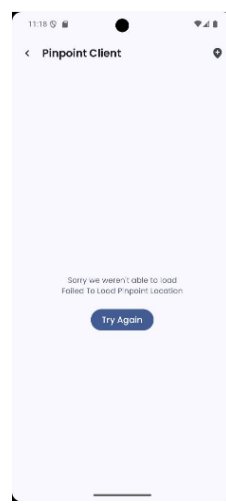
Client List



Client Details



Identifiers



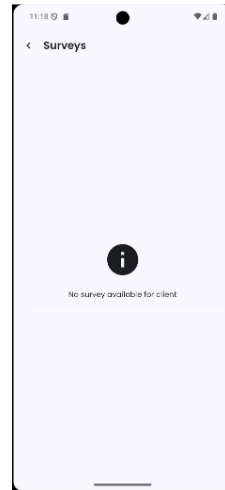
PinPoint



Modules Migrated So Far



Client Module



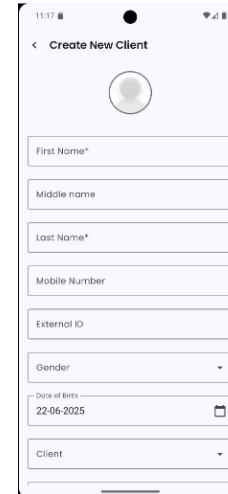
Client Surveys



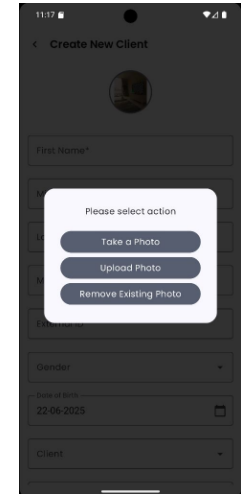
Client Charges



Signature



Client Form



Client Form
Camera/ Gallery
Picker



The screenshot shows the 'Pinpoint Client' app interface. At the top, the status bar displays the time 17:15, battery level, and signal strength. The app's title bar shows 'Pinpoint Client' with a back arrow on the left and a settings gear on the right. Below the title bar is a map with a red location pin. A white dialog box is centered on the screen, titled 'Allow MifosXDroid to access this device's location?'. It contains two options: 'Precise' with a circular map icon and 'Approximate' with a street map icon. Below these options are three light blue buttons: 'While using the app', 'Only this time', and 'Don't allow'.

The top screenshot shows a map of New Delhi with a red pin on the 'Marina Azaad Rd'. The middle screenshot shows a map of the Taj Mahal area in Agra, India, with a red pin on 'Mehrab Bagh'. The bottom screenshot shows a map of Charleston, South Carolina, with a red pin on 'Charleston Harbor'. Each screenshot includes a Google logo and a 'Pinpoint Client' header.

Client Pinpoint



Modules Migrated So Far



Client Charges Module



1:55

< Charges +

| | |
|-------------|---------------------------|
| Charge Id | 5 |
| Charge Name | Annual Membership Renewal |
| Amount | \$10.00 |
| Due Date | 6 Jul 2026 |

| | |
|-------------|-----------------------------|
| Charge Id | 6 |
| Charge Name | Late KYC Submission Penalty |
| Amount | \$2.00 |
| Due Date | 1 Sep 2025 |

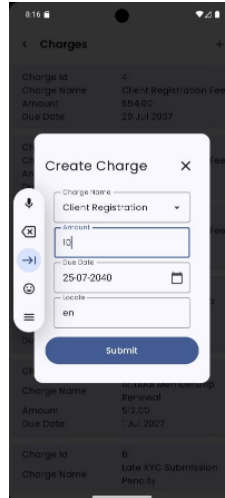
| | |
|-------------|-----------------------------|
| Charge Id | 6 |
| Charge Name | Late KYC Submission Penalty |
| Amount | \$1.00 |
| Due Date | 31 Jul 2025 |

| | |
|-------------|-------------------------|
| Charge Id | 4 |
| Charge Name | Client Registration Fee |
| Amount | \$5.00 |
| Due Date | 7 Jul 2025 |

| | |
|-------------|---------------------------|
| Charge Id | 5 |
| Charge Name | Annual Membership Renewal |
| Amount | \$4.00 |
| Due Date | 6 Jul 2025 |

