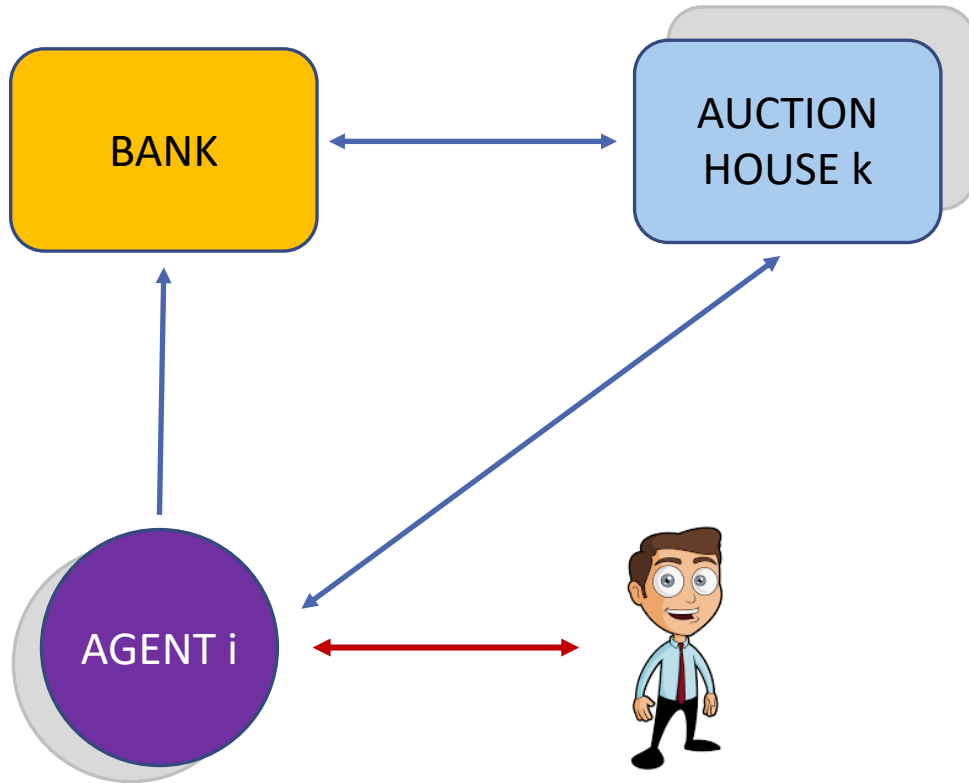


Public Auction Assignment

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Distributed Auction



Each entity is logically located on a different server in the network

Stakeholders

- Bank (static known address)
- Agents (dynamically created)
- Auction House (dynamically created)

Bank

- It is static and at a known address
- It hosts
 - a list of agent accounts
 - a list of action house accounts
- It shares the list of auction houses with agents having bank accounts
- It provides agents with secret keys for use in the bidding process
- It transfers funds from agent to auction accounts, under agent control
- It blocks and unblocks funds in agent accounts, at the request of action houses

Auction House

- Auction house is dynamically created
- It hosts
 - a list of items being auctioned
 - the bidding status for each bid
- Upon request, it shares the list of items being auctioned and the bidding status with agents: (house id, item id, description, minimum bid, current bid)
- Upon creation, it registers with the bank by opening an account with zero balance
- It may terminate any time no bidding activity is in progress
- At termination, it deregisters with the bank and closes the account

Auction Rules

- The auction house
 - receives bids and acknowledges them with a ***reject*** or ***accept*** response
 - when a bid is accepted, the bank is requested to block those funds
 - when a bid is overtaken, a ***pass*** notification is sent to the agent and the funds are unblocked
 - a bid is successful if not overtaken in 30 seconds
 - when winning a bid, the agent receives a ***winner*** notification and the auction house waits for the blocked funds to be transferred into its account

Agent

- Agent is dynamically created
 - opens a bank account by providing a name and an initial balance
 - receives a unique account number
 - gets from the bank a list of active auctions
 - asks an auction house for a list of items being auctioned
 - gets from the bank a secret key to be use when interacting with a specific auction house
 - uses the secret key to make a bid and receives back
 - acceptance
 - rejection
 - pass (higher bid in place)
 - winner
 - notifies the bank to transfer the blocked funds to the auction house when winning a bid
 - terminates and closes the account when no bidding action is in progress

Instructions

- Form three-person teams.
- Each person is fully responsible for developing one of the components.
- The entire team is responsible for
 - interface specification
 - integration and testing

Special Instructions

- An incremental approach to the program development is mandatory.
- The following phasing of the project is recommended
 - full specification of all interfaces
 - logical view
 - coding view
 - interactions between agent and bank
 - interactions between auction house and bank
 - interactions between agent and auction house

Other Instructions

- The auction house offerings may be scripted
- The auction house should terminate gracefully
- The agent should terminate gracefully
- The agent interface with the end user can be
 - textual
 - two separate windows (auction status & commands)
 - JavaFX display
- Testing should involve at least two auction houses and two agents