Customer Service Agent Documentation

Agent Overview

Name

Customer Service Agent (`customer_service_agent`)

Description

A comprehensive AI-powered customer service agent designed to manage customer interactions for Small to Medium Enterprises (SMEs). The agent operates through Telegram to provide automated customer support, order management, and business information services.

Technology Stack

- **AI Framework**: Google ADK (Application Development Kit) Agents
- **Language Model**: Gemini 2.0 Flash
- **Database**: SQLAlchemy with MySQL/PostgreSQL
- **Messaging Platform**: Telegram Bot API (AsyncTeleBot)
- **Programming Language**: Python
- **Session Management**: Custom session utilities
- **Environment Management**: python-dotenv

Core Capabilities

1. Chatbot Services

- **Business Information**: Provides factual information about the business and its products/services
- **Product Catalog**: Displays available products with prices in Nigerian Naira
- **Customer Recognition**: Identifies returning customers and provides personalized greetings
- **Knowledge Base**: Responds only with verified business information from the database

2. Order Management System

- **New Customer Onboarding**: Collects customer details (name, age, gender) for first-time orders
- **Order Processing**: Handles product selection, quantity, and pricing
- **Discount Negotiation**: Manages bargaining while respecting minimum selling prices
- **Order Confirmation**: Presents order summary before final confirmation

- **Order Tracking**: Monitors and updates order status
- **Automated Notifications**: Sends order updates to customers and business owners

3. Customer Relationship Management

- **Customer History**: Maintains comprehensive purchase history
- **Visit Logging**: Records customer interactions and visit summaries
- **Order Status Updates**: Real-time order tracking and status notifications
- **Personalized Service**: Provides tailored responses based on customer history

4. Security Features

- **Self-Service Prevention**: Prevents business owners from placing orders for themselves
- **Customer Verification**: Validates customer identity through Telegram ID and username
- **Session Management**: Secure session handling with automatic resets

Agent Tools

Business Information Tools

- `get_business_info(business_id)`: Retrieves basic business information including name, description, contact details, and address
- `get_products_info(business_id)`: Fetches all products offered by the business with pricing and inventory details
- `get_specific_product_info(business_id, product_id, product_name)`: Searches for specific products by ID or name

Customer Management Tools

- `get_customer_details(id)`: Retrieves customer profile information
- `upload_customer_details(...)`: Registers new customers in the database
- `get_customer_visits(business_id, customer_id, start_date)`: Fetches customer visit history from a specific date
- `get_all_customer_visits(business_id, customer_id)`: Retrieves complete customer visit records
- `log_customer_visit(...)`: Records customer interaction sessions

Order Management Tools

- `get_customer_orders(business_id, customer_id, start_date)`: Retrieves customer orders from a specific date
- `get_all_customer_orders(business_id, customer_id)`: Fetches complete customer order history
- `upload_customer_order(...)`: Creates new customer orders in the database

General Database Tools

- `list_tables()`: Lists all available database tables
- `describe_table(table_name)`: Describes table structure
- `execute_query(query)`: Executes custom SQL queries
- `get_single_value(...)`: Retrieves single values from database
- `get_rows_with_exact_column_values(...)`: Finds rows with exact matches
- `get_rows_with_matching_column_values(...)`: Finds rows with partial matches

Communication Tools

- `run(contact)`: Sends messages to business administrators

Subagents

This system operates as a single comprehensive agent without subagents. However, it integrates with:

- **Bizmate Agent Bot**: Receives order notifications and business communications
- **Business Administration System**: Handles owner notifications and alerts

Key Features

Automated Customer Support

- 24/7 availability through Telegram
- Multilingual support (primarily English with Naira currency support)
- Contextual responses based on customer history
- Automated greeting and business introduction

Order Processing Workflow

1. **Customer Verification**: Checks if customer exists in database
2. **Product Selection**: Guides customers through available products
3. **Detail Collection**: Gathers necessary customer information for new users

4. **Order Summary**: Presents complete order details with pricing

5. **Confirmation**: Secures customer approval before processing

6. **Notification**: Alerts both customer and business owner

Session Management

- **Automatic Session Reset**: Sessions reset after specified quota hours

- **State Persistence**: Maintains conversation context across interactions

- **Returning Customer Recognition**: Provides order updates for returning customers

- **Chat Logging**: Comprehensive conversation logging for audit trails

Business Intelligence

- **Visit Analytics**: Tracks customer engagement patterns

- **Order History**: Maintains comprehensive transaction records

- **Customer Profiling**: Builds detailed customer profiles over time

- **Business Performance**: Supports business analytics through data collection

Security and Compliance

Data Protection

- Customer data encrypted and securely stored

- Session-based authentication

- Access control based on business and customer IDs

Business Logic Security

- Prevents self-ordering by business owners

- Validates minimum selling prices during negotiations

- Maintains audit trails for all transactions

Error Handling

- Comprehensive exception handling for database operations

- Graceful degradation for network issues

- User-friendly error messages

Integration Points

Database Integration

- Direct SQL database connectivity
- Transaction-safe operations
- Data validation and sanitization

Telegram Integration

- Asynchronous message handling
- Rich message formatting
- Command-based interactions

Business System Integration

- Real-time notifications to business owners
- Integration with business management systems
- Automated reporting capabilities

Configuration

Environment Variables

- `COMMS`: Communication channel identifier
- `RESET_QUOTA`: Session reset time in hours
- `LOGS_FOLDER_PATH`: Path for conversation logs

Database Configuration

- Supports MySQL/PostgreSQL databases
- Connection pooling for performance
- Transaction management for data consistency

Usage Patterns

Customer Interactions

1. **Initial Contact**: `/start` or `/hello` commands
2. **Business Inquiry**: Ask about products, services, or business information
3. **Order Placement**: Select products, provide details, confirm orders
4. **Order Tracking**: Check status of existing orders

5. **History Review**: View past purchases and interactions

Business Administration

- Receive order notifications

- Monitor customer interactions

- Access customer analytics

- Manage product information

This customer service agent provides a comprehensive solution for SME customer management, combining AI-powered conversation capabilities with robust order management and customer relationship tools.