

Secure Ticketing System

Software Architecture Document

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1 Vision

Team Everest’s vision is to develop a website for the College of Charleston. This website will be a one-stop shop to purchase tickets for events at the College. This website, the Secure Ticketing System, will allow users a safe and secure login. The functionality of this website will include the ability to search for events, purchase tickets for events, process payments, send the user an email receipt, and update the available inventory

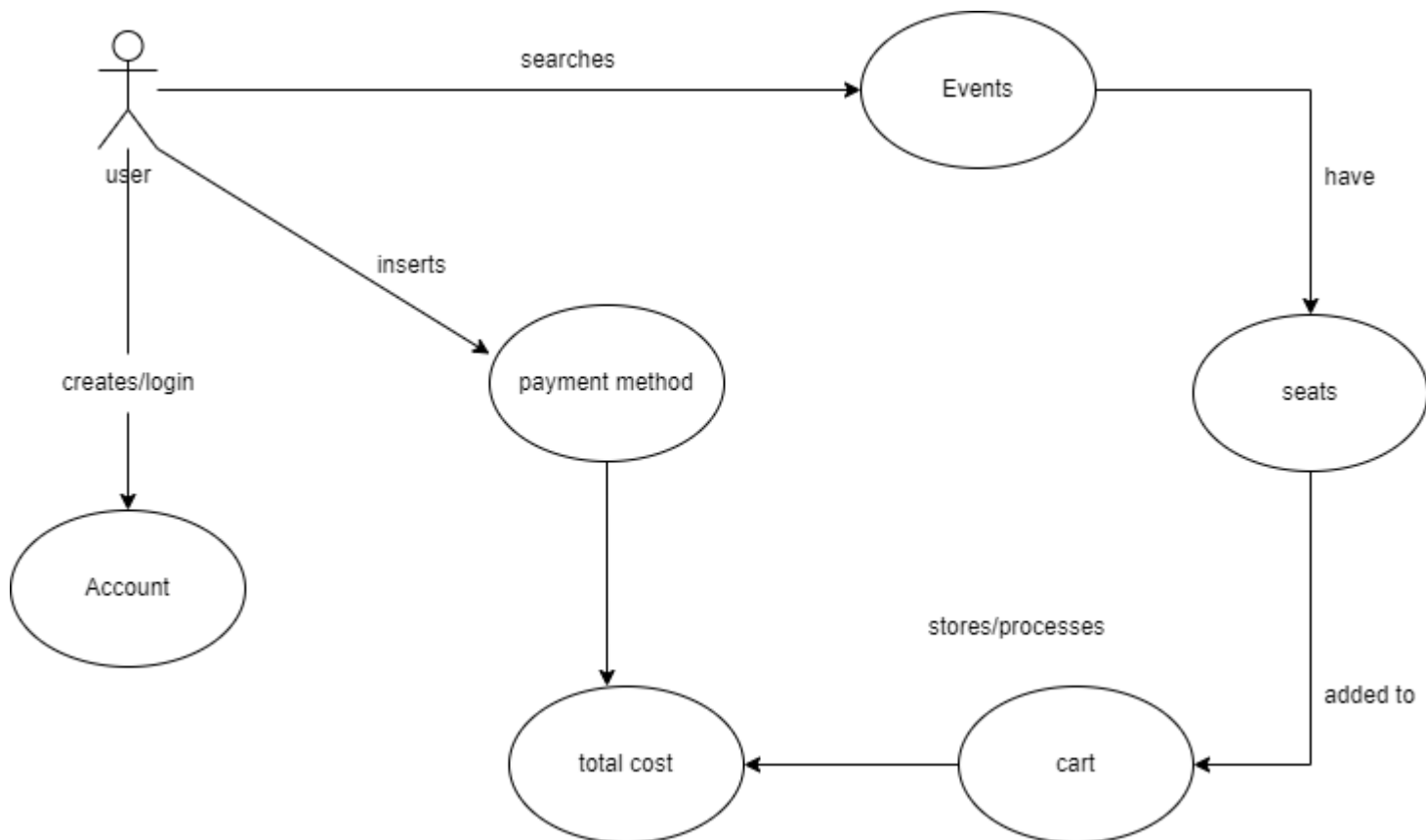
2 Glossary

Definitions

- Domain Model: In software engineering, a domain model is a conceptual model of the domain that incorporates both behavior and data.

