TEAM
BEANS

System Operation Descriptions and Activity Diagrams

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a) Create Reservation from the Requested Audiobook

   i. **Name:** Create Reservation from the Requested Audiobook
   ii. **Description:** Create a new Reservation object
   iii. **Actors:** Customer (p), Reservation
   iv. **Trigger:** Customer reserves an Audiobook
   v. **Inputs:** Title, Customer
   vi. **Classes of objects involved:** Customer, Audiobook, Reservation
   vii. **Precondition:** Audiobook of Title exists
   viii. **Postcondition:** Reservation instance is created with information from Audiobook
   ix. **Outputs:** Return new Reservation instance

b) Push new Reservation to queue

   i. **Name:** Push new Reservation to queue
   ii. **Description:** Push new Reservation object to ReservationQueue
   iii. **Actors:** Customer (p), Reservation
   iv. **Trigger:** New Reservation object is created
   v. **Inputs:** Reservation object
   vi. **Classes of objects involved:** Customer, Audiobook, Reservation
   vii. **Precondition:** Reservation exists
   viii. **Postcondition:** Status of Reservation object is updated to NEW and pushed to ReservationQueue
   ix. **Outputs:** OK on success

c) Pop from Reservation queue

   i. **Name:** Pop from Reservation queue
   ii. **Description:** Pop Reservation object from the Reservation Queue to be fulfilled or to be canceled by the Customer.
   iii. **Actors:** Kiosk (p), Customer, Reservation
   iv. **Trigger:** Customer is ready to cancel or checkout audiobook
   v. **Inputs:** the Reservation to pop
   vi. **Classes of objects involved:** Customer, Title, Reservation, Kiosk
   vii. **Precondition:** Reservation exists within the queue
   viii. **Postcondition:** Reservation no longer is present within the queue
   ix. **Outputs:** A Reservation to either cancel or use to confirm audiobook checkout

d) Update Reservation status to FULFILLED

   i. **Name:** Update Reservation status to FULFILLED
   ii. **Description:** Update status of Reservation at the front of the queue to FULFILLED
   iii. **Actors:** Customer (p), Audiobook (s)
   iv. **Trigger:** Customer checks out Audiobook
   v. **Inputs:** Reservation object, Time
   vi. **Classes of objects involved:** Customer, Audiobook, Reservation
   vii. **Precondition:** Reservation exists, Customer is authenticated
   viii. **Postcondition:** Status of Reservation object is updated to FULFILLED
   ix. **Outputs:** OK on success

e) Update Reservation status to RETURNED

   i. **Name:** Update Reservation status to RETURNED
   ii. **Description:** Update status of Reservation at the front of the queue to RETURNED

iii. **Actors:** Customer (p), Audiobook (s)
iv. **Trigger:** Customer returns Audiobook
v. **Inputs:** Reservation object, Time
vi. **Classes of objects involved:** Customer, Audiobook, Reservation
vii. **Precondition:** Reservation exists, Customer is authenticated
viii. **Postcondition:** Status of Reservation object is updated to RETURNED, Kiosk inventory is updated
ix. **Outputs:** OK on success

f) Create Request for the Requested Title
i. **Name:** Create Request for the Requested Title
ii. **Description:** Create new Request instance
iii. **Actors:** Customer (p)
iv. **Trigger:** Customer requests a title
v. **Inputs:** Title, Customer
vi. **Classes of objects involved:** Customer, Title, Request
vii. **Precondition:** Audiobook of title exists
viii. **Postcondition:** New request instance has been created with information of the title
ix. **Outputs:** Return new request instance.

g) Push new request to queue
i. **Name:** Push New Request to Queue
ii. **Description:** Push new Request object to RequestQueue
iii. **Actors:** Customer (p)
iv. **Trigger:** New Request object is created
v. **Inputs:** Request object
vi. **Classes of objects involved:** Customer, Title, Request
vii. **Precondition:** Request exists
viii. **Postcondition:** Status of Request object is updated to NEW and pushed to the RequestQueue
ix. **Outputs:** OK on success

h) Pop from request queue
i. **Name:** Pop from Request Queue
ii. **Description:** Pop Request object from the Request Queue to be fulfilled or to be cancelled by the customer
iii. **Actors:** Kiosk (p), Customer
iv. **Trigger:** Title becomes available
v. **Inputs:** Available title
vi. **Classes of objects involved:** Customer, Title, Request, Kiosk
vii. **Precondition:** Request exists within the queue
viii. **Postcondition:** Request is no longer present within the queue
ix. **Outputs:** Request object

i) Update Request status to FULFILLED
i. **Name:** Update Request Status to FULFILLED
ii. **Description:** Update status of Request at the front of the queue to FULFILLED
iii. **Actors:** Customer (p), Audiobook (s)
iv. **Trigger:** Title becomes available, and request is popped from queue
v. **Inputs:** Request object
vi. **Classes of objects involved:** Customer, Audiobook, Request
vii. **Precondition:** Request exists
viii. **Postcondition:** Status of Request object is updated to FULFILLED
ix. **Outputs:** OK on success

