This is a comprehensive Java-based Stock Trading Application that simulates a simple stock trading platform with the following key features:

* User registration and authentication
* Stock market with predefined stocks
* Buying and selling stocks
* Portfolio management
* Transaction logging
* Persistent user data storage

**Key Classes and Their Responsibilities**

1. StockTrading (Main Class)

* Entry point of the application
* Initializes core components:
  + StockMarket with sample stocks
  + UserManager for user management
  + TransactionLogger for tracking transactions
* Starts the console-based interface

2. User Class

* Represents a user in the system
* Contains:
  + Username and password
  + BankAccount for managing balance
  + portfolio tracking owned stocks (stock symbol to quantity)
* Methods to manage portfolio (add/remove stocks)

3. BankAccount Class

* Manages user's financial balance
* Supports:
  + Depositing money
  + Withdrawing money
* Initial balance set to ₹10,000

4. Stock Class

* Represents a stock in the market
* Contains:
  + Stock symbol
  + Stock name
  + Current price
* Provides a formatted toString() method for display

5. StockMarket Class

* Manages available stocks
* Stores stocks in a HashMap
* Methods to:
  + Add stocks
  + Retrieve stocks by symbol
  + Get list of all stocks

6. Transaction Class

* Logs individual stock transactions
* Tracks:
  + Username
  + Stock symbol
  + Quantity
  + Price per share
  + Total amount
  + Transaction type (BUY/SELL)
  + Timestamp

7. TransactionLogger Class

* Manages transaction history
* Stores transactions per user
* Methods to:
  + Log transactions
  + Retrieve user's transaction history

8. UserManager Class

* Handles user-related operations
* Features:
  + User registration
  + User authentication
  + Persistent user data storage using serialization
* Saves and loads user data to/from users.dat file

9. Console Class

* Manages user interaction
* Provides menu-driven interface with options:
  + View Available Stocks
  + View Portfolio
  + Buy Stocks
  + Sell Stocks
  + View Transaction History
  + Logout

**Key Technical Features**

* Serialization for data persistence
* Input validation
* Transaction logging
* Portfolio management
* Basic financial calculations