- Payment authorization: Validation by an external payment authorization service that they will make or guarantee the payment to the seller.
- Supplemental Specs: Means specific instructions setting forth conditions or requirements peculiar to the Project under consideration when said Project is not completely covered by the Specifications contained herein.
- Use Case: A specific situation in which a product or service could potentially be used.
- Vision: The plan set in place for Team-Everest
- Website: A set of related web pages located under a single domain name, typically produced by a single person or organization.

3 Domain Model



4 Use Cases

4.1 USC1

UC1: login

| Use Case Section | Text |
|-------------------------------------|---|
| Use Case Name | Login |
| Scope | Allow the user to make an account and login. |
| Level | User goal: The ability to login. |
| Primary Actor | The user wishing to login/create an account. |
| Stakeholders and Interests | A person wishing to use the CofC ticket system. |
| Preconditions | The user must have a pre-existing account or create an account using a valid email and password. |
| Success Guarantee | The user must successfully enter their current login credentials. The user must successfully create an account using a valid email and password. |
| Main Success Scenario | The user will enter their email/username and enter the correct password then click login. The user will click create an account and enter their email and password then follow the login steps once their account is created. |
| Extensions | If the wrong password or email is used, the user will not be granted to login. The application will prompt the user to try again or create an account. |
| Special Requirements | The user must have an existing account or create an existing account. Once an account is created the user will receive confirmation via email. |
| Technology and Data Variations List | The user will need a valid email to create an account. |
| Frequency of Occurrence | Every time the user wishes to use their account to purchase tickets. |
| Miscellaneous | Will the college make users create accounts using a @g.cofc.edu email?? |

4.2 USC2

UC2: Purchasing Tickets

| Use Case Section | Text |
|-------------------------------------|--|
| Use Case Name | Purchasing a Ticket |
| Scope | A logged-in user purchases a ticket using the CofC ticketing system. |
| Level | User goal: Purchasing tickets via the ticketing system. |
| Primary Actor | The logged in user wishing to purchase a ticket. |
| Stakeholders and Interests | A user trying to purchase a ticket. |
| Preconditions | The user must be logged in. |
| Success Guarantee | The user must be logged in and their transaction must be approved. |
| Main Success Scenario | The user will login, find the ticket they desire, add it to their cart, purchase the tickets using a valid payment and receive an email receipt and ticket pdf/QR. |
| Extensions | If the user's payment is denied, it will ask for another payment method. The user must be logged in to view any of these options. |
| Special Requirements | The payment method has to communicate with the CofC gateway to ensure the payment is successful. |
| Technology and Data Variations List | Payment information entered using a keyboard. Payment confirmation sent via email. |
| Frequency of Occurrence | This will occur until the user has purchased their desired number of tickets. |
| Miscellaneous | The developers are debating the idea of adding alternate payment methods such as PayPal and Quadpay. |

4.3 USC3

🔗 UC3: Search

| Use Case Section | Text |
|-------------------------------------|--|
| Use Case Name | Search |
| Scope | Allow users to search events when clicking on the search bar. |
| Level | User goal: The ability to login. |
| Primary Actor | The user wishing to login/create an account. |
| Stakeholders and Interests | mainly the user wishing to use the CofC ticket system. |
| Preconditions | none |
| Success Guarantee | The user must successfully enter a query in the search bar and get a list of events. |
| Main Success Scenario | The user will enter a keyword into the search bar, the results after the search should be event related to that keyword. |
| Extensions | If no related events are available, the user will be notified of this. (UI SHOULD STILL SHOW SOME AVAILABLE EVENTS) |
| Special Requirements | |
| Technology and Data Variations List | The user will need a valid email to create an account. |
| Frequency of Occurrence | very frequent , every time the users wish to look up or buy a ticket. |
| Miscellaneous | entry mistakes by the users when using the search bar |

