Airport Operation Management System
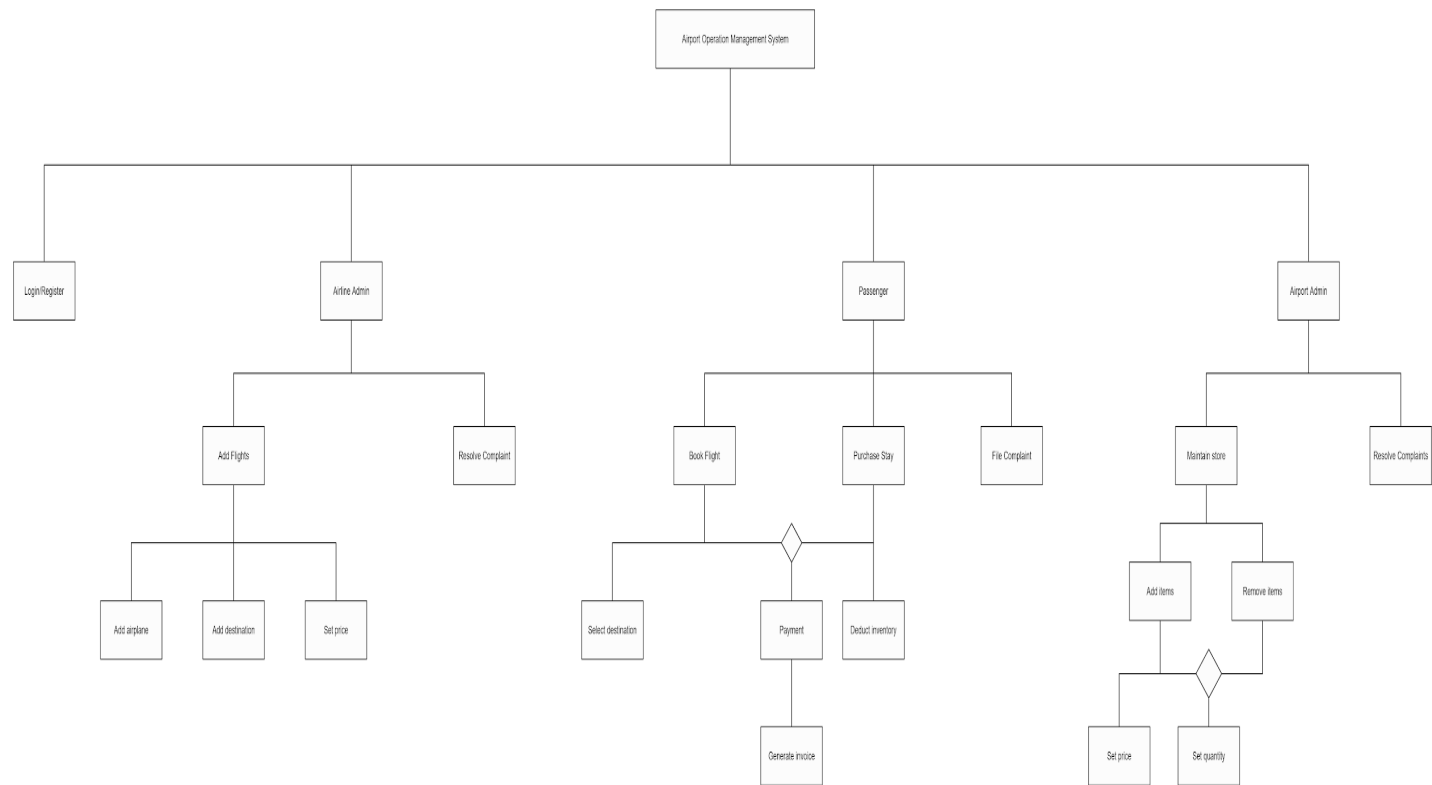Intermediate Progress Report Three
Project Functional Design
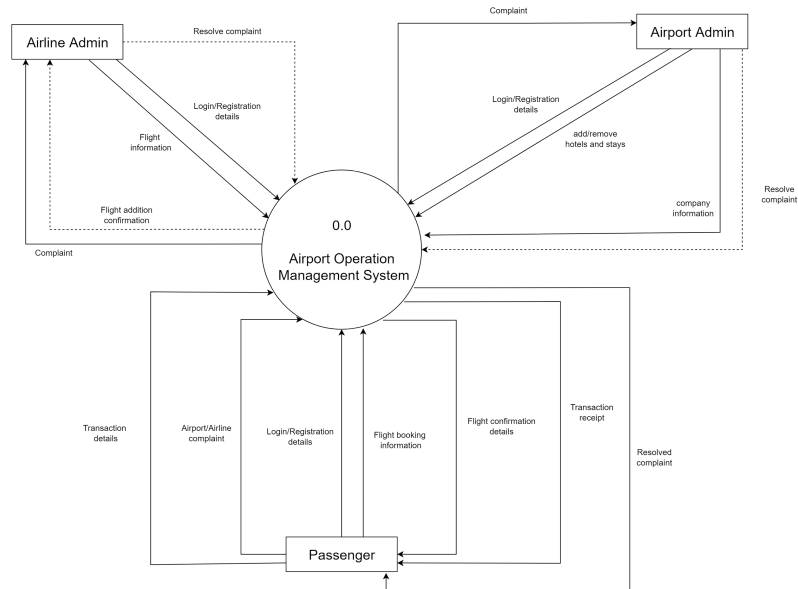Team Members: Azlan Amjad, Saud Agha, Faiz Marsad
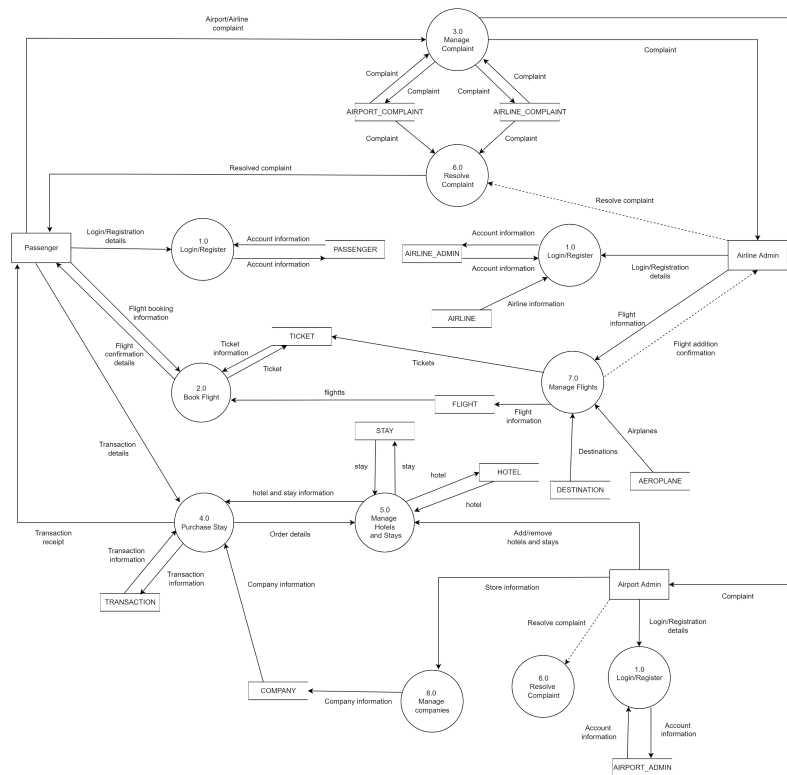Submission Date: March 30th, 2022

