Student Accommodation Management System

Project Description:

A person's education is very important in their life. When students from different areas join together to pursue their academic goals, finding housing in advance becomes a difficult task. A centralized platform is needed in the current digital era to make finding and booking easier.

The Student Accommodation Management System is a tool for finding on-campus housing at universities; it is usually a user-friendly website. Students can use it to look for openings, request accommodations, make reservations, and process payments, among other important functions. This project promises improved safeguarding of information and a more seamless experience for both administrators and students.

The dorms usually have rooms with two or three beds in them.Students must use the Student Id they gave upon admission to the college in order to register in the system. Input from students comprises creating account, logging in, and looking through the accommodation option that are offered. Administrators, in contrast, are in charge of overseeing and managing the student requests.

Student can register through the portal by providing basic details along with the student id. After successful registration, the student can login and file a request to reserve rooms available. The system will not allow to file a request if student has low wallet balance and give alert to top-up the wallet. Student can add money to their wallet with valid card details. If student has sufficient balance, the request will be filed and wait for admin approval. Students can also add their preferences for roommates according to their gender if needed. Students can see the request details filed by them on their home page.

Admin can login through predefined credentials to enter into the portal. Admin can see all pending requests by the students and rooms available as per semester. Admin can select room as per the room type and gender of the selected student from the drop down and assign to the request. Admin can also reject the request if he don't want to approve. On successful approval, room will be assigned and respected money will be deducted from the student wallet. The request will disappear on successful approval or rejection and student can see the status of the request updated in the portal.

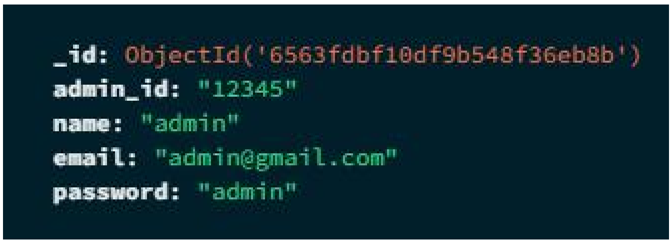
Database Description:

Storing these information in different collections make easy to manipulate and access easy for our project. Collections used to store all the information are admin, building, room, student, student_request, payment.

Administrator details should be stored as he/she can approve/reject the requests coming from the students.

Admin: This collection stores information about administrators.

```
{
"admin_id": ObjectId("admin1ObjectId"),
"name": "Admin User",
"email": "admin@example.com",
"password": "hashed_password"
 }
```

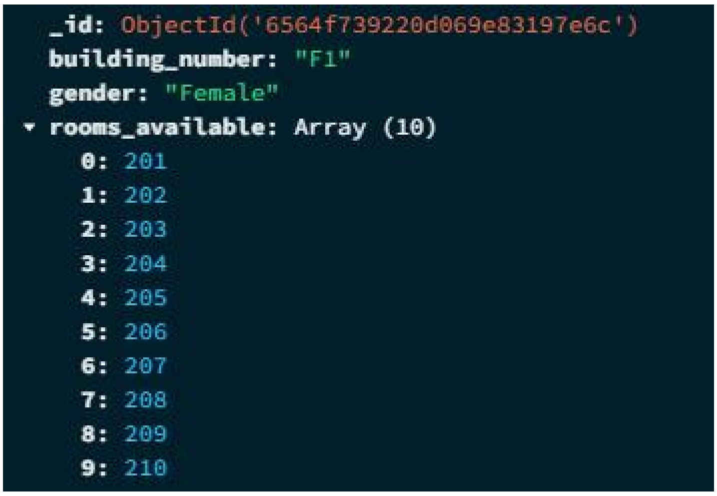


```
_id: ObjectId('6563fdbf10df9b548f36eb8b')
admin_id: "12345"
name: "admin"
email: "admin@gmail.com"
password: "admin"
```

Building data need to be stored along with the number of rooms available which are visible to students to select and make a reservation. Details like gender of the building, building number, list of rooms available etc,. will be stored.