4.4 USC4

UC4: Receipt

| Use Case Section | Text |
|-------------------------------------|--|
| Scope | send an email receipt to users after their purchase. |
| Level | User goal: The ability to receive their certification of purchase through their email. |
| Primary Actor | A ticket buyer. |
| Secondary Actor | the user who posted the event. |
| Stakeholders and Interests | A user buying the ticket |
| Preconditions | The primary actor must have a pre-existing account or create an account using a valid email and password. The primary actor must select the "email receipt" during purchase. |
| Success Guarantee | The user must successfully receive an email confirmation of purchase in the mail inbox. |
| Main Success Scenario | |
| Extensions | If the wrong password or email is used, the user will not be granted to login. The application will prompt the user to try again or create an account. |
| Special Requirements | The user must have an existing account or create an existing account. Once an account is created the user will receive confirmation via email. |
| Technology and Data Variations List | The user will need a valid email to create an account. |
| Frequency of Occurrence | Every time the user wishes to use their account to purchase tickets. |
| Miscellaneous | Will the college make users create accounts using a @g.cofc.edu email?? |

4.5 Misuse Case & Abuse Case

4.5.1 Abuse Case

| | |
|------------------|---|
| Abuse Case | account reach |
| Potential Harm | An intruder can use various methods and tools to guess a targeted user's login credentials. |
| Priviledge Range | the intruder might carry out the abusive action by: <ul style="list-style-type: none">- brute force guessing- using password generator tools- email phishing |
| Solution | <ul style="list-style-type: none">- enforce strong passwords- enforce a two-factor authentication policy- avoid allowing users to enter their email as part of the login credentials. |

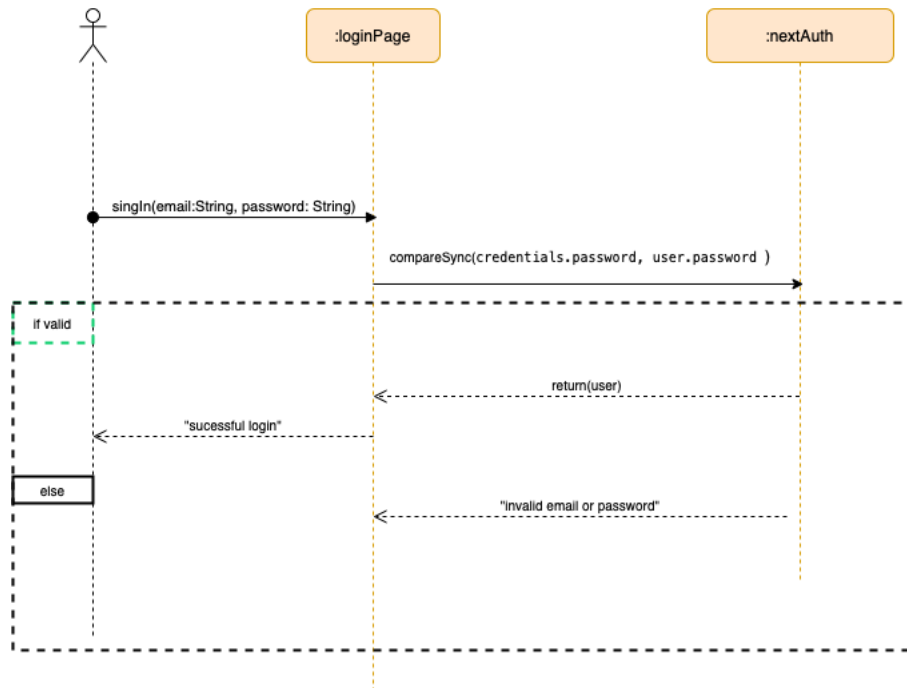
4.5.2 Misuse Case

| | |
|-----------------|---|
| Misuse Case | exiting out during checkout |
| Potential Harm | The user can lose the progress of selecting specific seats(if seated event) if they exit by mistake during checkout. |
| Misuse scenario | <ol style="list-style-type: none">1. the user selects seats and goes to the checkout2. during checkout the user might exit the checkout tab. or:<ol style="list-style-type: none">2a. close the browser2b. go back to the homepage2c. the computer's battery can die |
| Solution | <ul style="list-style-type: none">- save the selected tickets in a cart with a delete function to discard items the user does not want. |