Hierarchical Input Process Output (HIPO) Diagram

```
                                   ┌─────────────────────────────────┐
                                   │ Airport Operation Management System │
                                   └─────────────────────────────────┘
                                                   │
        ┌──────────────────────┬───────────────────┴───────────────────┬──────────────────────┐
        │                      │                                        │                      │
  ┌───────────┐          ┌───────────┐                          ┌───────────┐          ┌───────────┐
  │Login/Register│        │Airline Admin│                        │ Passenger │          │Airport Admin│
  └───────────┘          └───────────┘                          └───────────┘          └───────────┘
                              │                                        │                      │
                      ┌───────┴───────┐              ┌─────────────────┼──────────┐      ┌────┴──────────┐
                  ┌───────┐    ┌───────────┐      ┌───────┐      ┌───────────┐ ┌───────────┐ ┌───────────┐ ┌───────────┐
                  │Add Flights│  │Resolve Complaint│ │Book Flight│ │Purchase Stay│ │File Complaint│ │Maintain store│ │Resolve Complaints│
                  └───────┘    └───────────┘      └───────┘      └───────────┘ └───────────┘ └───────────┘ └───────────┘
                      │                                 │              │                         │
          ┌───────────┼───────────┐          ┌─────────┤    ◇         │            ┌────────────┴────────────┐
      ┌───────┐  ┌───────────┐ ┌───────┐ ┌───────────┐│         ┌───────────┐ ┌───────┐              ┌───────────┐
      │Add airplane│ │Add destination│ │Set price│ │Select destination│ │Payment│ │Deduct inventory│ │Add items│     │Remove items│
      └───────┘  └───────────┘ └───────┘ └───────────┘│         └───────────┘ └───────┘              └───────────┘
                                                       │             │               │                    │
                                                       │         ┌───────────┐   ┌────┴───────◇──────┐
                                                       │         │Generate invoice│ ┌───────┐     ┌───────────┐
                                                       │         └───────────┘   │Set price│     │Set quantity│
                                                                                  └───────┘     └───────────┘
```

Context Level Data Flow Diagram (DFD)

Airline Admin

Airport Admin

Resolve complaint

Complaint

Login/Registration details

Login/Registration details

Flight information

add/remove hotels and stays

Flight addition confirmation

company information

Resolve complaint

Complaint

0.0

Airport Operation Management System

Transaction details

Airport/Airline complaint

Login/Registration details

Flight booking information

Flight confirmation details

Transaction receipt

Resolved complaint

Passenger

Level One Data Flow Diagram (DFD)

API Specification

Passenger Sign Up
POST
'/signup'

Input:
{
        "email" : string,
        "password" : string,
        "first_name" : string,
        "last_name" : string,
        "address" : string,
        "ssn" : string
}

Output:
Status = 201 (CREATED) or 400 (BAD REQUEST)
{
        "email" : string,
        "password" : string,
        "first_name" : string,
        "last_name" : string,
        "address" : string,
        "ssn" : string
}

Functionality: inserts a new passenger in the database.

User Login
POST
'/login'

Input:
{
        "email" : string,
        "password" : string
        "type": string
}

Output:
JSON Web Token

Status = 202 (ACCEPTED) or 400 (BAD REQUEST)
```
{
        "email" : string,
        "password" : string
        "type": string
}
```

Functionality: searches database for inputted login fields and authenticates the user and the type.

Get All destinations
GET
'/destinations'

Input:
```
{

}
```

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
```
[

        {
                "airport_code" : string,
                "city" : string,
                "country" : string
        },
        …

]
```

Functionality: returns all the available destinations

Get Searched Flights
GET
'/flights/:destination/:departure'

Input:
```
{

}
```

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
[
      {
            "flight_num": int,
            "airline": string,
            "dep_time": string,
            "arrival_time": string,
            "destination": string,
            "plane": int,
      },
      …
]

Functionality: returns all flights matching search criteria.

