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DATASCAPE

# OURSPACE

(the nosql version)

Kaung Nyo Lwin  
Troung Vuong  
Cassandra Chang  
Aymen Zubair Qureshi



# Presentation Outline



- Description
- Importance
- Data Requirements
- Data Constraints
- Business Rules
- Transactions
- Queries

# OURSPACE



**OurSpace is an online platform that connects people looking for shared spaces with owners who have spaces to rent, such as co-working spaces, meeting rooms or private offices.**

**Space owners can list their space with details like location, size , price , facilities or Rental rates. customers can search, book, and review spaces in just a few clicks. The platform handles payments securely and earns a small 3% service fee on each booking.**



# Why do we need co-working spaces?

Not everyone works  
in an office!

# IMPORTANCE

- Space owners can rent out empty offices and earn extra income.
- Many people work from home or freelance and need short-term office spaces.
- The platform recommends spaces based on what customers like and need.
- Gives smart recommendations, shows simple reports, and improves based on customer feedback to make the platform easy to use.





# DATA REQUIREMENTS

## ● USER COLLECTION

Stores user information like name, contact details, preferences, and past booking history. It also includes user roles (e.g., individual, admin) and payment info if applicable.

## ● FEEDBACK COLLECTION

Stores reviews and ratings left by users for coworking spaces. It includes user feedback, comments, ratings, and optionally space owner responses.

## ● BOOKING COLLECTION

Tracks all user bookings, including the space booked, date, duration, user info, payment status, special requests, and booking status (confirmed, canceled, etc.).

## ● SPACE COLLECTION

Contains details of coworking spaces, such as location, amenities, pricing models, capacity, photos, and availability. It helps users search for spaces based on preferences.

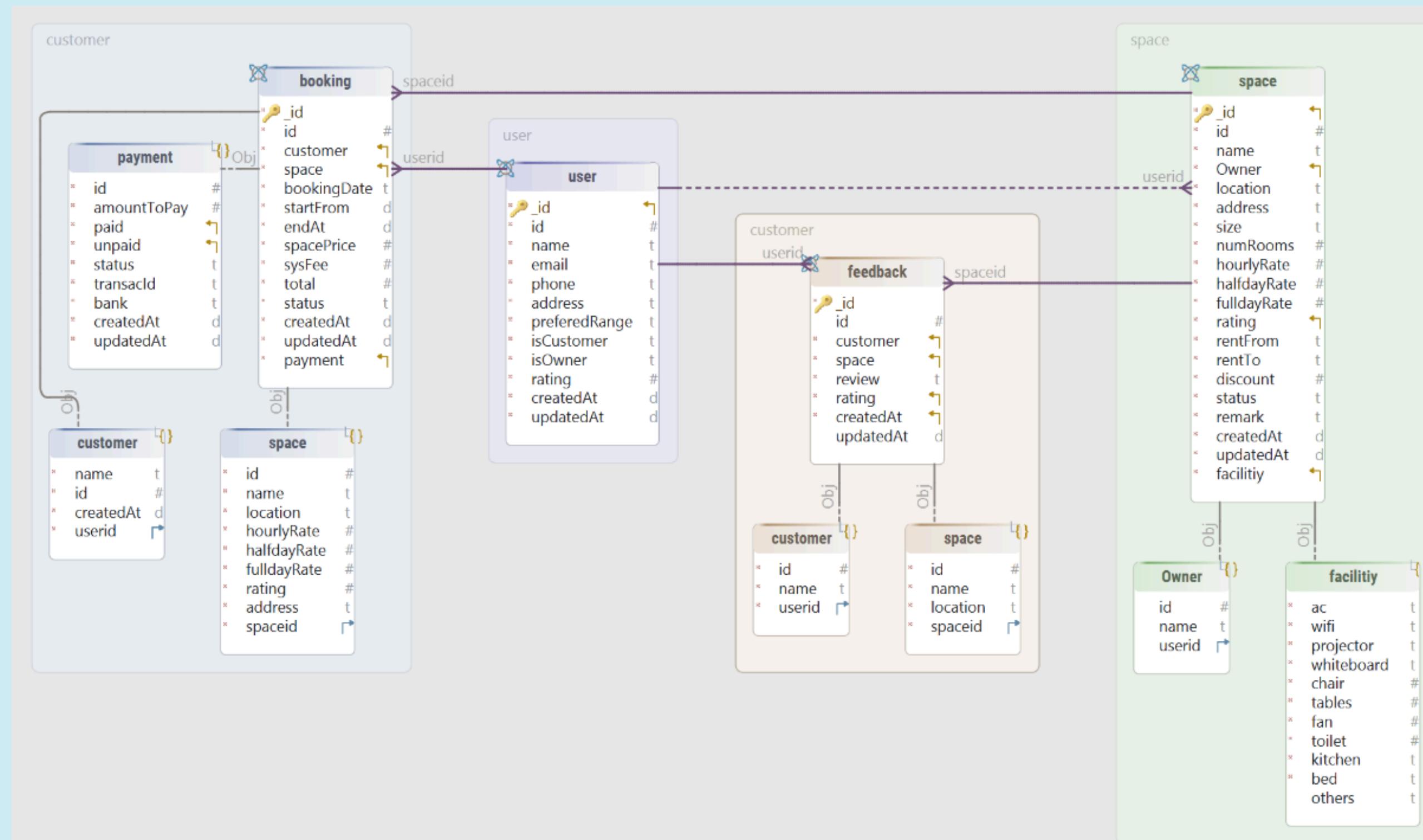
## DATA CONSTRAINTS

- Users must register before making a booking with a valid debit or credit card and email address
- Email IDs, userid, bookingids, spaceid, transactionid and owner should be unique
- Ensure that bookings do not overlap for the same space at the same time.

## BUSINESS RULES

- When a customer is searching up spaces to rent, no “booked” spaces should be displayed. Only “active” or “unoccupied” spaces should be displayed
- Booking can only be cancelled and the charges will be refunded if the cancellation is made at least 24 hours before the scheduled booking timing.
- Payments must be made during booking the spaces

# CONCEPTUAL DESIGN



# TRANSACTIONS

CASSANDRA

1

## RENTAL RATE ADJUSTMENTS

Space owners can modify the rental rates (hourly, half-day, or full-day) for their listed spaces.