Building: This collection stores information about available rooms.

```
{
"id": ObjectId("building1ObjectId"),
"building_number": "M1",
"gender": "Male",
"rooms_available": [ 101,102,103]
}
```

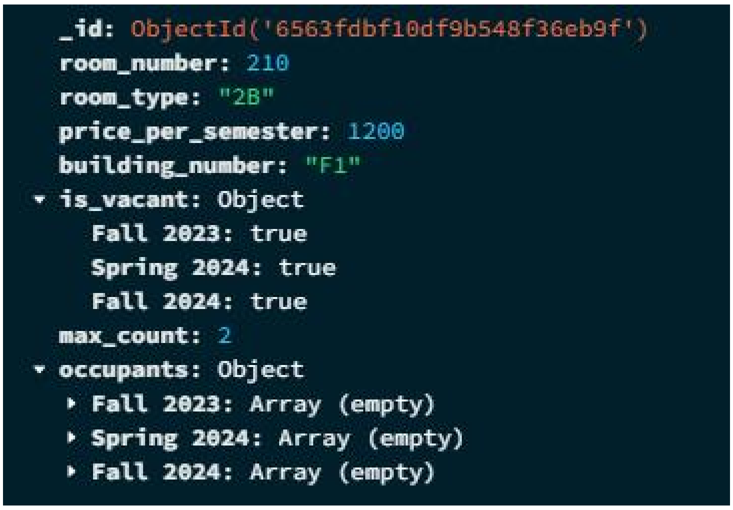


```
  _id: ObjectId('6564f739220d069e83197e6c')
  building_number: "F1"
  gender: "Female"
▾ rooms_available: Array (10)
    0: 201
    1: 202
    2: 203
    3: 204
    4: 205
    5: 206
    6: 207
    7: 208
    8: 209
    9: 210
```

Rooms data need to be stored which are visible to students to select and make a reservation. Room details like room type, building, occupants etc,. need to be stored. Maximum number of the occupants will be decided by the room type. Is_vacant and occupants needs to be stored for multiple semesters as we have option to select as per semester.

Rooms: This collection stores information about available rooms.

```
{
"id": ObjectId("room1ObjectId"),
"room_number": "101",
"room_type": "2B",
"building_number": "M1",
"price_per_semester": 500,
"is_vacant":{
   "Fall 2023": true,
   "Spring 2024": true,
   "Fall 2024": true
  } ,
"occupants": {
    "Fall 2023": [],
    "Spring 2024": [],
    "Fall 2024": []
  }
}
```

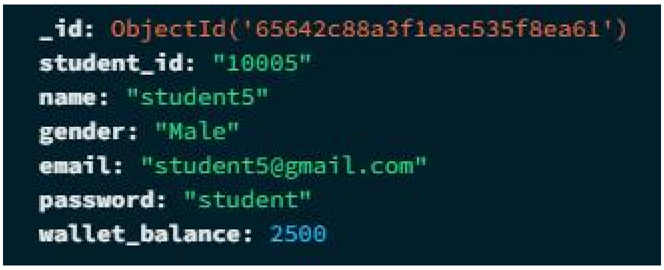


```
    _id: ObjectId('6563fdbf10df9b548f36eb9f')
    room_number: 210
    room_type: "2B"
    price_per_semester: 1200
    building_number: "F1"
  ▾ is_vacant: Object
      Fall 2023: true
      Spring 2024: true
      Fall 2024: true
    max_count: 2
  ▾ occupants: Object
    ▸ Fall 2023: Array (empty)
    ▸ Spring 2024: Array (empty)
    ▸ Fall 2024: Array (empty)
```

Students can register by providing their personal information. They can also search and request for reservation according to their preferences among the available rooms.Student data need to be stored in the collections. Students should have the sufficient wallet balance for a successful reservation. The amount will be deducted from the student wallet after reservation.

Students: This collection stores information about registered students.

```
{
"student_id": ObjectId("student1ObjectId"),
"name": "John Doe",
"gender": “Male”,
"email": "johndoe@example.com",
"password": "hashed_password",
 "wallet_balance": 500.00
}
```

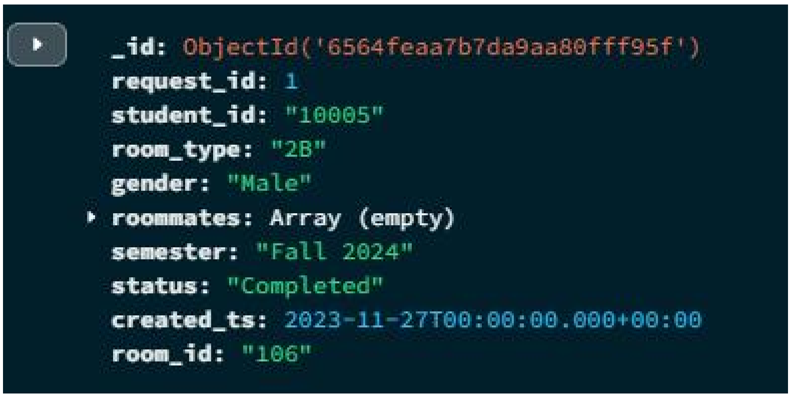


```
  _id: ObjectId('65642c88a3f1eac535f8ea61')
  student_id: "10005"
  name: "student5"
  gender: "Male"
  email: "student5@gmail.com"
  password: "student"
  wallet_balance: 2500
```

Student can select room as their needs and make a request to admin for reservation. These requests data need to be stored to get approved by the admin. Along with that student can add roommates needed in the requests. Only if both students requests each other as roommates needed, the admin will assign the room manually.