Get One Flight
GET
'/flight/:flight_num'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
{
      "flight_num": int,
      "airline_name": string,
      "dep_time": string,
      "arrival_time": string,
      "dest_code": string,
      "plane_id": int,

}

Functionality: returns one flight matching search criteria.

Get One Destination
GET

'/destination/:airport_code'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
{
      "airport_code": string,
      "city" : string,
      "country": string
}

Functionality: returns one destination matching search criteria.

Get Flight Fares
GET
'/fares/:flight_num'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
[

      {
            "price": string,
            "cabin": string,
            "tickets": int,
      },
      …
]

Functionality: returns all fares matching search criteria.

Get All Companies
GET

'/companies'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
[

    {

        "name": string
        "a_email": string

    },
    …
]

Functionality: returns all companies in the database.

Get Company Hotels
GET
'/hotels/:company'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
[

    {

        "id": int,
        "name": string,
        "location": string,
        "company_name": string

    },
    …
]

Functionality: returns company hotels.

Get Hotel Stays
GET
'/stays/:hotel_id'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
[

       {
           "id": int,
           "name": string,
           "price": int,
           "description": string,
           "transac_id": string,
           "hotel_id": int
       },
       …
]

Functionality: returns available stays at a hotel.

Get Any Fare Ticket
GET
'/ticket/:fare_id'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
{
      "ticket_id": string,
      "seat_pos": string,
      "p_email: string,

}

Functionality: returns available ticket for the specified fare.

Update Ticket
PUT
'ticket/:ticket_id'

Input:
{

       "ticket_id": string,
       "seat_pos": string,
       "p_email: string,

}

Output:
Status = 200 (OK) or 400 (BAD REQUEST)
{

}

Functionality: updates specified ticket, indicating its been purchased.

Add Transaction
POST
'/transaction'

Input:
{
       "transac_id": int,
       "type": string,
       "date": string,
       "p_email": string,
       "company": string
}

Output:
Status: 201 (CREATED) or 400 (BAD REQUEST)

{

```
        "transac_id": int,
        "type": string,
        "date": string,
        "p_email": string,
        "company": string


}
```

Functionality: adds transaction to database.

Update Stay
PUT
'/stay/:stay_id'

Input:
```
{

        "stay_id": string,
        "name": string,
        "price": string,
        "description:" string,
        "transac_id": int,
        "hotel_id": int,


}
```


Output:
Status = 200 (OK) or 400 (BAD REQUEST)
```
{

}
```
Functionality: updates stay to indicate purchased status.

Get Airline Flights
GET
'/flights/:airline_name'

Input:
```
{

}
```

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
[
    {
        "flight_num": int,
        "airline_name": string,
        "dep_time": string,
        "arrival_time": string,
        "dest_code": string,
        "plane_id": int,
    },
    …
]

Functionality: returns all flights for the airline.

Add Flight
POST
'/flight'

Input :
{
    "flight_num": int,
    "airline_name": string,
    "dep_time": string,
    "arrival_time": string,
    "dest_code": string,
    "plane_id": int,
}

Output:
Status: 201 (CREATED) or 400 (BAD REQUEST)
{
    "flight_num": int,
    "airline_name": string,
    "dep_time": string,
    "arrival_time": string,
    "dest_code": string,
    "plane_id": int,
}

Functionality: Adds flight for the airline.

Update Flight
PUT
'/flight/:flight_num'

Input :
{
       "flight_num": int,
       "airline_name": string,
       "dep_time": string,
       "arrival_time": string,
       "dest_code": string,
       "plane_id": int,
}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
{

}

Functionality: Updates specific flight record.

Remove Flight
DELETE
'/flight/:flight_num'

Input:
{

}

Output:
Status = 200 (OKAY) or 400 (BAD REQUEST)
{

}

Add Airline Complaint
'/airline_complaint/'
POST

Input:
{

 "complaint_id": int,

 "description": string,

 "p_email": string,

 "a_email": string,

 "airline_name": string

}

Output:

Status: 201 (CREATED) or 400 (BAD REQUEST)

{

 "complaint_id": int,

 "description": string,

 "p_email": string,

 "a_email": string,

 "airline_name": string

}

Functionality: adds a complaint for the airline.

Update Airline Complaint
PUT
'airline_complaint/:complaint_id'
Input:
{

 "complaint_id": int,

 "description": string,

 "p_email": string,

 "a_email": string,

 "airline_name": string

}
Output:
Status: 200 (OK) or 400 (BAD REQUEST)
Functionality: updates complaint for the airline.

Delete Airline Complaint
'/airline_complaint/:complaint_id'

Input:
{

}

Output:
Status: 200 (OK) or 400 (BAD REQUEST)
{

}
Functionality: delete complaints for the airline.

Get Airline Complaints
GET
'/airline_complaint/:airline_name'

Input:
{

}

Output:
Status: 200 (OK) or 400 (BAD REQUEST)
[
 {
        "complaint_id": int,
        "description": string,
        "p_email": string,
        "a_email": string,
        "airline_name": string

 }
]
Functionality: gets all complaints for the airline.

Add Airport Complaint
'/airport_complaint/'
POST

Input:
{

        "complaint_id": int,
        "description": string,
        "p_email": string,
        "a_email": string,
        "airline_name": string

}

Output:
Status: 201 (CREATED) or 400 (BAD REQUEST)
{
        "complaint_id": int,
        "description": string,
        "p_email": string,
        "a_email": string,
        "airline_name": string

}

Functionality: adds a complaint for the airport.

