# SE LAB 4 EXERCISE

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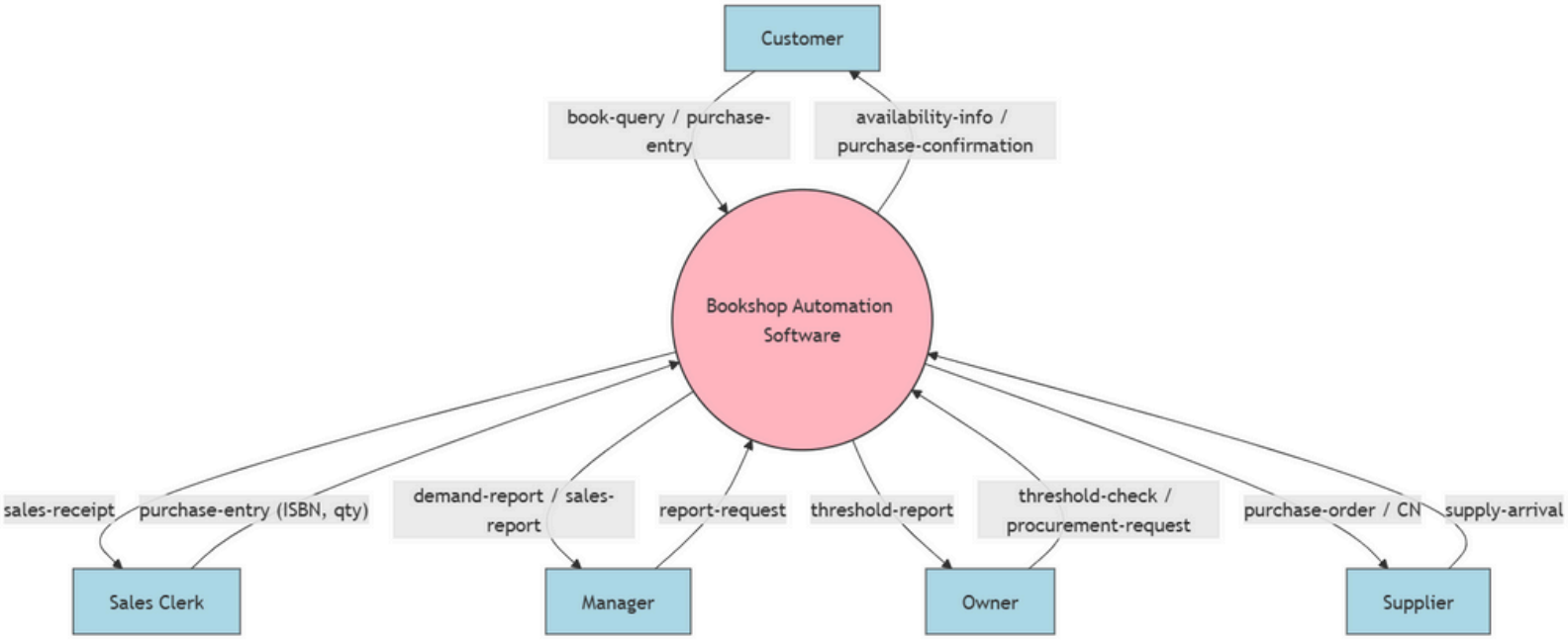