No More Charges Available

Client Charges



8:16

< Charges +

Charge Id 4
Charge Name Client Registration Fee
Amount \$54.00
Due Date 29 Jul 2027

Create Charge x

Charge Name Client Registration

Amount 10

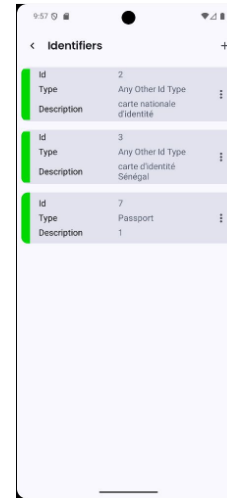
Due Date 25-07-2040

Location en

Submit

Create Charge

Client Identifiers Module



9:57

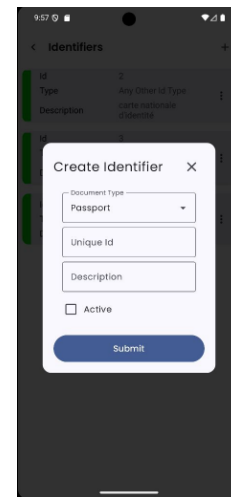
< Identifiers +

| | |
|-------------|----------------------------|
| Id | 2 |
| Type | Any Other Id Type |
| Description | carte nationale d'identité |

| | |
|-------------|--------------------------|
| Id | 3 |
| Type | Any Other Id Type |
| Description | carte d'identité Sénégal |

| | |
|-------------|----------|
| Id | 7 |
| Type | Passport |
| Description | 1 |

Client Identifiers



9:57

< Identifiers +

Id 2
Type Any Other Id Type
Description carte nationale d'identité

Create Identifier x

Document Type

Unique Id

Description

☐ Active

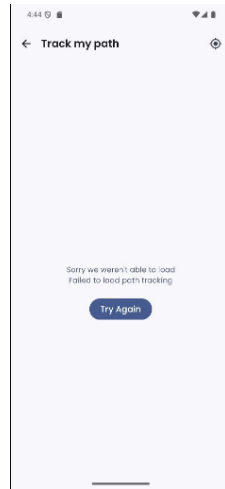
Submit

Create Identifiers



Modules Migrated So Far

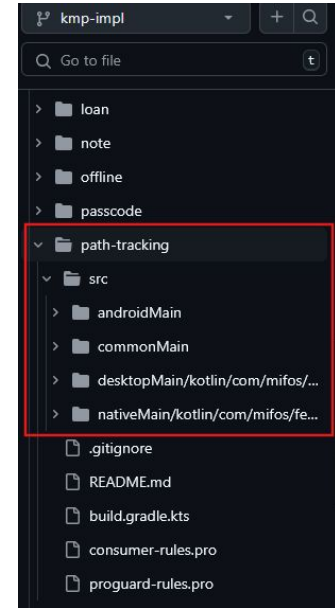
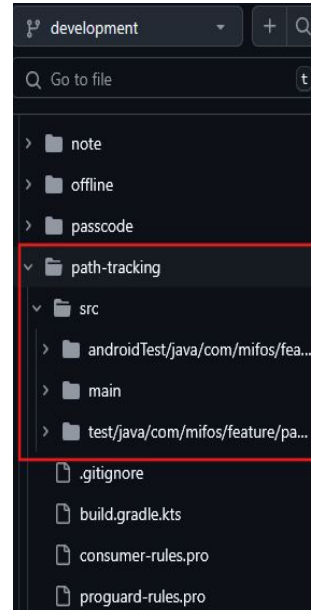
Path Tracking Module