Update Airport Complaint
PUT
'airport_complaint/:complaint_id'
Input:
{
        "complaint_id": int,
        "description": string,
        "p_email": string,
        "a_email": string,
        "airline_name": string

}
Output:
Status: 200 (OK) or 400 (BAD REQUEST)
Functionality: updates complaint for the airport.

Delete Airport Complaint
'/airport_complaint/:complaint_id'

Input:

{

}

Output:
Status: 200 (OK) or 400 (BAD REQUEST)

}
Functionality: delete complaints for the airport.

Get Airport Complaints
GET
'/airport_complaint'

Input:
{

}

Output:
Status: 200 (OK) or 400 (BAD REQUEST)
[
 {
        "complaint_id": int,
        "description": string,
        "p_email": string,
        "a_email": string,

 }
]
Functionality: gets all complaints for the airport.

Add Company
POST
'/company'

Input:
{
        "name": string,
        "a_email": string
}

Output:

Status: 201 (CREATED) or 400 (BAD REQUEST)
{
        "name": string,
        "a_email": string
}
Functionality: adds company.

Add Stay
POST
'/stays'

Input:
{
        "id": int,
        "name": string,
        "price": int,
        "description": string,
        "hotel_id": int,
        "transac_id": int

}

Output:
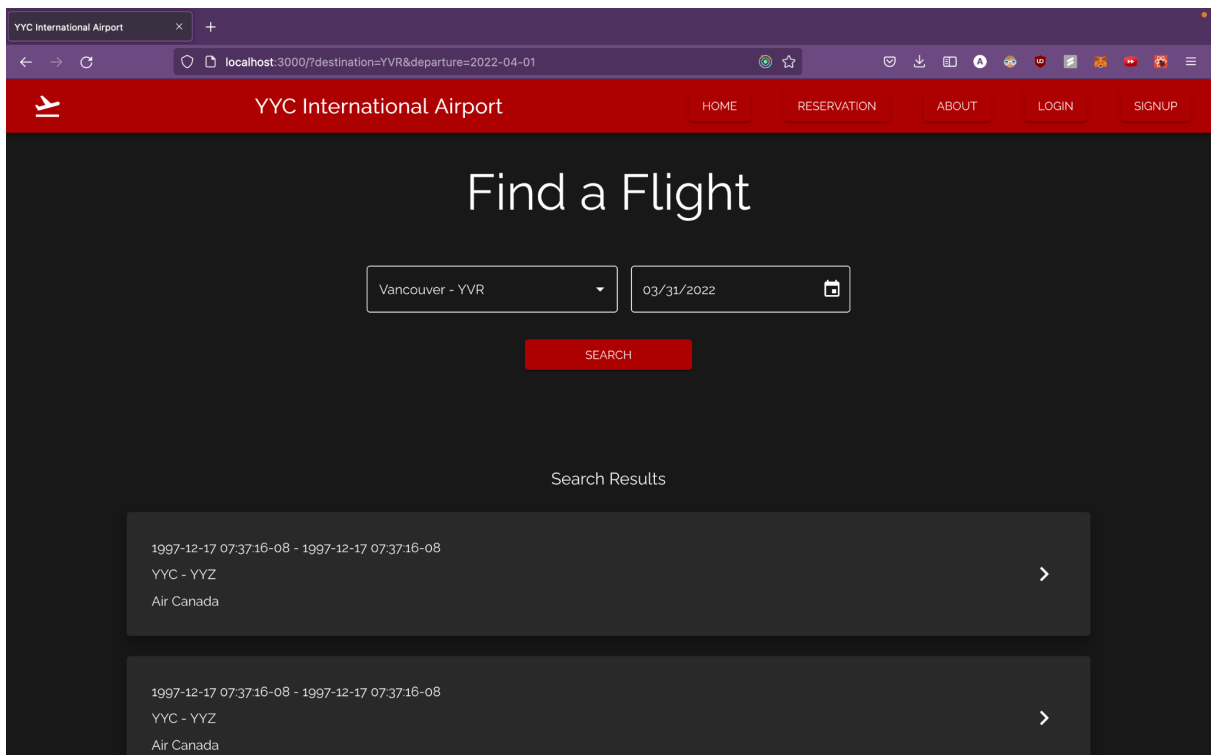Status: 201 (CREATED) or 400 (BAD REQUEST)
{
        "id": int,
        "name": string,
        "price": int,
        "description": string,
        "hotel_id": int,
        "transac_id": int

}
Functionality: adds stay.

Add Hotel
POST
'/hotel'