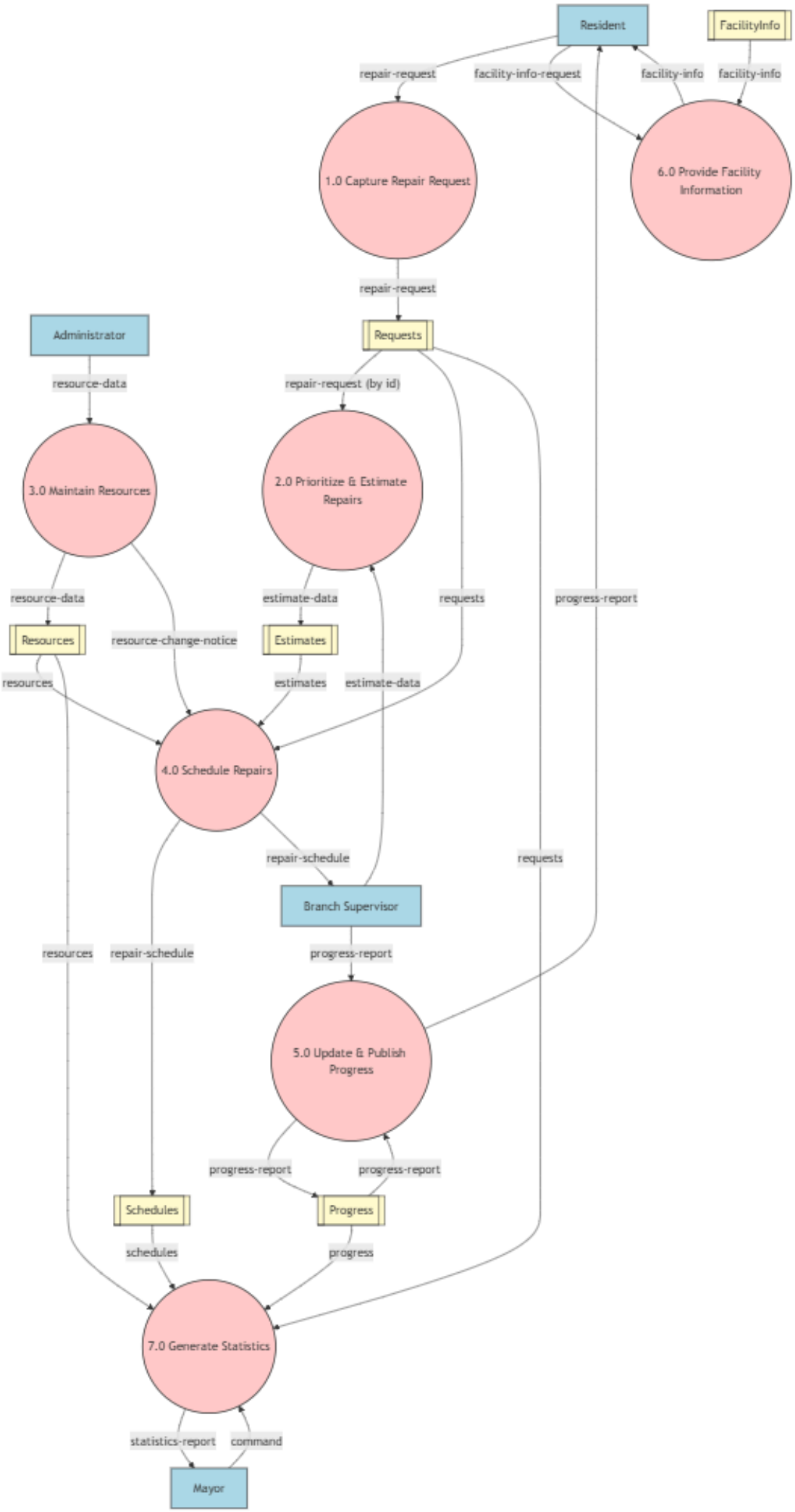
## Book-Shop Automation Software