Path Tracking



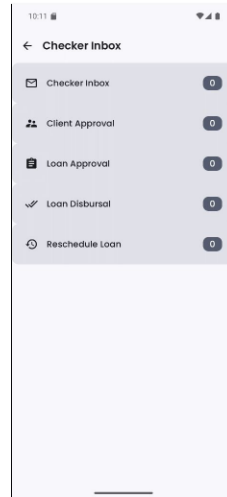
Directory Structure



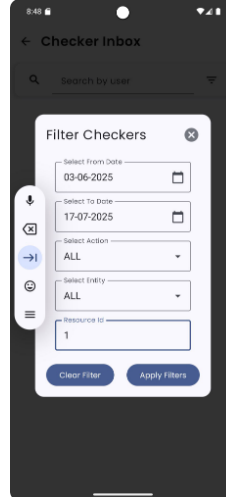
Modules Migrated So Far



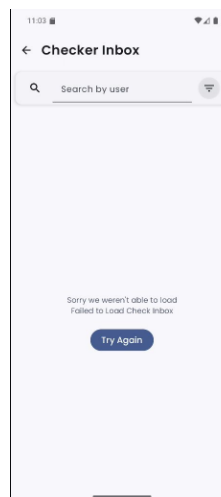
Checker Inbox Task Module



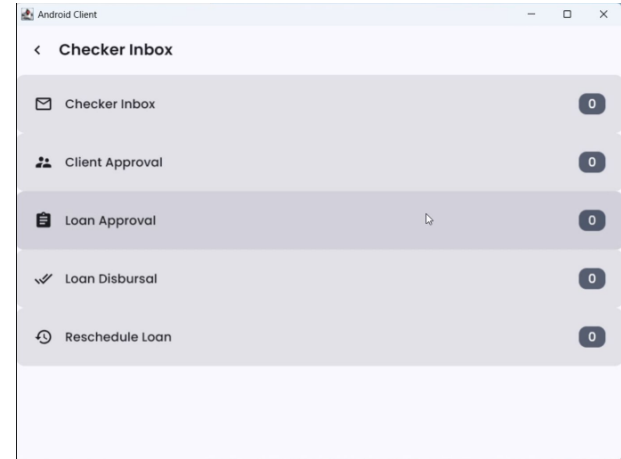
Checker Inbox



Checker Inbox
Dialog

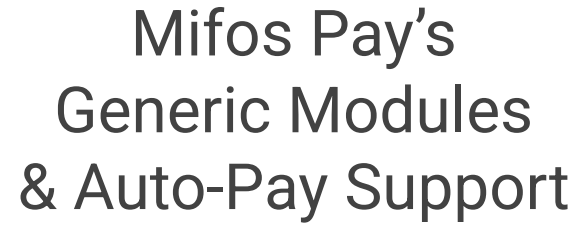


Checker Inbox
Search



Desktop App





Overview of Planned Work in Mifos Pay



Tentative Roadmap – Mifos Pay Enhancements (KMP)

1. Generic KMP Module for Merchant Payments

Plug-and-play SDK integration for any merchant payment provider.

2. KMP Sandbox for Generic Loan Applications

Reusable base for integrating loan workflows from various lenders.

3. Country-specific Payment Provider Integration

Dynamic gateway selection based on user location.

4. Auto-Pay Bills Module

Configurable recurring bill payment with scheduling and provider choice.



Focus Areas (Tentative Plan)



Mifos Initiative

Initial Focus

Merchant Payments Module

Already scoped out as a **generic Kotlin Multiplatform layer** to make integrating different merchant SDKs easy. Designed to reduce time-to-market across deployments.

KMP Sandbox for Loan Applications

A reusable module to simulate and test loan workflows, decoupled from live systems. Enables seamless integration of multiple lenders through a standard interface.

(Next Steps)

Final scope and priorities will be shaped based on discussions with mentor and the broader team during the coming weeks.



[illegible]

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- A word cloud of technology and innovation terms. The words are arranged in a circular pattern, with some larger and more prominent than others. The terms include: MOBILE, VOLUNTEER, UP/LIFT, COMMUNITY, INNOVATE, COLLABORATE, NIFOS X, OPEN SOURCE, TECH, CLOUD, CODE, POTENTIAL, and many others. The words are in various shades of blue and white, creating a dynamic and interconnected visual.



 www.linkedin.com/in/biplab26/