Requests: This collection stores student requests for rooms.

```
{
"request_id": ObjectId("request1ObjectId"),
"student_id": ObjectId("student1ObjectId"),
"room_id": 104,
"room_type": "2B",
“gender”: “Male”,
"roommates": [ "ObjectId("student2ObjectId")","ObjectId("student3ObjectId")”]
"semester": "Fall 2023",
"created_ts": ISODate("2023-10-15T00:00:00Z"),
"status": "Pending"
}
```

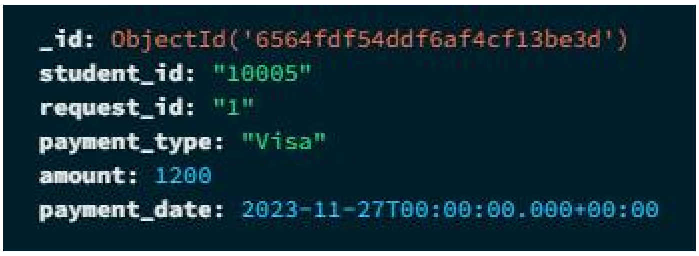


```
_id: ObjectId('6564feaa7b7da9aa80fff95f')
request_id: 1
student_id: "10005"
room_type: "2B"
gender: "Male"
▸ roommates: Array (empty)
semester: "Fall 2024"
status: "Completed"
created_ts: 2023-11-27T00:00:00.000+00:00
room_id: "106"
```

If Student is successfully registered and has sufficient funds in the wallet need to reserve the room as per their needs, request can be placed and the amount will be deducted from his wallet.

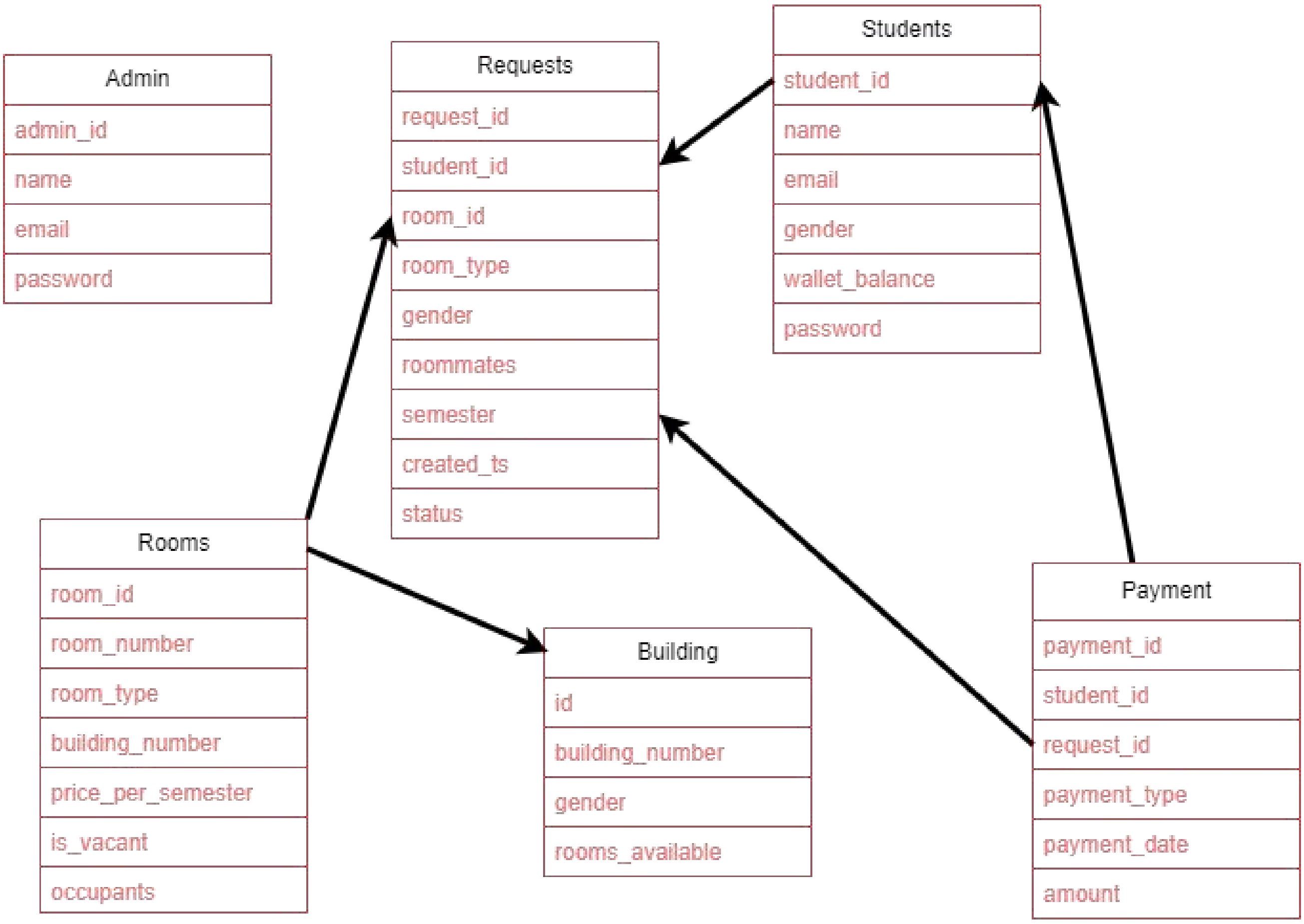
Payment: This collection stores the details regarding the payments made by the students.

```
{
"payment_id": ObjectId("transaction1ObjectId"),
"student_id": 100005,
“request_id”: 1
"payment_type": "Visa"
"payment_date": ISODate("2023-10-10T09:00:00Z"),
"amount": 200,
}
```



```
_id: ObjectId('6564fdf54ddf6af4cf13be3d')
student_id: "10005"
request_id: "1"
payment_type: "Visa"
amount: 1200
payment_date: 2023-11-27T00:00:00.000+00:00
```