2

## FEEDBACK SUBMISSION

Information containing the feedback from the customer

3

## USER PROFILE UPDATES:

Users (owner or customer) can update their personal details

## ● RENTAL RATE ADJUSTMENTS

```
_id: ObjectId('67bc9ce8a88c21f2dc648c87'),  
id: 2,  
name: 'Space B',  
Owner: {  
  id: 3,  
  name: 'Charlie Brown'  
},  
location: 'Uptown',  
address: '5678 Oak Rd',  
size: '150',  
numRooms: 3,  
hourlyRate: 12,  
halfdayRate: 110,  
fulldayRate: 200,  
rating: 4.8,
```

```
db.space.updateOne(  
{  
  "id": 2,  
  "Owner.id": 3  
},  
{  
  $set: {  
    "hourlyRate": 15,  
    "halfdayRate": 120,  
    "fulldayRate": 220  
  },  
  $currentDate: { "updatedAt": true }  
});
```

```
db.space.findOne({id:2})  
{  
  _id: ObjectId('67bc9ce8a88c21f2dc648c87'),  
  id: 2,  
  name: 'Space B',  
  Owner: {  
    id: 3,  
    name: 'Charlie Brown'  
  },  
  location: 'Uptown',  
  address: '5678 Oak Rd',  
  size: '150',  
  numRooms: 3,  
  hourlyRate: 15,  
  halfdayRate: 120,  
  fulldayRate: 220,  
  rating: 4.8,  
  updatedAt: ISODate("2025-02-27T14:00:00.000Z")  
}
```

## ● FEEDBACK SUBMISSION

```
{  
  _id: ObjectId('67bca5c7a88c21f2dc648cc2'),  
  id: 20,  
  customer: {  
    id: 20,  
    name: 'Taylor Evans'  
  },  
  space: {  
    id: 20,  
    name: 'Space T',  
    location: 'Downtown'  
  },  
  review: 'Great for presentations and workshops.',  
  rating: 4.2,  
  createdAt: '2021-07-05 00:00:00'  
}
```

```
db.feedback.updateOne(  
  {  
    "customer.id": 20,  
    "space.id": 20  
  },  
  {  
    $set: {  
      "review": "Superb place for presentations!",  
      "$currentDate": { "updatedAt": true }  
    }  
  }  
)
```

```
{  
  _id: ObjectId('67bca5c7a88c21f2dc648cc2'),  
  id: 20,  
  customer: {  
    id: 20,  
    name: 'Taylor Evans'  
  },  
  space: {  
    id: 20,  
    name: 'Space T',  
    location: 'Downtown'  
  },  
  review: 'Superb place for presentations!',  
  rating: 4.2,  
  createdAt: '2021-07-05 00:00:00',  
  updatedAt: 2025-02-26T16:26:06.486Z  
}
```

## ● USER PROFILE

```
{  
  _id: ObjectId('67bca321a88c21f2dc648c9f'),  
  id: 5,  
  name: 'Ethan Wright',  
  email: 'ethan.wright@example.com',  
  phone: '6789012345',  
  address: '7890 Cedar St',  
  preferedRange: '7 - 14',  
  isCustomer: false,  
  isOwner: true,  
  rating: 4.7,  
  createdAt: '2018-06-25 14:10:00',  
  updatedAt: '2021-11-15 09:00:00'  
}
```

```
db.user.updateOne(  
  {id:5},  
  {  
    $set:{  
      "email":"ethan_wright@example.com",  
      "phone":"5612357896",  
      "preferedRange" : "5 - 10"  
    }  
  ,  
  {$currentDate: { "updatedAt": true } }  
);
```

```
{  
  _id: ObjectId('67bca321a88c21f2dc648c9f'),  
  id: 5,  
  name: 'Ethan Wright',  
  email: 'ethan_wright@example.com',  
  phone: '5612357896',  
  address: '7890 Cedar St',  
  preferedRange: '5 - 10',  
  isCustomer: false,  
  isOwner: true,  
  rating: 4.7,  
  createdAt: '2018-06-25 14:10:00',  
  updatedAt: 2025-02-26T16:40:29.324Z  
}
```

# QUERIES

CASSANDRA

## FEEDBACK REPORT

information containing the feedback from the customer

```
db.feedback.aggregate([
  {
    $group: {
      _id: "$space.location",
      avgRating: { $avg: "$rating" },
      spaceName: { $first: "$space.name" },
      topReview: { $first: "$review" }
    }
  },
  {
    $project: {
      _id: 0,
      location: "$_id",
      spaceName: 1,
      avgRating: { $round: ["$avgRating", 2] },
      topReview: 1
    }
  }
]);
  {
    spaceName: 'Space C',
    topReview: 'A very comfortable and quiet place.',
    location: 'Midtown',
    avgRating: 4.58
  }
];
  {
    spaceName: 'Space E',
    topReview: 'Very convenient and well-equipped space.',
    location: 'Downtown',
    avgRating: 4.06
  }
]);
```

## CUSTOMER BOOKING HISTORY

Customers will be able to view their booking history.

```
db.booking.aggregate([
  {
    $match: {
      "customer.id": 8
    }
  },
  {
    $project: {
      _id: 0,
      bookingId: "$id",
      spaceName: "$space.name",
      location: "$space.location",
      bookingDate: "$bookingDate",
      startTime: "$startFrom",
      endTime: "$endAt",
      totalCharges: "$total"
    }
  }
]);
  {
    bookingId: 9,
    spaceName: 'Space S',
    location: 'Midtown',
    bookingDate: '2025-09-20',
    startTime: '2025-09-20 09:00:00',
    endTime: '2025-09-20 17:00:00',
    totalCharges: 144.2
  }
]);
```

