

Take-Home Assignment: Customer Service Support System

Overview

Build an application using **Claude Code** - a Multi-Agent system to support customer service representatives at a bank.

What You Need to Build

1. Knowledge Base - Banking Domain

Create a knowledge base with 5-10 documents covering topics such as:

- Account opening policies
- Loans and mortgage terms
- Fees and refunds
- Credit cards - types and benefits
- Branch hours and contact information
- Common app/website issues and troubleshooting

Transform this Knowledge Base into a searchable RAG system.

2. Multi-Agent System

Build a pipeline with three agents working together:

User Question → Reformulation Agent → Search Agent → Validation Agent → Response to Rep

Agent 1 - Reformulation Agent

- Receives the raw question from the representative
- Identifies the true intent behind the question
- Reformulates it into an optimized search query

Example:

- Rep writes: "Customer is yelling that money was stolen from his card"
- Agent reformulates: "Unauthorized credit card charge - dispute process and refund policy"

Agent 2 - Search Agent

- Receives the reformulated query

- Searches the Knowledge Base
- Returns an answer + source reference

Agent 3 - Validation Agent

- Receives the answer from Agent 2
- Evaluates accuracy and relevance
- Returns a confidence score (percentage)

3. User Interface - Two Screens

Screen 1: Representative View

- Input field for questions
- Display of the answer
- Confidence score (visual - color/icon)
- Reference - which document the answer came from
- Button/link to view the full source document

Screen 2: Manager Dashboard

- Statistics on human users (e.g., number of queries per rep, topics asked, response usage)
- Statistics on the application and agents (e.g., average confidence scores, response times, most-used documents, low-confidence answers)

Technical Requirements

- Everything must be built using Claude Code
- The code must run and work
- The UI must be clear and usable - does not need to be beautiful, but must be practical for daily use

Deliverables

1. Source code (GitHub repo or ZIP file)
2. Brief instructions on how to run the application
3. Demo - short video (2-3 minutes) + live demonstration, showing:
 - A question being asked
 - The reformulated query (visible in UI or logs)
 - Answer returned with confidence score
 - Opening the source document
 - Manager dashboard with statistics

Time Allocation

Up to 2 hours (not including time to learn Claude Code if you are new to the tool)

Evaluation Criteria

Criteria	What We're Looking For
Multi-Agent	Three agents orchestrated correctly in sequence
RAG + DB	Search returns relevant results from Knowledge Base
Vibe Coding	Everything built through Claude Code
UX	A non-technical rep can use it without explanation
Manager Dashboard	Meaningful statistics on both users and system

Good luck!