5 System Sequence Diagram

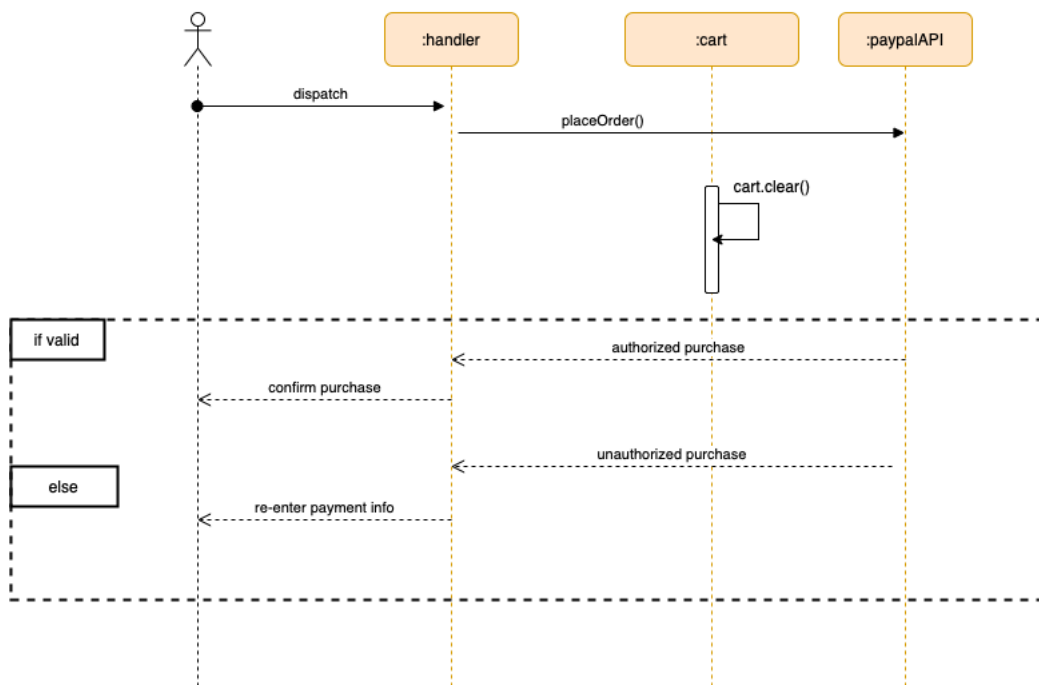
5.1 SSD 1: LOGIN

LOGIN

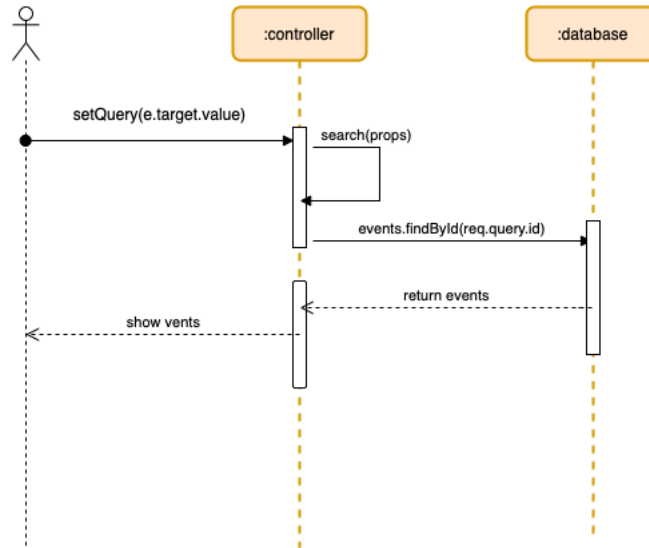


5.2 SDD 2: PURCHASE

PURCHASE

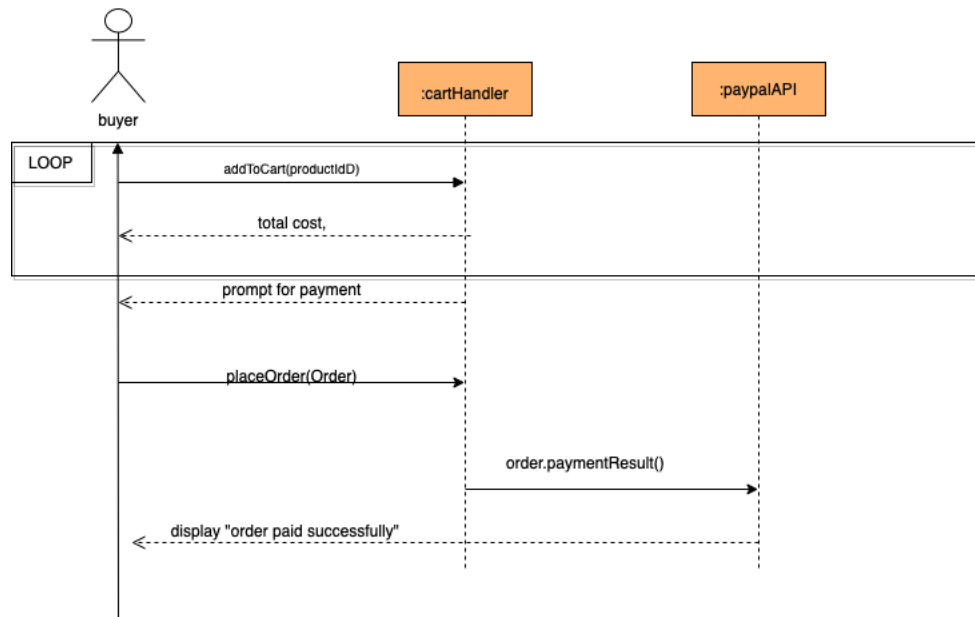


5.3 SSD 3: SEARCH



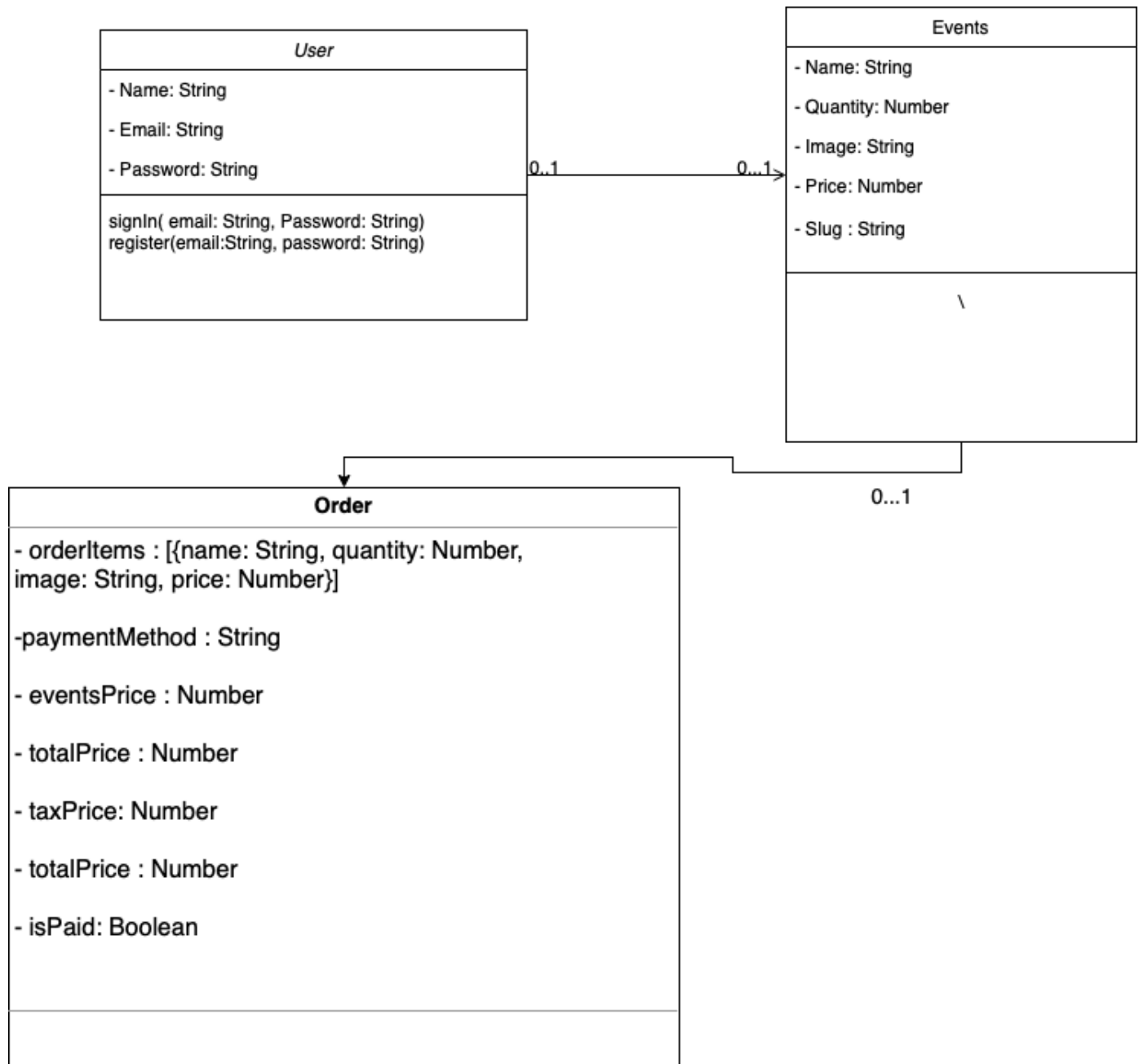
5.4 SSD 4: Display Receipt

DISPLAY RECEIPT



6 UML System Diagram

6.1 UML system Diagram



7 Operation Contracts

7.1 OPC 1: Login

| Operation | login |
|------------------|---|
| Operation | login(email: String, password: String) |
| Cross References | Use Cases: login |
| Preconditions | User has created an account |
| Postconditions | 1. A check through the database is performed 2. The user is successfully logged in or rejected. |