## SPACE OWNER EARNINGS REPORT

Space Owners will be able to view their total revenue using this report.

```
db.booking.aggregate([
  {
    $lookup: {
      from: "space",
      localField: "space.id",
      foreignField: "id",
      as: "spaceDetails"
    }
  },
  {
    $unwind: "$spaceDetails"
  },
  {
    $match: {
      "spaceDetails.Owner.id": 5
    }
  },
  {
    $group: {
      _id: {
        spaceName: "$_id.spaceName",
        ownerId: "$_id.ownerName",
        address: "$_id.address"
      },
      totalBookings: { $sum: 1 },
      totalEarnings: { $sum: "$spacePrice" },
      platformFees: { $sum: "$sysFee" }
    }
  },
  {
    $project: {
      _id: 0,
      spaceName: "$_id.spaceName",
      ownerName: "$_id.ownerName",
      address: "$_id.address",
      totalBookings: 1,
      totalEarnings: 1,
      platformFees: 1
    }
  }
]);
  {
    _id: {
      spaceName: 'Space S',
      ownerName: 'Ethan Wright',
      address: '7890 Oak St'
    },
    totalBookings: 4,
    totalEarnings: 588,
    platformFees: 17.64,
    spaceName: 'Space S',
    ownerName: 'Ethan Wright',
    address: '7890 Oak St'
  }
];
  {
    totalBookings: 2,
    totalEarnings: 60,
    platformFees: 1.7999999999999998,
    spaceName: 'Space A',
    ownerName: 'Ethan Wright',
    address: '1234 Main St'
  }
]);
```

## SPACE UTILIZATION REPORT

Contains the information of how much a particular space is utilized.

```
db.booking.aggregate([
  {
    $group: {
      _id: {
        id: "$space.id",
        name: "$space.name",
        location: "$space.location"
      },
      totalBookings: { $sum: 1 },
      totalHours: {
        $sum: {
          $divide: [
            { $subtract: ["$endAt", "$startFrom"] },
            3600000 // Convert milliseconds to hours
          ]
        }
      }
    }
  },
  {
    $project: {
      _id: 0,
      spaceName: "$_id.name",
      location: "$_id.location",
      totalBookings: 1,
      totalHours: 1,
      utilizationRate: {
        $multiply: [
          {
            $divide: [
              "$totalHours",
              { $multiply: ["$totalBookings", 24] }
            ],
            100 // Convert to percentage
          ]
        }
      }
    }
  }
], [
  {
    totalBookings: 4,
    totalHours: 29,
    spaceName: 'Space S',
    location: 'Midtown',
    utilizationRate: 30.20
  },
  {
    totalBookings: 2,
    totalHours: 6,
    spaceName: 'Space A',
    location: 'Downtown',
    utilizationRate: 12.5
  }
]);
```

## CANCELED BOOKINGS REPORT:

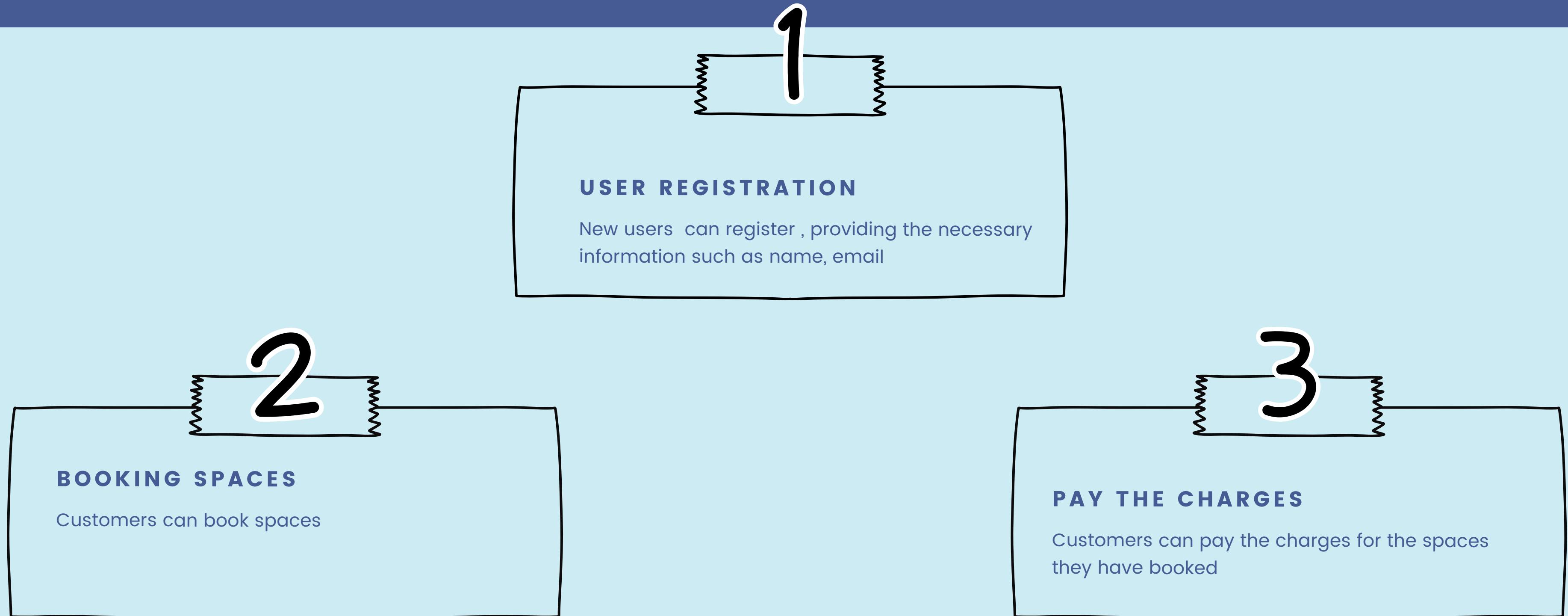
Retrieves information about all the cancelled bookings.

```
db.booking.aggregate([
  {
    $match: {
      status: "cancelled"
    }
  },
  {
    $project: {
      _id: 0,
      bookingID: "$id",
      customerName: "$customer.name",
      spaceName: "$space.name",
      cancellationDate: "$updatedAt"
    }
  }
]);
```

```
{
  bookingID: 4,
  customerName: 'Taylor Evans',
  spaceName: 'Space A',
  cancellationDate: '2024-04-04 08:15:00'
},
{
  bookingID: 7,
  customerName: 'Quinn Hall',
  spaceName: 'Space R',
  cancellationDate: '2024-07-04 09:15:00'
},
{
  bookingID: 9,
  customerName: 'Rachel White',
  spaceName: 'Space S',
  cancellationDate: '2024-09-19 15:00:00'
}
```