Input:
{

```
        "id": int,
        "name": string,
        "location": string,
        "company": string
}
```
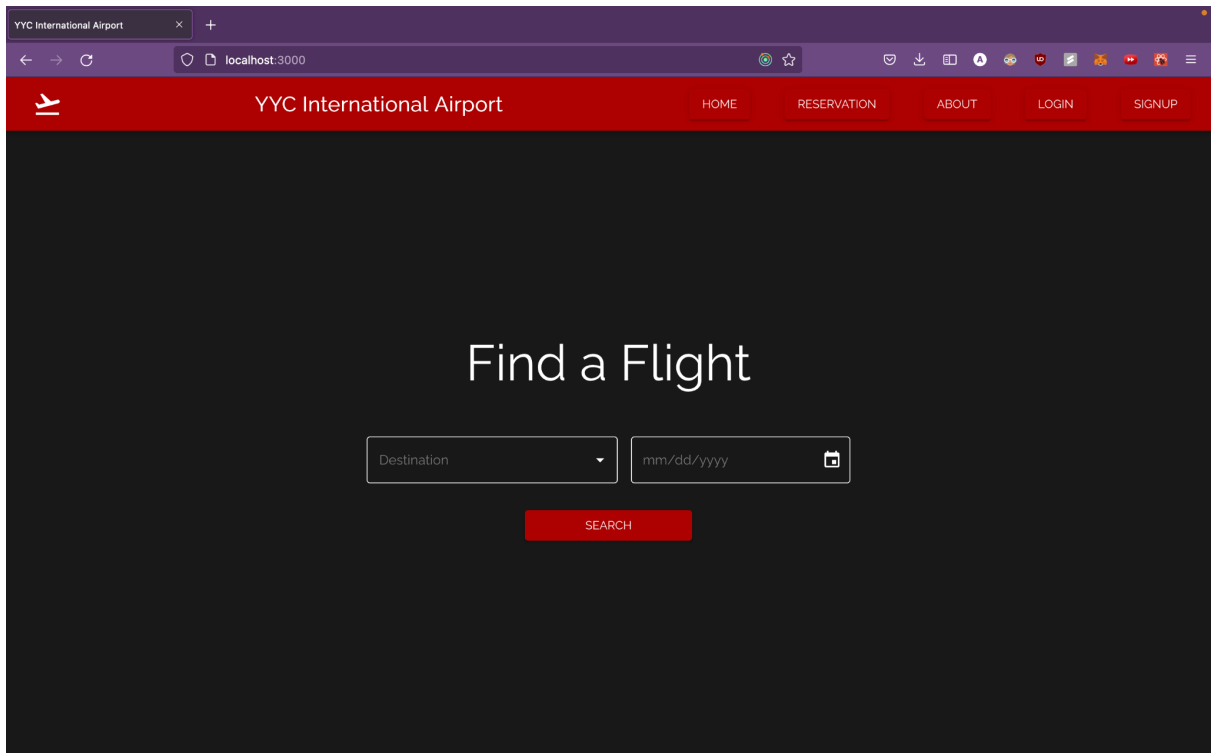
Output:
Status: 201 (CREATED) or 400 (BAD REQUEST)
```
{
        "id": int,
        "name": string,
        "location": string,
        "company": string
}
```
Functionality: adds hotel.

Update Stay
PUT
'/stays/:id'

Input:
```
{
        "id": int,
        "name": string,
        "price": int,
        "description": string,
        "hotel_id": int,
        "transac_id": int

}
```

Output:
Status: 200 (OK) or 400 (BAD REQUEST)
```
{

}
```

Functionality: updates the specified stay:

Update Hotel
POST
'/hotel/:id'