7.2 OPC 2: addToCart

| Operation | addToCart() |
|------------------|---|
| Cross References | Use case: Purchase a ticket |
| PreConditions | the event item is not out of stock |
| postCondition | an event item is added to the cart, and the quantity variable now incremented by 1. |

7.3 OPC 3: deleteFromCart

| Operation | delete() |
|------------------|---|
| Cross References | Misuse case: exiting during checkout. |
| Preconditions | User has selected tickets and is on the checkout page. |
| PostCondition | the total cost has changed accordingly to the price of the removed item. the following functions are executed product.remove(), db.disconnect() |

7.4 OPC 4: Purchase ticket

| Operation | purchaseTicket |
|------------------|---|
| Operation | purchaseTicket(userID: int, ticketID: int, cardInfo: ??) |
| Cross References | Use Cases: purchasing a ticket |
| Preconditions | User has logged in and found a ticket. The user sends a request to purchase a ticket to the server. |
| Postconditions | 1. eventID.availableTickets() was decremented by 1 2. userID.account.purchaseID() sent an email to the user |

7.5 OPC 5

| Operation | searchTickets |
|------------------|--|
| Operation | search(props) |
| Cross References | Use Cases: Search |
| Preconditions | User is logged in and goes to the search for tickets section on the website. |
| Postconditions | search page is updated after event.Find() returns matched items. |