# TRANSACTIONS

KAUNG



# ● BOOKING SPACES

```
OurSpace > db.booking.insertOne({
  id: 1,
  customer: {
    id: 14,
    name: "Natalie Carter"
  },
  space: {
    id: 1,
    name: "Space A",
    location: "Downtown",
    hourlyRate: 10,
    halfdayRate: 100,
    fulldayRate: 180,
    rating: 4.5,
    address: "1234 Main St"
  },
  bookingDate: ISODate("2025-01-01T00:00:00Z"),
  startFrom: ISODate("2025-01-01T10:00:00Z"),
  endAt: ISODate("2025-01-01T12:00:00Z"),
  status: "booked",
  createdAt: ISODate("2025-01-01T01:00:00Z"),
  updatedAt: ISODate("2025-01-01T01:00:00Z"),
  payment: null
});|
```

```
OurSpace > db.booking.updateOne(
  { id: 1 }, // Search condition
  [
    {
      $set: {
        spacePrice: {
          $let: {
            vars: {
              hours: {
                $dateDiff: {
                  startDate: "$startFrom",
                  endDate: "$endAt",
                  unit: "hour"
                }
              }
            }
          }
        }
      }
    }
  ],
  {
    $set: {
      sysFee: { $multiply: ["$spacePrice", 0.03] },
      total: { $add: ["$spacePrice", { $multiply: ["$spacePrice", 0.03] }] },
      updatedAt: new Date() // Updates timestamp
    }
  }
);|
```

```
in: {
  $switch: {
    branches: [
      {
        case: { $lt: [ "$$hours", 12 ] },
        then: { $multiply: [ "$space.hourlyRate", "$$hours" ] }
      },
      {
        case: { $eq: [ "$$hours", 12 ] },
        then: "$space.halfdayRate"
      },
      {
        case: { $eq: [ "$$hours", 24 ] },
        then: "$space.fulldayRate"
      },
      {
        case: { $and: [ { $gt: [ "$$hours", 12 ] }, { $lt: [ "$$hours", 24 ] } ] },
        then: {
          $add: [
            "$space.halfdayRate",
            { $multiply: [ "$space.hourlyRate", { $subtract: [ "$$hours", 12 ] } ] }
          ]
        }
      },
      default: 0
    ]
  }
};|
```

Activate Windows  
Go to Settings to activate W...

## ● USER REGISTRATION

```
OurSpace > db.user.insertOne({  
    id: 21,  
    name: "John Doe",  
    email: "johndoe1@gmail.com",  
    phone: "1234567890",  
    address: "1234 Main St",  
    preferredRange: "10 - 15",  
    isCustomer: true,  
    isOwner: false,  
    rating: 4.5,  
    createdAt: ISODate("2020-01-01T00:00:00Z"),  
    updatedAt: ISODate("2020-01-01T00:00:00Z")  
});|
```

## ● PAY THE CHARGES

```
OurSpace > db.booking.updateOne(  
    { id: 1 },  
    {  
        $set: {  
            status: "rent",  
            payment: {  
                _id: 1,  
                amountToPay: 20.6,  
                paid: 20.6,  
                unpaid: 0,  
                status: "paid",  
                transacId: "1234567890",  
                bank: "Chase",  
                createdAt: ISODate("2025-01-01T01:00:00Z"),  
                updatedAt: ISODate("2025-01-01T01:00:00Z")  
            }  
        }  
    }  
.|
```

# QUERIES

KAUNG

## MOST SPENDER REPORT

Show the most spending users

```
{
    username: 'Taylor Evans',
    totalAmount: 90.64,
    daysOnPlatform: 2615,
    avgSpendingPerDay: 0.034661567877629064
}

{
    username: 'Rachel White',
    totalAmount: 307.8,
    daysOnPlatform: 2380,
    avgSpendingPerDay: 0.12932773109243698
}

{
    username: 'Samuel Baker',
    totalAmount: 144.2,
    daysOnPlatform: 2023,
    avgSpendingPerDay: 0.07128027681660899
}
```

## MONTHLY REVENUE REPORT

Show price and fee by months

```
< {
    year: 2024,
    month: 3,
    spacePrice: 39,
    sysFee: 1.17,
    total: 40
}
{
    year: 2024,
    month: 4,
    spacePrice: 40,
    sysFee: 1.2,
    total: 41.2
}
{
    year: 2024,
    month: 5,
    spacePrice: 140,
    sysFee: 4.2,
    total: 144.2
}
```

## POPULAR DAY OF THE WEEK

Show the most busy days during the input period

```
< {
    totalBookings: 5,
    dayOfWeek: 'Friday',
    spacePrice: 527,
    sysFee: 15.809999999999999,
    total: 542.64
}
{
    totalBookings: 4,
    dayOfWeek: 'Monday',
    spacePrice: 548,
    sysFee: 16.44,
    total: 564.44
}
{
    totalBookings: 1,
    dayOfWeek: 'Thursday',
    spacePrice: 48,
    sysFee: 1.44,
    total: 49.44
}
```

## RENTAL REPORT BY PRICE RANGES

Show the rental price and fee by input ranges of prices

```
< {
    totalBookings: 2,
    range: '10 - 15',
    spacePrice: 60,
    sysFee: 1.799999999999998,
    total: 61.80000000000004
}
{
    totalBookings: 5,
    range: '15 - 20',
    spacePrice: 495,
    sysFee: 14.85,
    total: 509.68
}
{
    totalBookings: 4,
    range: '20 - 25',
    spacePrice: 588,
    sysFee: 17.64,
    total: 605.64
}
```