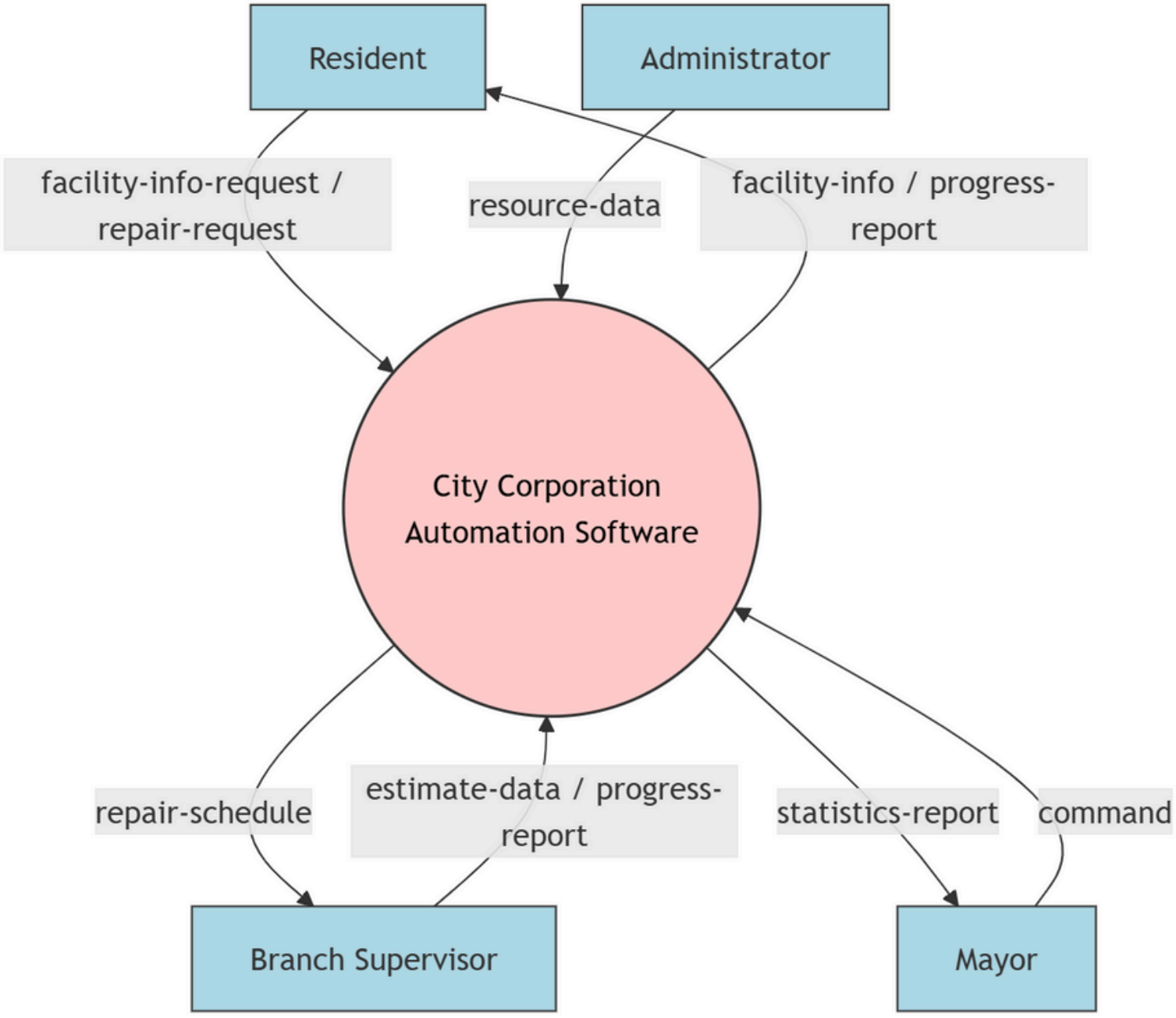



Level 0

# Level 1

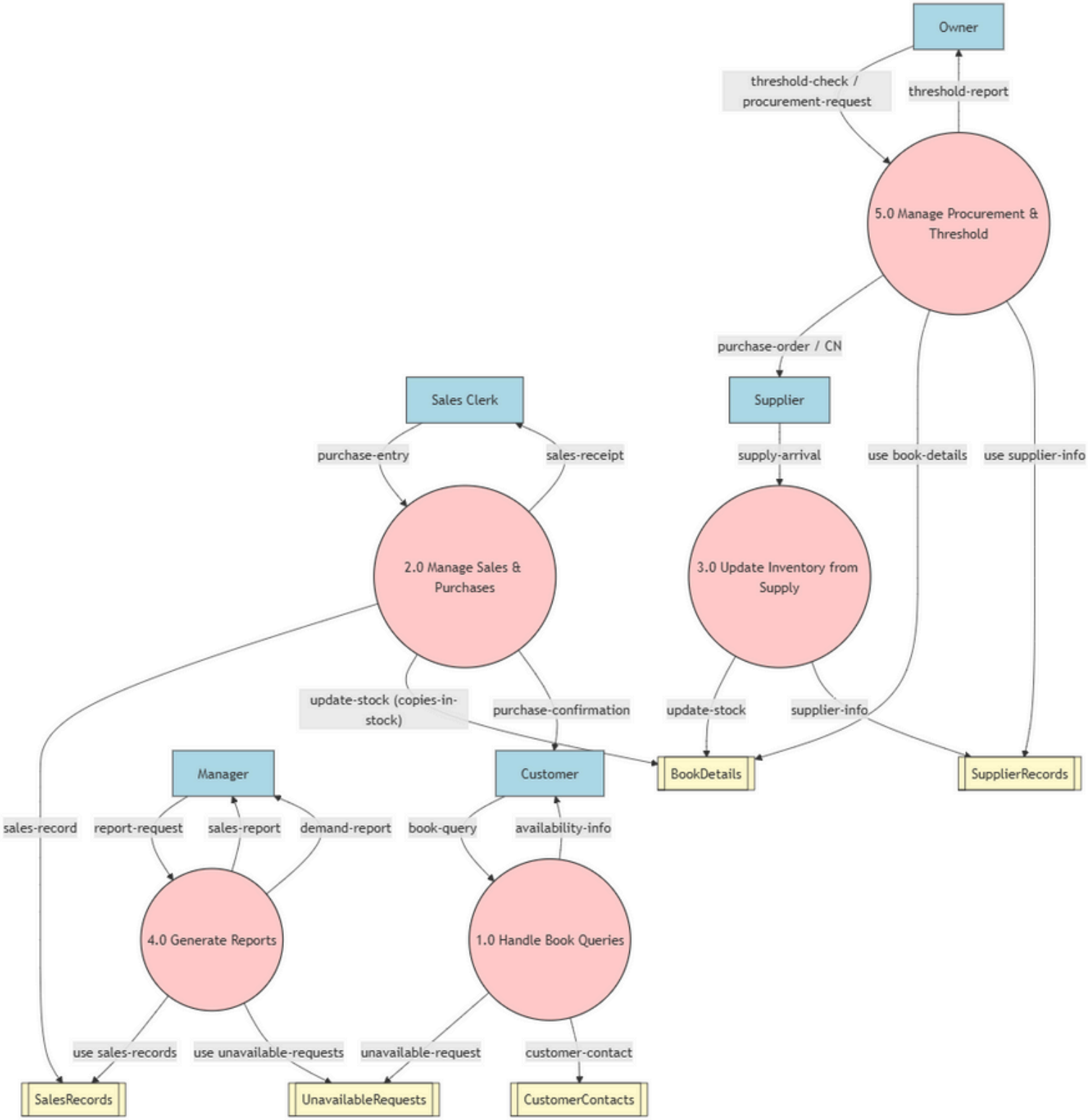

Resident
FacilityInfo
repair-request
facility-info-request
facility-info
facility-info
1.0 Capture Repair Request
6.0 Provide Facility Information
repair-request
Administrator
Requests
resource-data
repair-request (by id)
3.0 Maintain Resources
2.0 Prioritize & Estimate Repairs
resource-data
estimate-data
requests
progress-report
Resources
resource-change-notice
Estimates
resources
estimates
estimate-data
4.0 Schedule Repairs
repair-schedule
requests
Branch Supervisor
resources
repair-schedule
progress-report
5.0 Update & Publish Progress
progress-report
progress-report
Schedules
Progress
schedules
progress
7.0 Generate Statistics
statistics-report
command
Mayor