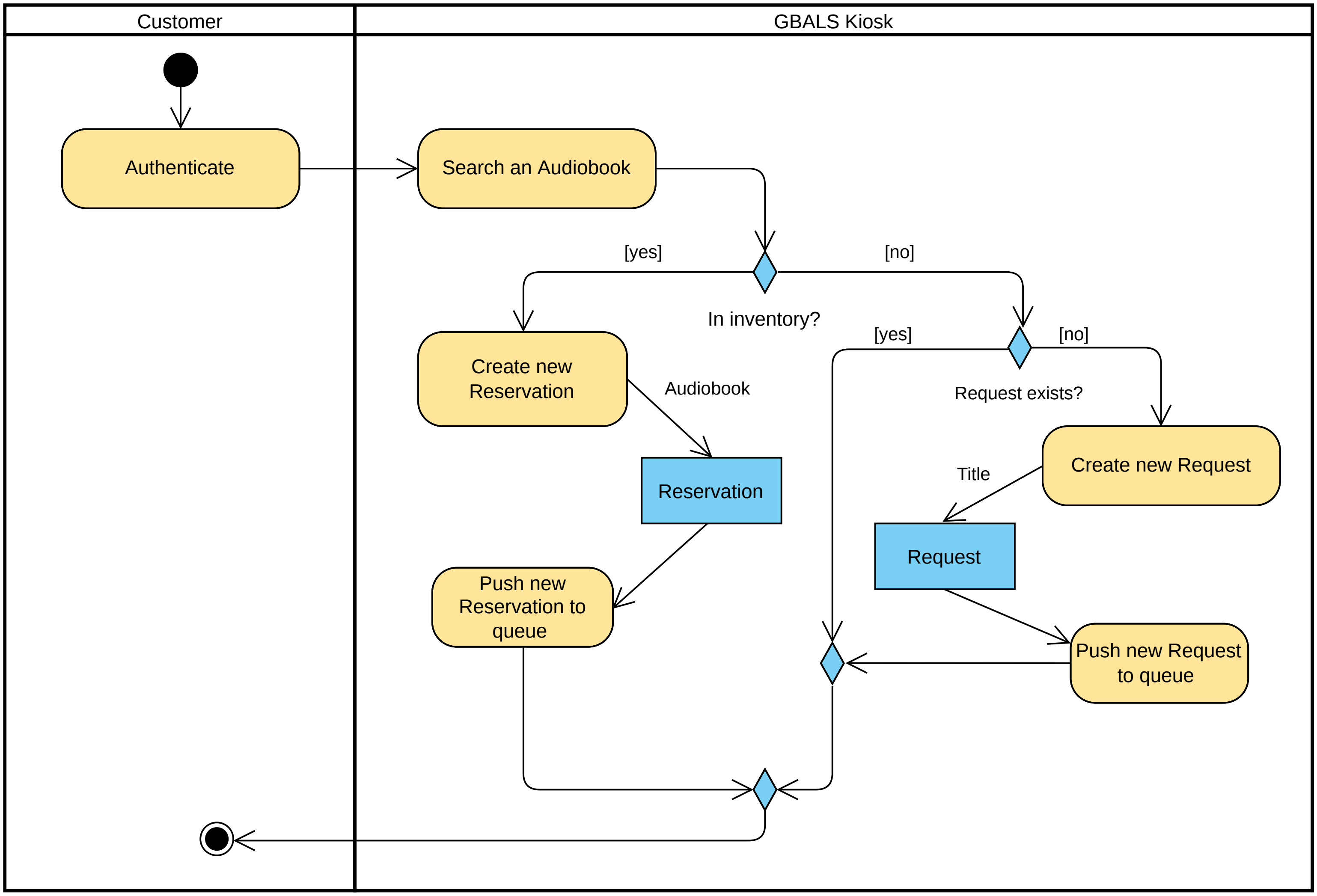
j) Authenticate the Customer

    i. **Name:** Authenticate a customer.
    ii. **Description:** By reaching out to external, already existing, library software a Customer can be authenticated via input information.
    iii. **Actors:** Customer (p)
    iv. **Trigger:** Customer attempts to use Kiosk
    v. **Inputs:** authentication information
    vi. **Classes of objects involved:** Customer and Kiosk
    vii. **Precondition:** N/A
    viii. **Postcondition:** Status of Customer authentication validated
    ix. **Outputs:** Acceptance or denial of Customer into Kiosk