## SPACE RECOMMENDATION QUERY

retrieves a list of available spaces based on the user's information such as location, history of booking, and preferred price range by taking the input of user and the period to be booked.

```
OurSpace > db.space.aggregate([
    // Step 1: Left join with booking to get the number of bookings by input user id
    {
        $lookup: {
            from: "booking",
            let: { spaceId: "$id" },
            pipeline: [
                { $match: { "customer.id": 20 } }, // Replace with input user ID
                { $match: { $expr: { $eq: ["$space.id", "$$spaceId"] } } },
                { $group: { _id: "$space.id", numBookings: { $sum: 1 } } }
            ],
            as: "userBookings"
        }
    },
    // Step 2: Left join with booking to get total booking hours in search period
    {
        $lookup: {
            from: "booking",
            let: { spaceId: "$id" },
            pipeline: [
                {
                    $match: {
                        startFrom: { $gte: ISODate("2025-01-01T10:00:00Z") }, // Replace with input startTime
                        endAt: { $lte: ISODate("2025-01-01T12:00:00Z") }, // Replace with input endTime
                    }
                },
                { $match: { $expr: { $eq: ["$space.id", "$$spaceId"] } } },
                {
                    $group: {
                        _id: "$space.id",
                        totalBookedHours: {
                            $sum: { $divide: [{ $subtract: ["$endAt", "$startFrom"] }, 3600000] } // Convert ms to hours
                        }
                    }
                }
            ],
            as: "bookingHours"
        }
    },
    // Step 3: Filter and sort
    {
        $match: {
            numBookings: { $lt: 10 } // Filter out spaces with less than 10 bookings
        }
    },
    {
        $sort: {
            numBookings: -1,
            bookingHours: -1
        }
    }
])
```

```
// Step 2: Left join with booking to get total booking hours in search period
{
    $lookup: {
        from: "booking",
        let: { spaceId: "$id" },
        pipeline: [
            {
                $match: {
                    startFrom: { $gte: ISODate("2025-01-01T10:00:00Z") }, // Replace with input startTime
                    endAt: { $lte: ISODate("2025-01-01T12:00:00Z") }, // Replace with input endTime
                }
            },
            { $match: { $expr: { $eq: ["$space.id", "$$spaceId"] } } },
            {
                $group: {
                    _id: "$space.id",
                    totalBookedHours: {
                        $sum: { $divide: [{ $subtract: ["$endAt", "$startFrom"] }, 3600000] } // Convert ms to hours
                    }
                }
            }
        ],
        as: "bookingHours"
    },
    // Step 3: Filter and sort
    {
        $match: {
            numBookings: { $lt: 10 } // Filter out spaces with less than 10 bookings
        }
    },
    {
        $sort: {
            numBookings: -1,
            bookingHours: -1
        }
    }
})
```

## CONTINUE

```
// Step 3: Unwind lookup results
{
  $addFields: {
    numBookings: { $ifNull: [{ $arrayElemAt: ["$userBookings.numBookings", 0] }, 0] },
    totalBookedHours: { $ifNull: [{ $arrayElemAt: ["$bookingHours.totalBookedHours", 0] }, 0] }
  },
}

// Step 4: Filter out fully booked spaces
{
  $match: {
    $expr: {
      $lt: [
        "$totalBookedHours",
        { $divide: [{ $subtract: [ISODate("2025-01-01T12:00:00Z"),
          ISODate("2025-01-01T10:00:00Z")], 3600000} // Search hours
        ]
      }
    }
  }
},
```

```
// Step 5: Filter by location
{
  $match: { location: "Uptown" } // Replace with input location
},

// Step 6: Project required fields
{
  $project: {
    _id: 0,
    spaceName: "$name",
    hourlyRate: 1,
    halfdayRate: 1,
    fulldayRate: 1,
    rating: 1,
    numBookings: 1
  }
},
}

// Step 7: Sort by number of bookings and rating
{
  $sort: { numBookings: -1, rating: -1 }
},
}

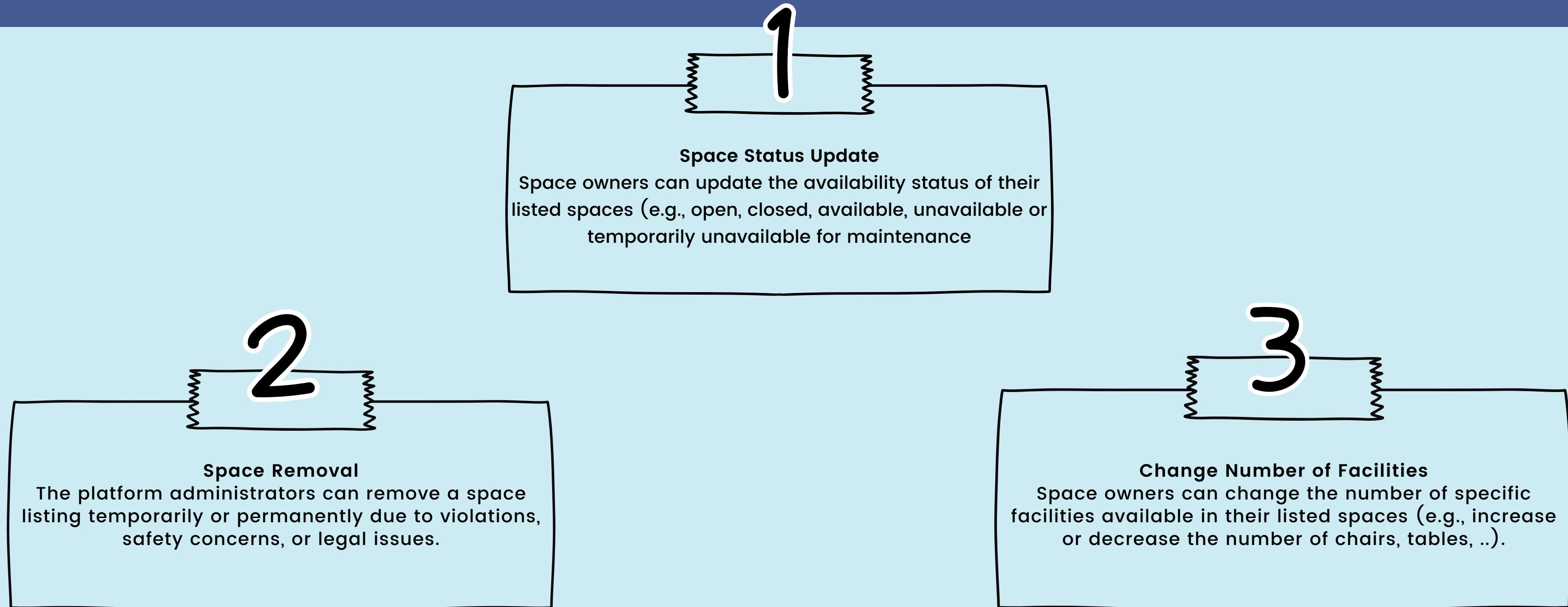
// Step 8: Limit to first 10 documents
{ $limit: 10 }
]);
```

```
< {
  hourlyRate: 7,
  halfdayRate: 65,
  fulldayRate: 130,
  rating: 3.9,
  numBookings: 1,
  spaceName: 'Space R'
}
{
  hourlyRate: 15,
  halfdayRate: 120,
  fulldayRate: 220,
  rating: 4.8,
  numBookings: 0,
  spaceName: 'Space B'
}
{
  hourlyRate: 14,
  halfdayRate: 125,
  fulldayRate: 230,
  rating: 4.8,
  numBookings: 0,
  spaceName: 'Space N'
}
```