Input:

```
{
        "id": int,
        "name": string,
        "location": string,
        "company": string
}
```
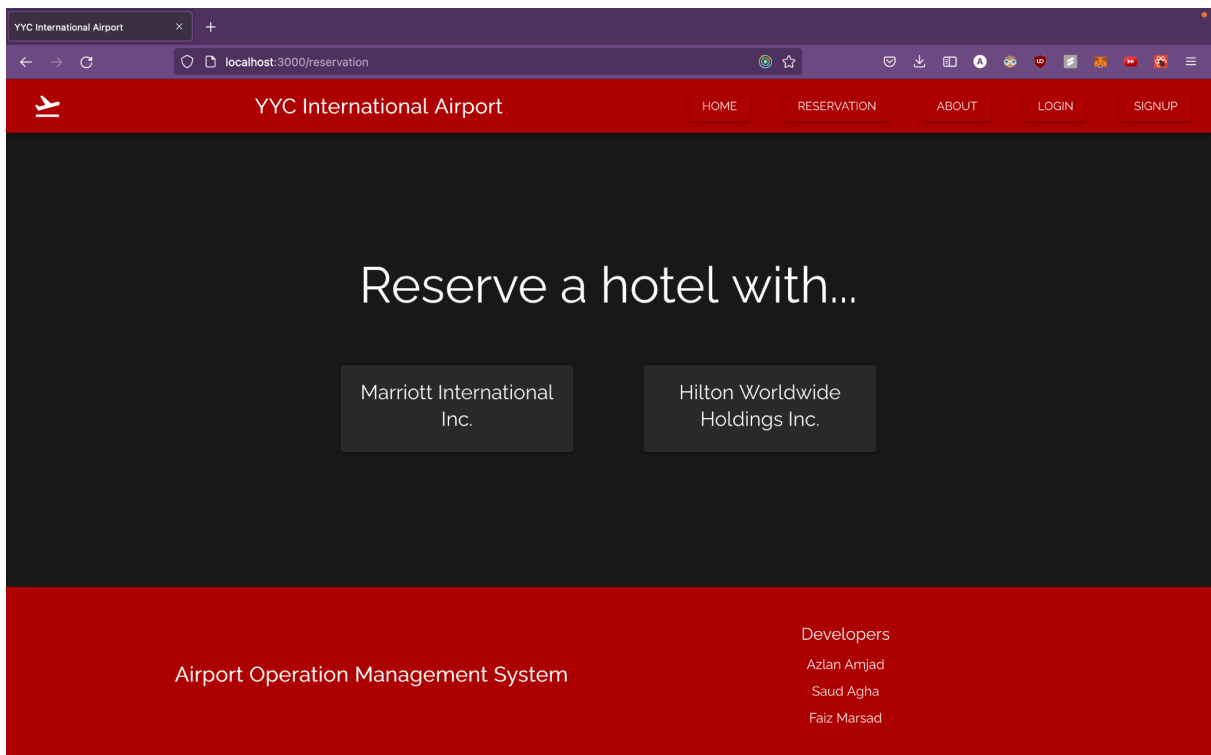