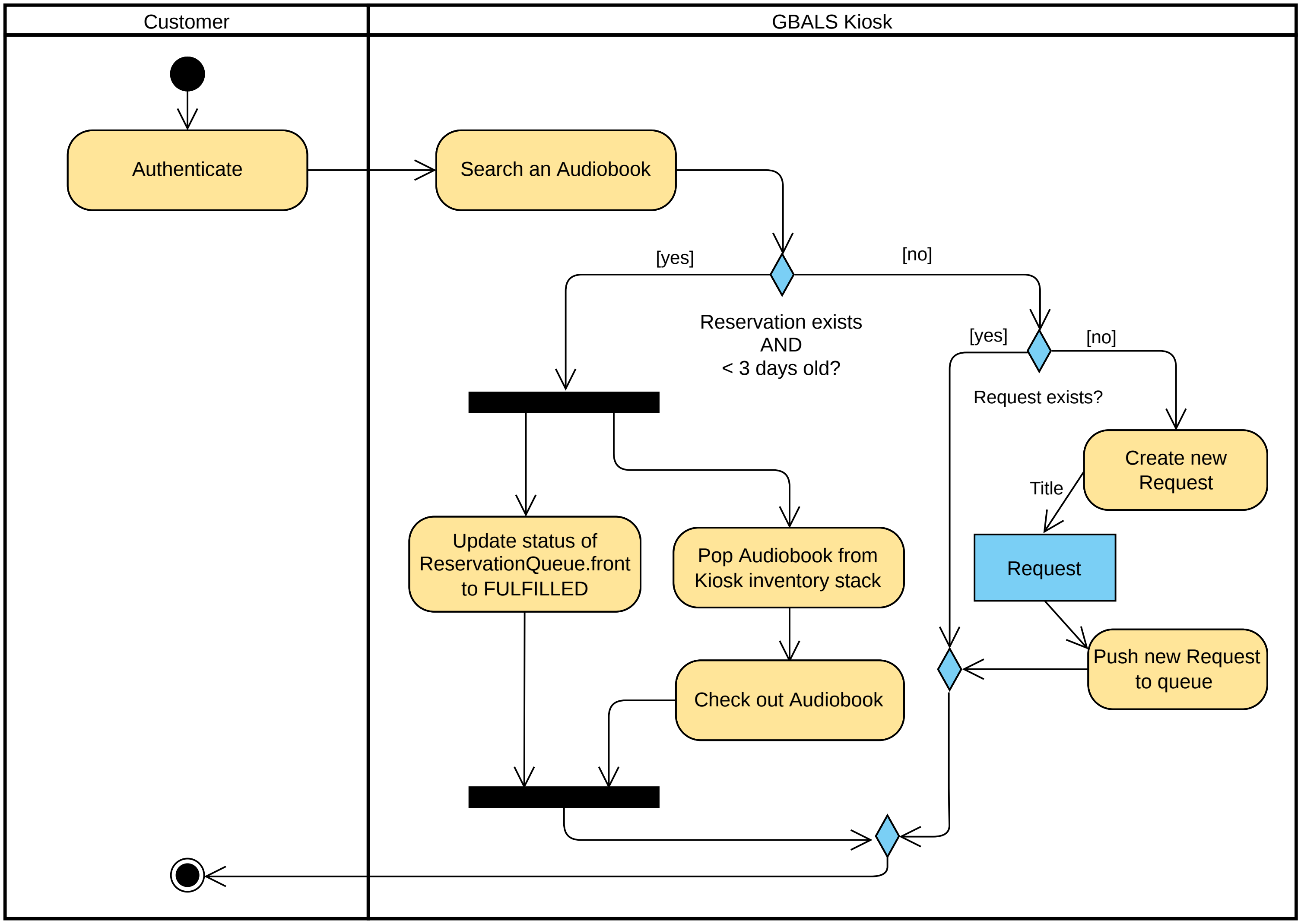
k) Push Audiobook to Kiosk inventory stack
    i. **Name:** Push Audiobook to Kiosk inventory stack
    ii. **Description:** Add an Audiobook object to the Kiosk inventory
    iii. **Actors:** Kiosk (p)
    iv. **Trigger:** Customer returns Audiobook
    v. **Inputs:** Reservation
    vi. **Classes of objects involved:** Customer, Reservation, Kiosk
    vii. **Precondition:** Customer is authenticated
    viii. **Postcondition:** Audiobook is added to the Kiosk inventory
    ix. **Outputs:** OK on success

l) Pop from Kiosk inventory stack
    i. **Name:** Pop from Kiosk inventory stack
    ii. **Description:** Remove last-added Audiobook from Kiosk inventory
    iii. **Actors:** Kiosk (p)
    iv. **Trigger:** Customer checked out Audiobook
    v. **Inputs:** Reservation information
    vi. **Classes of objects involved:** Customer, Reservation, Kiosk
    vii. **Precondition:** Audiobook exists in Kiosk inventory stack, Customer is authenticated
    viii. **Postcondition:** Audiobook is removed from the inventory, Reservation status is updated
    ix. **Outputs:** Audiobook