## RESULT

# TRANSACTIONS

TRUONG



## Space Status Update

```
OurSpace > db.transaction.insertOne({
    "spaceId": 2,
    "operationType": "Space Status Update",
    "status": "Unavailable",
    "remark": "Undergoing maintenance",
    "createdAt": new Date(),
    "updatedAt": new Date()
});

db.space.updateOne(
  { "id": 2 },
  {
    $set: {
      "status": "Unavailable",
      "remark": "Undergoing maintenance",
      "updatedAt": new Date()
    }
  }
);
```

## Space Removal

```
OurSpace > db.transaction.insertOne({
    "spaceId": 2,
    "operationType": "Space Removal",
    "reason": "Violation of safety policies",
    "createdAt": new Date(),
    "updatedAt": new Date()
});

db.space.deleteOne({ "id": 2 });
```

## Change Number of Facilities

```
OurSpace > db.transaction.insertOne({
    "spaceId": 2,
    "operationType": "Change Number of Facilities",
    "updatedFacilities": { "chair": 15, "tables": 8 },
    "createdAt": new Date(),
    "updatedAt": new Date()
});

db.space.updateOne(
  { "id": 2 },
  {
    $set: {
      "facilitiy.chair": 15,
      "facilitiy.tables": 8,
      "updatedAt": new Date()
    }
  }
);
```

# QUERIES

TRUONG

**1. Customer Retention Report:** Calculates the total bookings, total spend, last booking date, and retention status for each customer. Retention status can be based on the frequency of bookings (e.g., the number of TotalBookings is greater than or equal to 3 bookings => "Loyal").

CustomerName: 'Taylor Evans', TotalBookings: 2, TotalSpend: 90.64, LastBookingDate: '2025-04-05', RetentionStatus: 'Casual'	CustomerName: 'Quinn Hall', TotalBookings: 2, TotalSpend: 193.64, LastBookingDate: '2024-07-05', RetentionStatus: 'Casual'	CustomerName: 'Samuel Baker', TotalBookings: 3, TotalSpend: 420.24, LastBookingDate: '2025-02-11', RetentionStatus: 'Loyal'	CustomerName: 'Natalie Carter', TotalBookings: 1, TotalSpend: 20.6, LastBookingDate: '2025-01-01', RetentionStatus: 'Casual'
---	--	---	--

**2. Total System Fee:** calculates the total system fee by month, providing insights into monthly revenue trends specifically for System. This helps us monitor our revenue streams from booking transactions.

TotalSystemFee: 12, TotalBookings: 2, Month: '2024-09'
--

TotalSystemFee: 1.44, TotalBookings: 1, Month: '2024-10'
--

TotalSystemFee: 0.6, TotalBookings: 1, Month: '2025-01'
---

TotalSystemFee: 1.44, TotalBookings: 1, Month: '2025-02'
--

**3. Booking Trends by Season Report:** Analyzes seasonal demand and calculates the TotalOwnerRevenue, which represents the total revenue for space owners, excluding the sysFee. This helps owners adjust pricing and promotions accordingly.

```
_id: 'Winter',
TotalBookings: 3,
TotalOwnerRevenue: 106.83
```

```
_id: 'Spring',
TotalBookings: 3,
TotalOwnerRevenue: 410
```

```
_id: 'Fall',
TotalBookings: 1,
TotalOwnerRevenue: 48
```

```
_id: 'Summer',
TotalBookings: 4,
TotalOwnerRevenue: 578
```

**4. Customer Feedback Sentiment Report:** Categorizes reviews into positive, neutral, or negative, providing insights into customer satisfaction and areas for improvement.

```
SpaceName: 'Space T',
Location: 'Downtown',
TotalReviews: 2,
PositiveSentimentPercentage: 50,
NeutralSentimentPercentage: 0,
NegativeSentimentPercentage: 50,
AverageRating: 3.35
```

```
SpaceName: 'Space E',
Location: 'Downtown',
TotalReviews: 1,
PositiveSentimentPercentage: 100,
NeutralSentimentPercentage: 0,
NegativeSentimentPercentage: 0,
AverageRating: 4.3
```

```
SpaceName: 'Space P',
Location: 'Downtown',
TotalReviews: 1,
PositiveSentimentPercentage: 0,
NeutralSentimentPercentage: 100,
NegativeSentimentPercentage: 0,
AverageRating: 3.9
```

**5. Space Demand and Performance Report:** Highlights the most and least demanded spaces, showcasing booking trends and performance metrics like revenue contribution and utilization disparities.

```
{  
    SpaceName: 'Space A',  
    Location: 'Downtown',  
    TotalRevenue: 61.80000000000004,  
    TotalBookings: 2,  
    AverageBookingRate: 10,  
    PerformanceStatus: 'Low Demand'  
}  
  
{  
    SpaceName: 'Space S',  
    Location: 'Midtown',  
    TotalRevenue: 605.64,  
    TotalBookings: 4,  
    AverageBookingRate: 16,  
    PerformanceStatus: 'Moderate Demand'  
}
```

```
{  
    SpaceName: 'Space R',  
    Location: 'Uptown',  
    TotalRevenue: 98.88,  
    TotalBookings: 2,  
    AverageBookingRate: 7,  
    PerformanceStatus: 'Low Demand'  
}  
  
{  
    SpaceName: 'Space T',  
    Location: 'Downtown',  
    TotalRevenue: 276.9,  
    TotalBookings: 2,  
    AverageBookingRate: 13,  
    PerformanceStatus: 'Low Demand'  
}
```

# TRANSACTIONS

AYMEN

1

## NEW SPACE LISTING:

The space owner can create a new listing by providing important details of the new space.

2

## FEEDBACK REVIEW AND REMOVAL

Allows space owners to review customer feedback and request the removal of inappropriate or misleading reviews.

3

## EDITING THE BOOKINGS:

The customer can modify/cancel the booking dates.