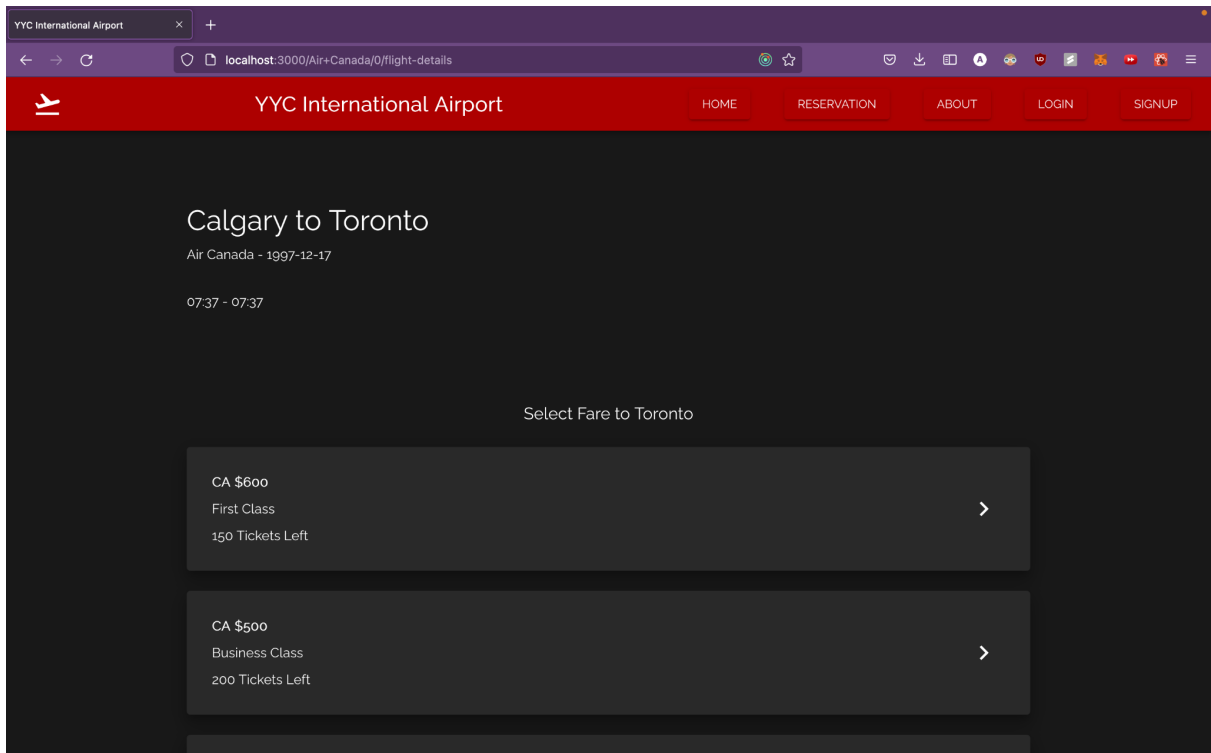
Output:
Status:
Status: 201 (CREATED) or 400 (BAD REQUEST)
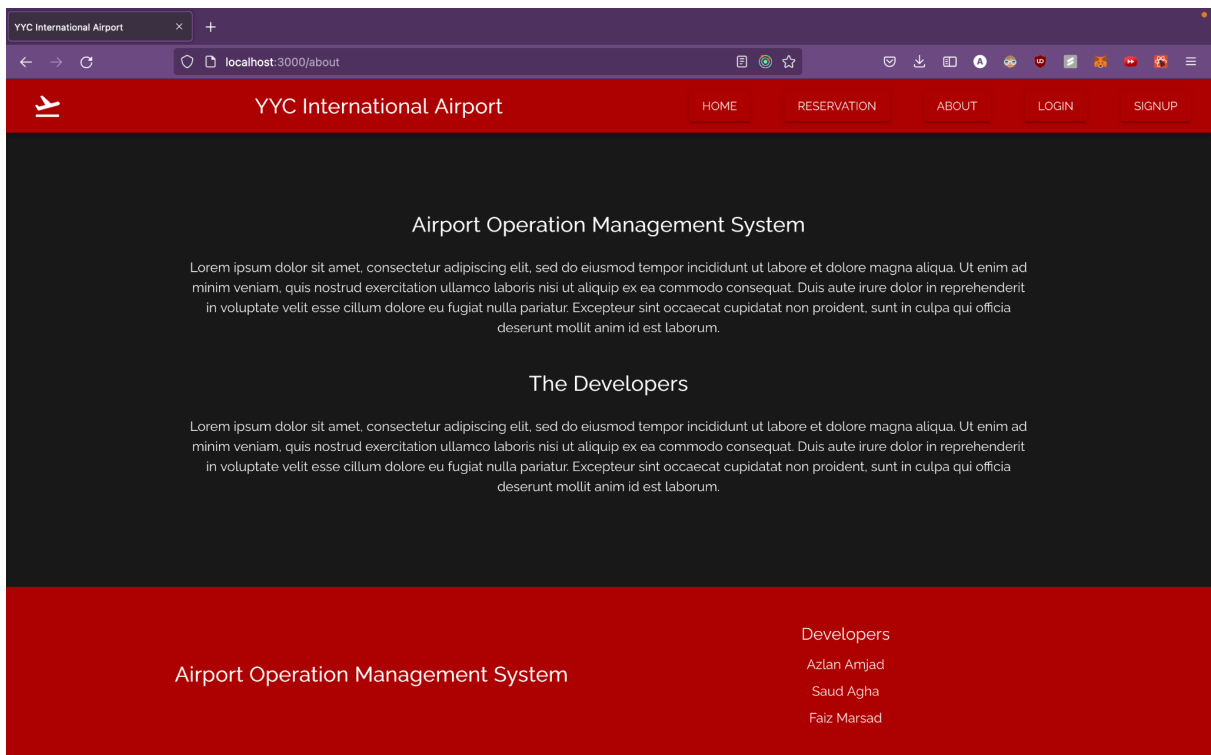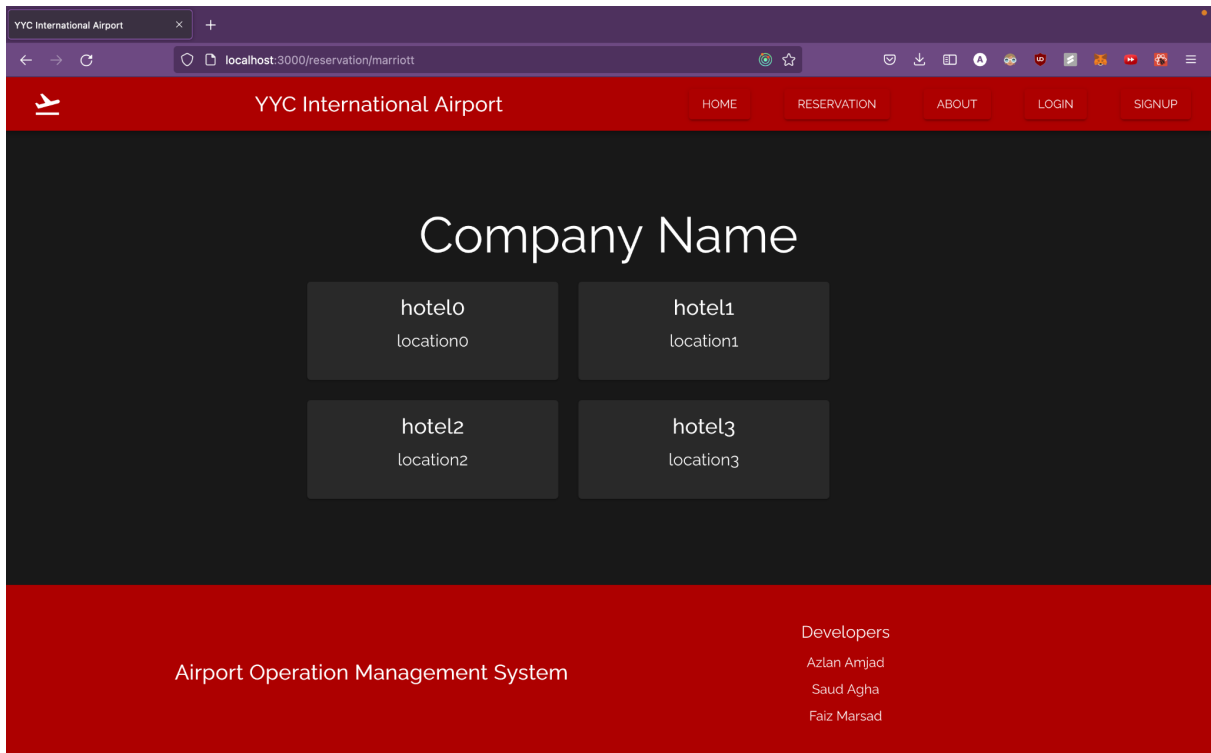```
{