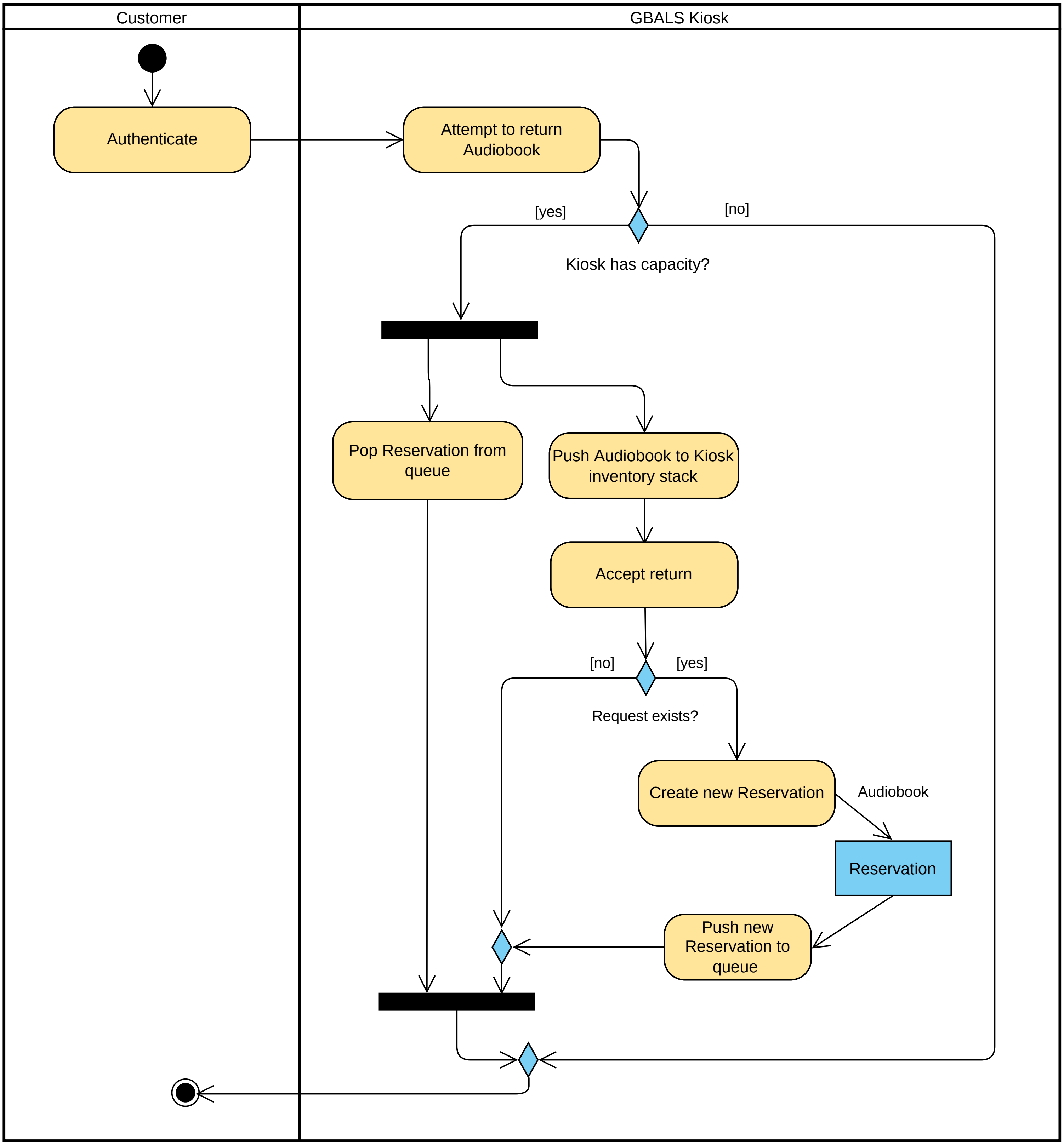
Activity Diagram 1: Request or Reserve an Audiobook



Activity Diagram 2: Check out an Audiobook



Activity Diagram 3: Return an audiobook


Customer
GBALS Kiosk
Authenticate
Attempt to return Audiobook
[yes]
[no]
Kiosk has capacity?
Pop Reservation from queue
Push Audiobook to Kiosk inventory stack
Accept return
[no]
[yes]
Request exists?
Create new Reservation
Audiobook
Reservation
Push new Reservation to queue