## ● NEW SPACE LISTING

```
> db.space.insertOne({  
  id: 22,  
  name: "OurSpace",  
  location: "West",  
  address: "1234 Main St",  
  size: "200",  
  numRooms: 5,  
  hourlyRate: 15,  
  halfdayRate: 120,  
  fulldayRate: 220,  
  rating: 4.7,  
  rentFrom: "08:00:00",  
  rentTo: "22:00:00",  
  discount: 0.1,  
  status: "open",  
  remark: "Modern space with premium amenities",  
  createdAt: new Date(),  
  updatedAt: new Date(),  
  facility: {  
    ac: true,  
    wifi: true,  
    projector: true,  
  },  
  amenities: {  
    whiteboard: true,  
    chair: 20,  
    tables: 8,  
    fan: 4,  
    toilet: 3,  
    kitchen: true,  
    bed: false  
  },  
  Owner: {  
    id: 3,  
    name: "Charlie Brown"  
  }  
});  
< {  
  acknowledged: true,  
  insertedId: ObjectId('67bff...')  
}
```

## ● FEEDBACK REVIEW AND REMOVAL

```
> db.feedback.find({ "id": 4 })  
< {  
  _id: ObjectId('67bca5c7a88c21f2dc648cb2'),  
  id: 4,  
  customer: {  
    id: 5,  
    name: 'Ethan Wright',  
    userid: ObjectId('67bca321a88c21f2dc648c9f')  
  },  
  space: {  
    id: 4,  
    name: 'Space D',  
    location: 'Suburbs',  
    spaceid: ObjectId('67bc9ce8a88c21f2dc648c89')  
  },  
  review: 'Perfect for team workshops.',  
  rating: 4.5,  
  createdAt: '2021-11-20 00:00:00'  
}  
> db.feedback.deleteOne({ id: 4 });  
< {  
  acknowledged: true,  
  deletedCount: 1  
}  
> db.feedback.find({ id: 4 });  
<  
Atlas atlas-py9c6i-shard-0 [primary] OurSpace>
```

## ● EDITING THE BOOKINGS:

```
name: 'Space A',
location: 'Downtown',
hourlyRate: 10,
halfdayRate: 100,
fulldayRate: 180,
rating: 4.5,
address: '1234 Main St',
spaceid: ObjectId('67bc9e44a88c21f2dc648c9a'),
},
bookingDate: '2025-01-10',
startFrom: 2025-01-10T10:00:00.000Z,
endAt: 2025-01-10T12:00:00.000Z,
spacePrice: 20,
sysFee: 0.6,
total: 20.6,
status: 'booked',
createdAt: 2024-01-01T01:00:00.000Z,
updatedAt: 2025-02-27T06:10:50.793Z,
payment: {
  id: 1,
  amountToPay: 20.6,
  paid: 20.6,
```

```
> db.bookings.updateOne(
  { "id": 1 },
  {
    $set: {
      "startFrom": new Date("2025-03-01T10:00:00.000Z"),
      "endAt": new Date("2025-03-01T12:00:00.000Z")
    }
  }
);
```

```
name: 'Space A',
location: 'Downtown',
hourlyRate: 10,
halfdayRate: 100,
fulldayRate: 180,
rating: 4.5,
address: '1234 Main St',
spaceid: ObjectId('67bc9e44a88c21f2dc648c9a'),
},
bookingDate: '2025-01-10',
startFrom: 2025-01-02T10:00:00.000Z,
endAt: 2025-01-02T12:00:00.000Z,
spacePrice: 20,
sysFee: 0.6,
total: 20.6,
status: 'booked',
createdAt: 2024-01-01T01:00:00.000Z,
updatedAt: 2025-02-27T06:26:50.778Z,
payment: {
  id: 1,
  amountToPay: 20.6,
  paid: 20.6,
```

# QUERIES

AYMEN

## OWNER REVIEW FEEDBACK

Space Owners can view the feedbacks from their customers.

```
> db.feedback.aggregate([
  { $lookup: { from: "space", localField: "space.spaceid", foreignField: "_id", as: "spaceDetails" } },
  { $unwind: "$spaceDetails" },
  { $match: { "spaceDetails.Owner.userid": ObjectId("67bca321a88c21f2dc648c9f") } },
  { $project: { _id: 0, customerName: "$customer.name", spaceName: "$spaceDetails.name", review: 1, rating: 1, createdAt: 1 } }
])

{
  "review": "A very comfortable and quiet place.",
  "rating": 4.7,
  "createdAt": "2022-07-01 00:00:00",
  "customerName": "George Miller",
  "spaceName": "Space C"
}
{
  "review": "Very convenient and well-equipped space.",
  "rating": 4.3,
  "createdAt": "2020-05-17 00:00:00",
  "customerName": "Bob Smith",
  "spaceName": "Space E"
}
```

## RECENTLY LISTED SPACE

Allows user to retrieve recently listed spaces

```
> db.space.aggregate([
  {
    $match: {} // Match all documents
  },
  {
    $project: {
      _id: 0, // Exclude the _id field
      spaceName: "$name", // Rename the name field
      ownerName: 1, // Owner's name
      location: 1, // Location
      rating: 1, // Rating
      createdAt: 1 // Created at
    }
  },
  {
    $sort: { createdAt: -1 } // Sort by created at
  },
  {
    $limit: 10 // Limit to 10
  }
])
```

location: 'West',  
rating: 4.7,  
createdAt: 2025-02-27T05:32:10.645Z,  
spaceName: 'OurSpace'

location: 'Midtown',  
rating: 0,  
createdAt: 2025-02-26T19:27:30.489Z,  
spaceName: 'New Conference Hall'

location: 'Downtown',  
rating: 4.9,  
createdAt: 2023-06-10T00:00:00.000Z,  
spaceName: 'Space E'



## RETRIEVE A SPECIFIC BOOKINGS DETAILS

Allows users to get a specific bookings details.

```
> db.booking.aggregate([
  {
    $match: { "id": 2 }
  },
  {
    $project: {
      _id: 0,
      customerName: "$customer.name",
      bookingDate: 1,
      startFrom: 1,
      endAt: 1,
      status: 1,
      paymentAmount: "$payment.amountToPay",
      createdAt: 1,
      updatedAt: 1
    }
  }
])
{
  "id": 2,
  "customerName": "Samuel Baker",
  "bookingDate": "2025-02-10",
  "startFrom": "2025-02-10T14:00:00.000Z",
  "endAt": "2025-02-10T17:00:00.000Z",
  "status": "booked",
  "createdAt": "2025-02-09T12:30:00.000Z",
  "updatedAt": "2025-02-09T12:30:00.000Z",
  "paymentAmount": 49.44
}
```