# City Corporation Automation Software (CCAS)




Level 0

# Level 1


Owner
threshold-check / procurement-request
threshold-report
5.0 Manage Procurement & Threshold
purchase-order / CN
Supplier
Sales Clerk
purchase-entry
sales-receipt
supply-arrival
use book-details
use supplier-info
2.0 Manage Sales & Purchases
3.0 Update Inventory from Supply
update-stock (copies-in-stock)
purchase-confirmation
update-stock
supplier-info
Manager
Customer
BookDetails
SupplierRecords
sales-record
report-request
sales-report
demand-report
book-query
availability-info
4.0 Generate Reports
1.0 Handle Book Queries
use sales-records
use unavailable-requests
unavailable-request
customer-contact
SalesRecords
UnavailableRequests
CustomerContacts

DATA DICTIONARY - BOOKSHOP
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External Entities
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- Customer → queries availability, purchases books.
- Sales Clerk → records ISBNs of purchases, issues receipts.
- Manager → requests demand/sales reports.
- Owner → checks stock thresholds, initiates procurement.
- Supplier → delivers supply-arrivals, receives purchase-orders.

Data Flows
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- book-query → title | author.
- availability-info → copies-in-stock + rack-no.
- unavailable-request → book-details + request-date + request-count.
- customer-contact → name + email + book-requested.
- purchase-entry → {ISBN + quantity}* + date + CN.
- sales-record → purchase-entry + total-amount.
- supply-arrival → ISBN + quantity-supplied + delivery-date.
- demand-report → {ISBN + title + request-count}*.
- sales-report → {ISBN + title + publisher + copies-sold + revenue}*.
- threshold-report → {ISBN + title + copies-in-stock + threshold + qty-to-procure + publisher-address}*.
- supplier-info → publisher-name + publisher-address + contact-no + email.
- purchase-order → ISBN + quantity + order-date + supplier-info.
- CN (Credit Note) → integer reference for sales transaction.

Data Stores
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- BookDetails → ISBN + title + author + publisher + price + rack-no + copies-in-stock.
- UnavailableRequests → unavailable-request data for out-of-stock titles.
- SalesRecords → purchase-entry + sales-record.
- SupplierRecords → supplier-info + supply-history.
- CustomerContacts → customer-contact info for notifications.

DATA DICTIONARY - CITY
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External Entities
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- Resident → citizen who raises repair requests / queries facilities.
- Branch Supervisor → inspects roads, enters estimates, updates progress.
- Administrator → maintains manpower & machine availability.
- Mayor → requests statistics.

Data Flows
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- facility-info-request → request for info about city facilities.
- facility-info → description + contact-info of a facility.
- repair-request → request-id + road-id + location + severity + locality-type + request-date + requester-info.
- estimate-data → raw-material-req + machines-req + manpower-req + priority.
- resource-data → {machine-type + quantity}* + {manpower-type + quantity}*.
- repair-schedule → request-id + start-date + end-date + assigned-resources.
- assigned-resources → {machine-type + quantity}* + {manpower-type + quantity}*.
- progress-report → request-id + date + status-details + percent-completion.
- statistics-report → total-repairs + {repair-type + count}* + outstanding-repairs + {resource-type + utilisation-rate}*.
- command → mayor’s command string for statistics.
- requester-info → name + address + contact-no/email.
- contact-info → phone + email.
- machine-type → type of road machine (roller, mixer, etc.).
- manpower-type → type of worker (engineer, mason, laborer).
- percent-completion → integer 0–100.

Data Stores
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- Requests → stores all repair-requests.
- Estimates → stores estimate-data from supervisors.
- Resources → manpower + machines available.
- Schedules → planned repair schedules.
- Progress → status updates of repair work.
- FacilityInfo → records of services/facilities for citizens.