}
```
Functionality: updates the specified hotel.

**Dummy Website**

**YYC International Airport**

HOME    RESERVATION    ABOUT    LOGIN    SIGNUP

# Find a Flight

Destination    mm/dd/yyyy

SEARCH

---

**YYC International Airport**

HOME    RESERVATION    ABOUT    LOGIN    SIGNUP

# Find a Flight

Vancouver - YVR    03/31/2022

SEARCH

## Search Results

1997-12-17 07:37:16-08 - 1997-12-17 07:37:16-08
YYC - YYZ
Air Canada    >

1997-12-17 07:37:16-08 - 1997-12-17 07:37:16-08
YYC - YYZ
Air Canada    >

YYC International Airport   HOME   RESERVATION   ABOUT   LOGIN   SIGNUP

## Calgary to Toronto

Air Canada - 1997-12-17

07:37 - 07:37

Select Fare to Toronto

CA $600
First Class
150 Tickets Left

CA $500
Business Class
200 Tickets Left

---

YYC International Airport   HOME   RESERVATION   ABOUT   LOGIN   SIGNUP

# Reserve a hotel with...

Marriott International Inc.

Hilton Worldwide Holdings Inc.

Airport Operation Management System

Developers

Azlan Amjad

Saud Agha

Faiz Marsad

YYC International Airport

HOME   RESERVATION   ABOUT   LOGIN   SIGNUP

# Company Name

| hotel0 | hotel1 |
|--------|--------|
| location0 | location1 |

| hotel2 | hotel3 |
|--------|--------|
| location2 | location3 |

Airport Operation Management System

Developers

Azlan Amjad

Saud Agha

Faiz Marsad

---

YYC International Airport

HOME   RESERVATION   ABOUT   LOGIN   SIGNUP

## Airport Operation Management System

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

## The Developers

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Airport Operation Management System

Developers

Azlan Amjad

Saud Agha

Faiz Marsad

## YYC International Airport

HOME          RESERVATION          ABOUT          LOGIN          SIGNUP

### Login

Email *

Password *

**SIGN IN**

Forgot password ?

Don't have an account?Create account

○ Passenger

○ Airport Admin

○ Airline Admin

**Developers**

Azlan Amjad

Saud Agha

## Airport Operation Management System

## YYC International Airport

HOME          RESERVATION          ABOUT          LOGIN          SIGNUP

### Sign Up

First Name          Last Name

SSN          Address

Email *

Password *

**CREATE AN ACCOUNT**

Have an account already?Log in

**Developers**

Azlan Amjad

Airport Operation Management System

## Screenshot 1

YYC International Airport    HOME    RESERVATION    ABOUT    LOGIN    SIGNUP

# Air Canada: Complaints

**WELCOME**

**FLIGHTS**

**COMPLAINT**

| Complaint ID | Passenger Email | Description | Resolve? |
|---|---|---|---|
| 0 | passenger1@email.com | worst experience in my life | RESOLVE |
| 1 | passenger1@email.com | worst experience in my life | RESOLVE |
| 2 | passenger1@email.com | worst experience in my life | RESOLVE |
| 3 | passenger1@email.com | worst experience in my life | RESOLVE |
| 4 | passenger1@email.com | worst experience in my life | RESOLVE |

Airport Operation Management System

**Developers**

Azlan Amjad

Saud Agha

Faiz Marsad

## Screenshot 2

YYC International Airport    HOME    RESERVATION    ABOUT    LOGIN    SIGNUP

**WELCOME**

**COMPANIES**

**COMPLAINT**

# Welcome to YYC Internation Airport's Dashboard

Airport Operation Management System

**Developers**

Azlan Amjad

Saud Agha

Faiz Marsad

YYC International Airport

WELCOME

COMPANIE

COMPLAINT

# Reserve a hotel with...

Marriott International Inc.

Hilton Worldwide Holdings Inc.

Airport Operation Management System

Developers

Azlan Amjad

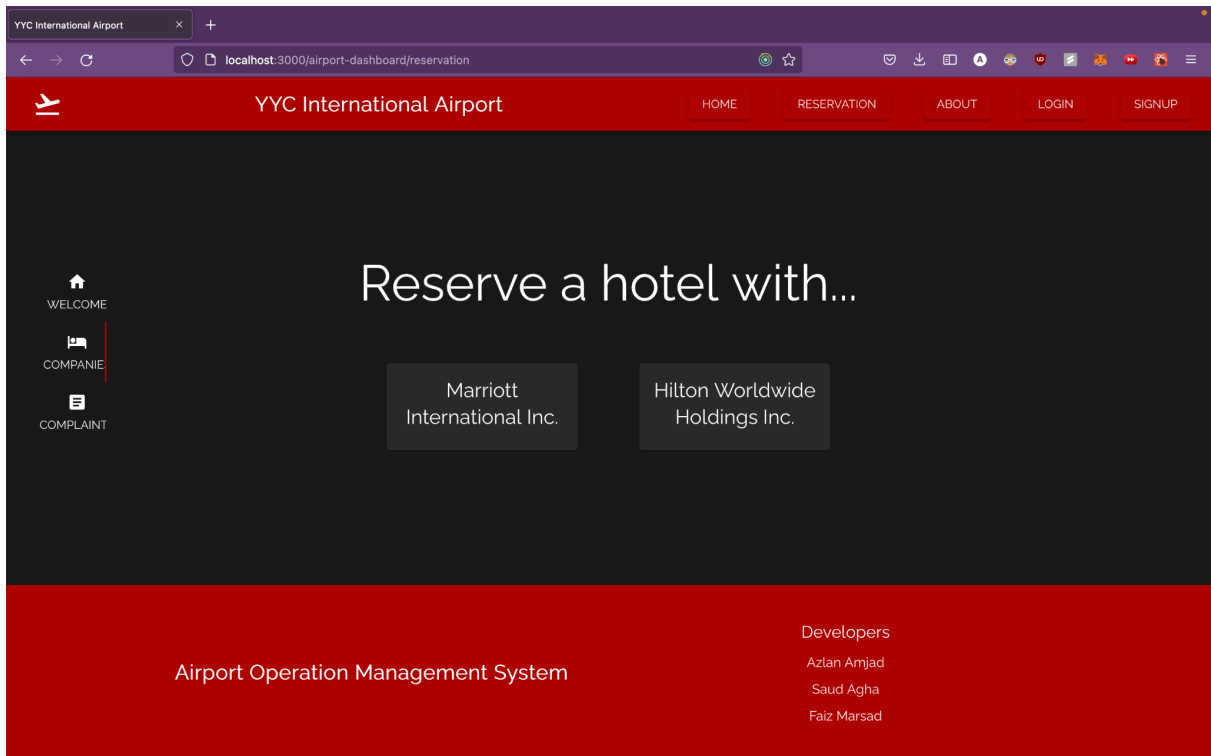Saud Agha

Faiz Marsad

localhost:3000/airport-dashboard/complaints

# YYC International Airport

HOME | RESERVATION | ABOUT | LOGIN | SIGNUP

# YYC Internation Airport: Complaints

WELCOME

COMPANIES

COMPLAINT

| Complaint ID | Passenger Email | Description | Resolve? |
|---|---|---|---|
| 0 | passenger1@email.com | worst experience in my life | RESOLVE |
| 1 | passenger1@email.com | worst experience in my life | RESOLVE |
| 2 | passenger1@email.com | worst experience in my life | RESOLVE |
| 3 | passenger1@email.com | worst experience in my life | RESOLVE |
| 4 | passenger1@email.com | worst experience in my life | RESOLVE |

Airport Operation Management System

Developers

Azlan Amjad

Saud Agha

Faiz Marsad

---

localhost:3000/checkout

# YYC International Airport

HOME | RESERVATION | ABOUT | LOGIN | SIGNUP

## Checkout

Ready for Pickup in                45-50 mins

### Payment method

Name on card *          Card number *

Expiry date *           CVV *

Last three digits on signature strip

☐ Remember credit card details for next time