## POPULAR BOOKING TIME SLOTS

Retrieves the timings where the spaces were booked the most  
 Morning: 12Am - 12 PM, Afternoon: 12pm-6pm, Evening: 6pm-12Am

```
> db.booking.aggregate([
  {
    $project: {
      spaceName: "$space.name",
      timeSlot: {
        $cond: [
          { $lt: [{ $hour: { $toDate: "$startFrom" } }, 12] },
          "Morning",
          {
            $cond: [
              { $lt: [{ $hour: { $toDate: "$startFrom" } }, 18] },
              "Afternoon",
              "Evening"
            ]
          }
        ]
      }
    }
  },
  {
    $group: {
      _id: { spaceName: "$spaceName", timeSlot: "$timeSlot" },
      count: { $sum: 1 }
    }
  }
])
[{"_id": {"spaceName": "Space S", "timeSlot": "Morning"}, "count": 3}, {"_id": {"spaceName": "Space R", "timeSlot": "Afternoon"}, "count": 2}, {"_id": {"spaceName": "Space T", "timeSlot": "Morning"}, "count": 2}]
```



## MOST POPULAR SPACES BY BOOKING FREQUENCY

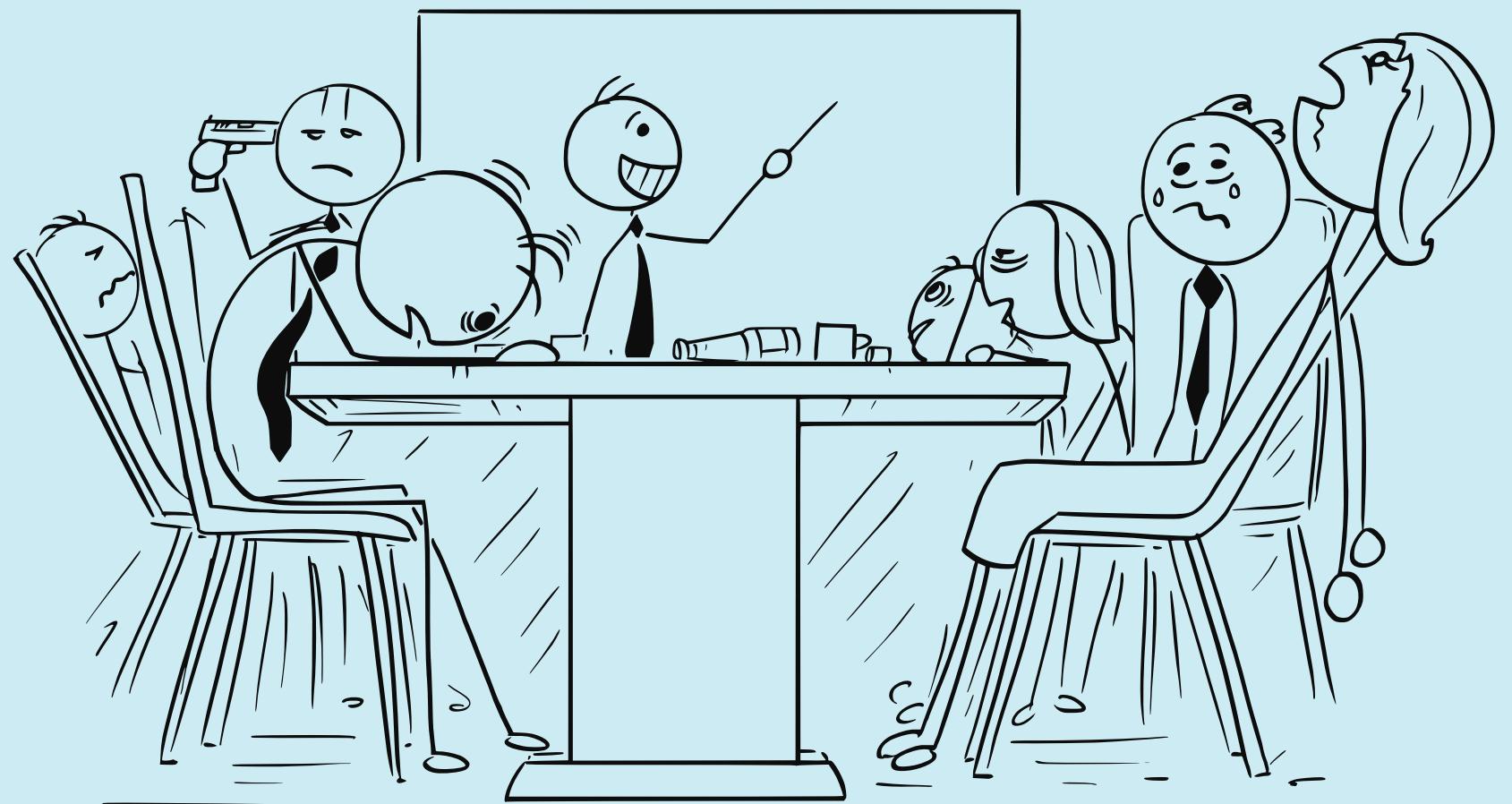
Shows which spaces have been booked the most.

```
> db.booking.aggregate([
  {
    $group: {
      _id: "$space.spaceid",
      spaceName: { $first: "$space.name" },
      bookingCount: { $sum: 1 }
    }
  },
  {
    $sort: { bookingCount: -1 }
  },
  {
    $project: {
      _id: 0,
      spaceId: "$_id",
      spaceName: 1,
      bookingCount: 1
    }
  }
]);
```

```
  spaceName: 'Space S',
  bookingCount: 4,
  spaceId: ObjectId('67bc9ce8a88c21f2dc648c98')
}
{
  spaceName: 'Space A',
  bookingCount: 2,
  spaceId: ObjectId('67bc9e44a88c21f2dc648c9a')
}
{
  spaceName: 'Space R',
  bookingCount: 2,
  spaceId: ObjectId('67bc9ce8a88c21f2dc648c97')
}
```

February 27, 2025

DATASCAPE



THANK  
YOU!