Database Model:



Functional Requirements:

Admin:

- Admin can login with predefined credentials
- Admin can view student room requests.
- Admin can view rooms and vacancy status of room as per semester respectively.
- Admin can approve and assign the room for student requests which are in progress.
- Admin can reject requests if admin don’t want to approve.

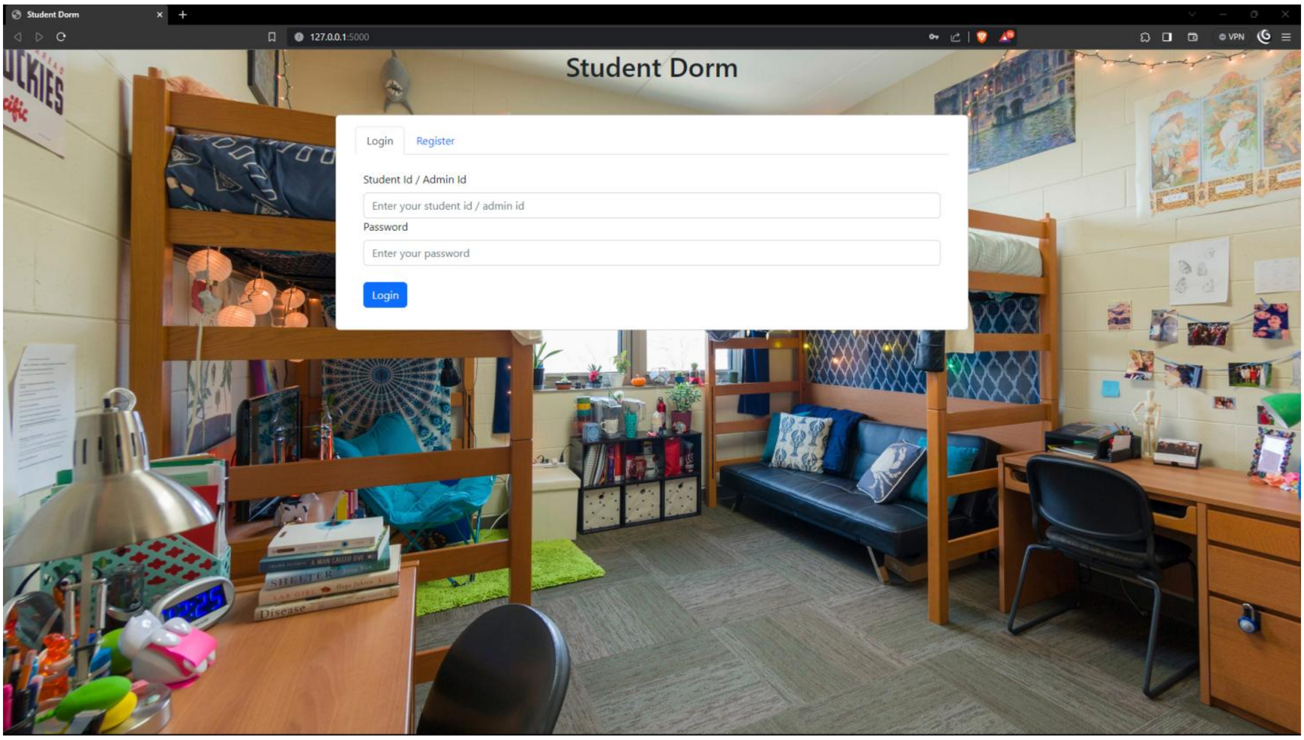
Student:

- Student can register by providing personal information
- Student can login through the student id and password.
- Student can file a request with all preferences if he has sufficient wallet balance
- Student can add money to their wallet if there is insufficient balance.
- Students can view the requests raised by them
- Students can see the status of the requests

Page alerts:

- Get alerted if admin/ student try to login with invalid credentials
- Alert to register if student id don’t exists
- Alert after successful registration of student
- Alert to top-up wallet if student try to request with low wallet balance as per requirement

Common Login Page:



Student Dorm

Login | Register

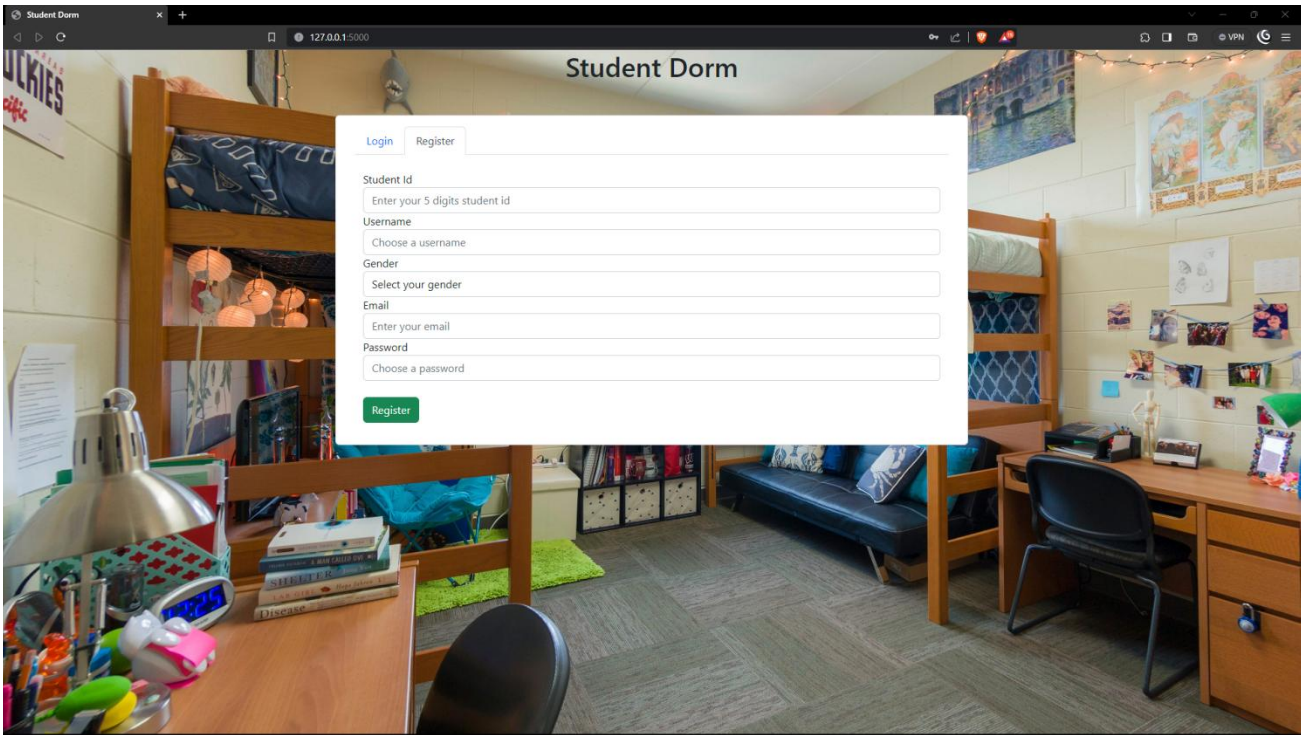
Student Id / Admin Id

Enter your student id / admin id

Password

Enter your password

Student registration page:



Student Dorm

Login | Register

Student Id

Enter your 5 digits student id

Username

Choose a username

Gender

Select your gender

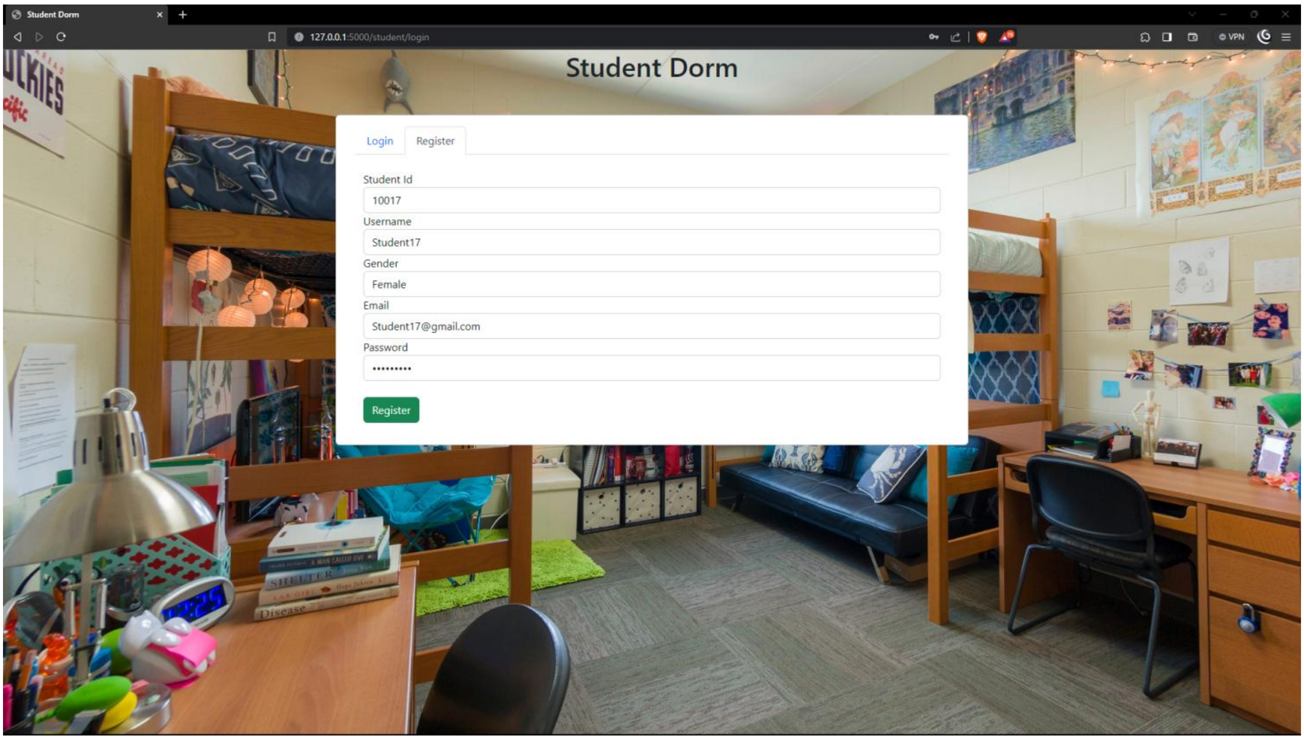
Email

Enter your email

Password

Choose a password

Student registration form with valid details:



Student Dorm

Student Id: 10017

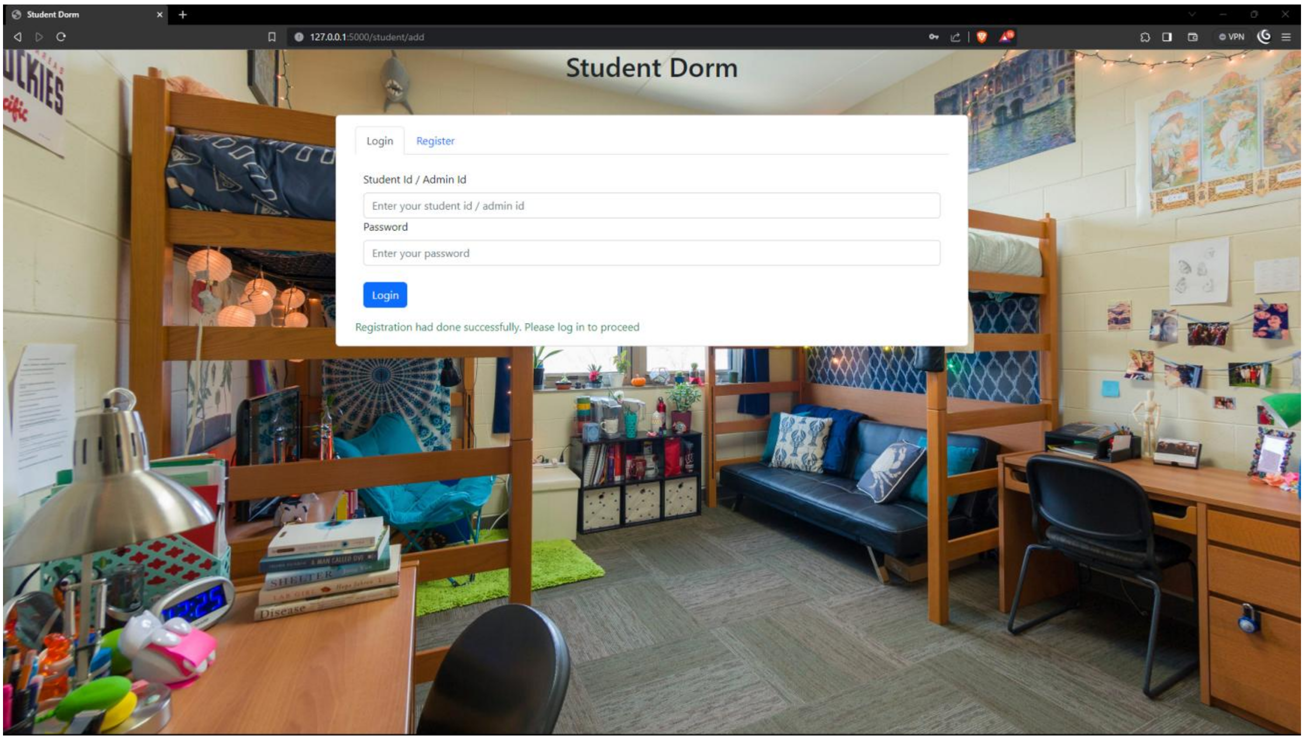
Username: Student17

Gender: Female

Email: Student17@gmail.com

Password: •••••••••

Student login page with registration success message:



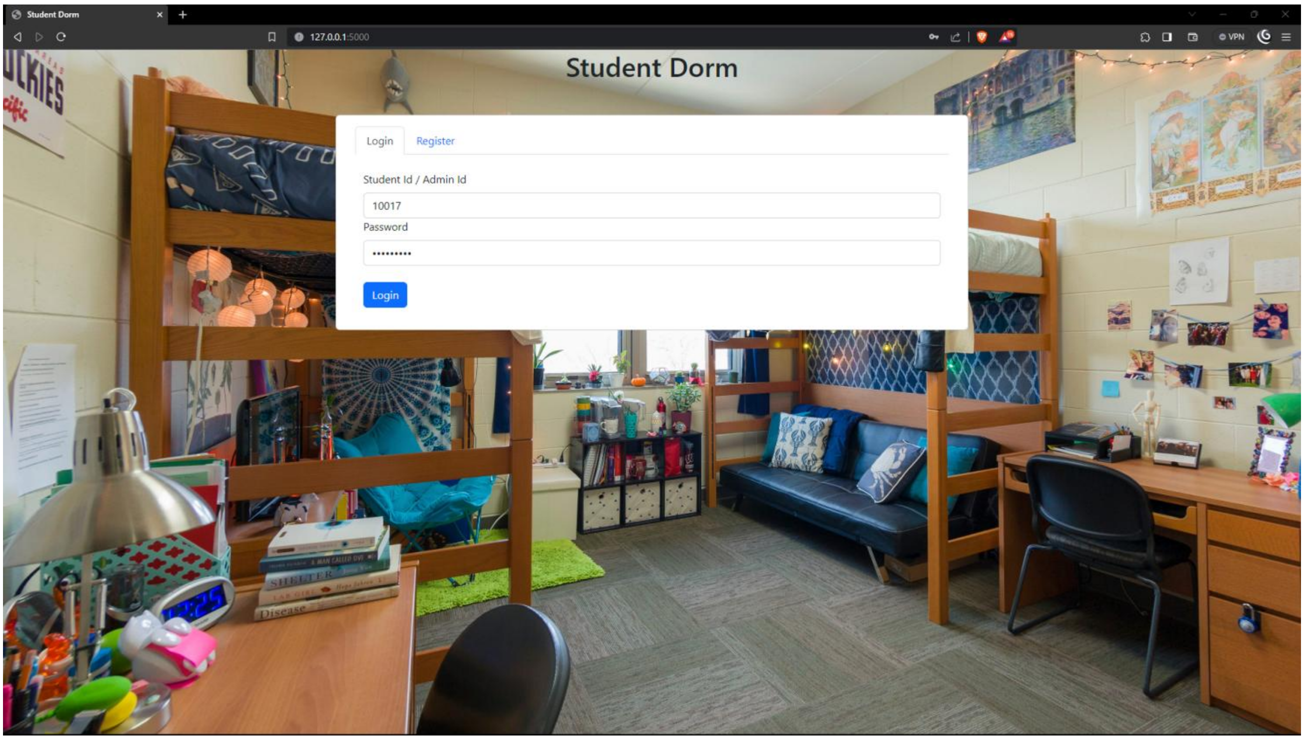
Student Dorm

Student Id / Admin Id: Enter your student id / admin id

Password: Enter your password

Registration had done successfully. Please log in to proceed

Student trying to login with credentials.

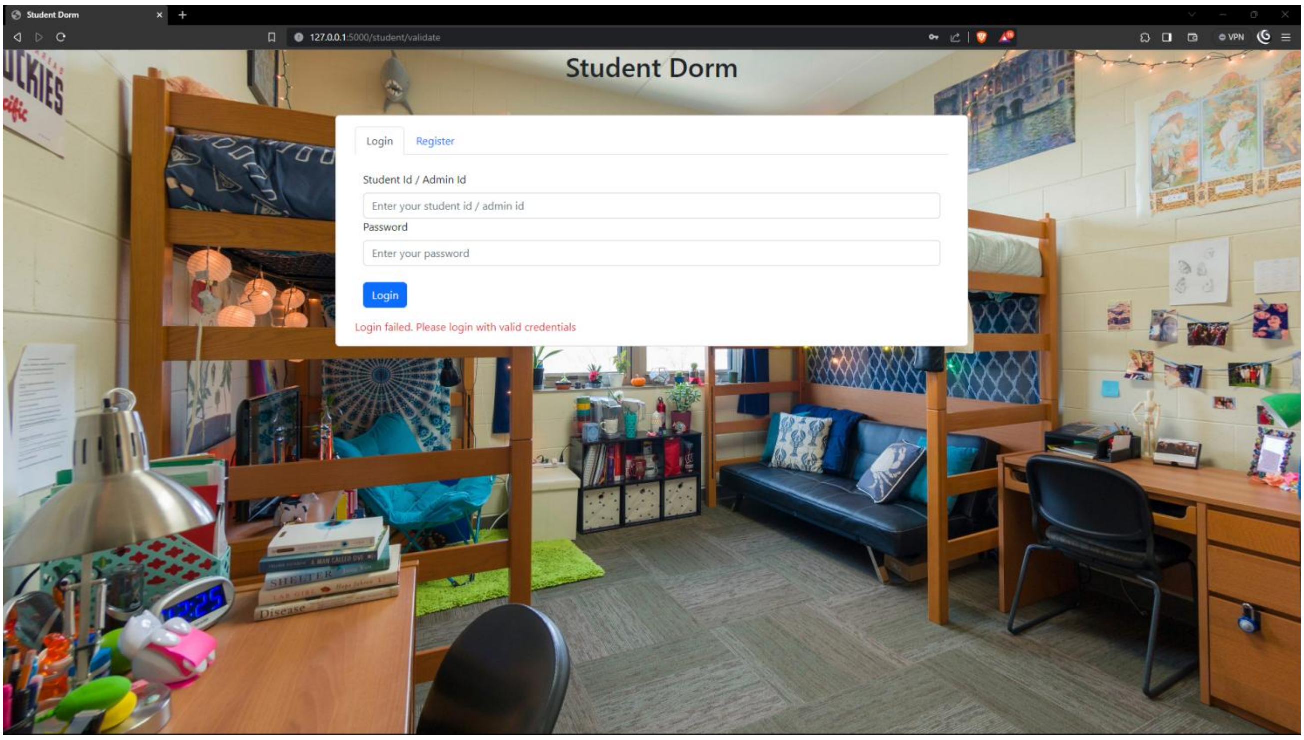


Student Dorm

Student Id / Admin Id
10017

Password
•••••••••

Student login page with invalid credentials error message:



Student Dorm

Student Id / Admin Id
Enter your student id / admin id

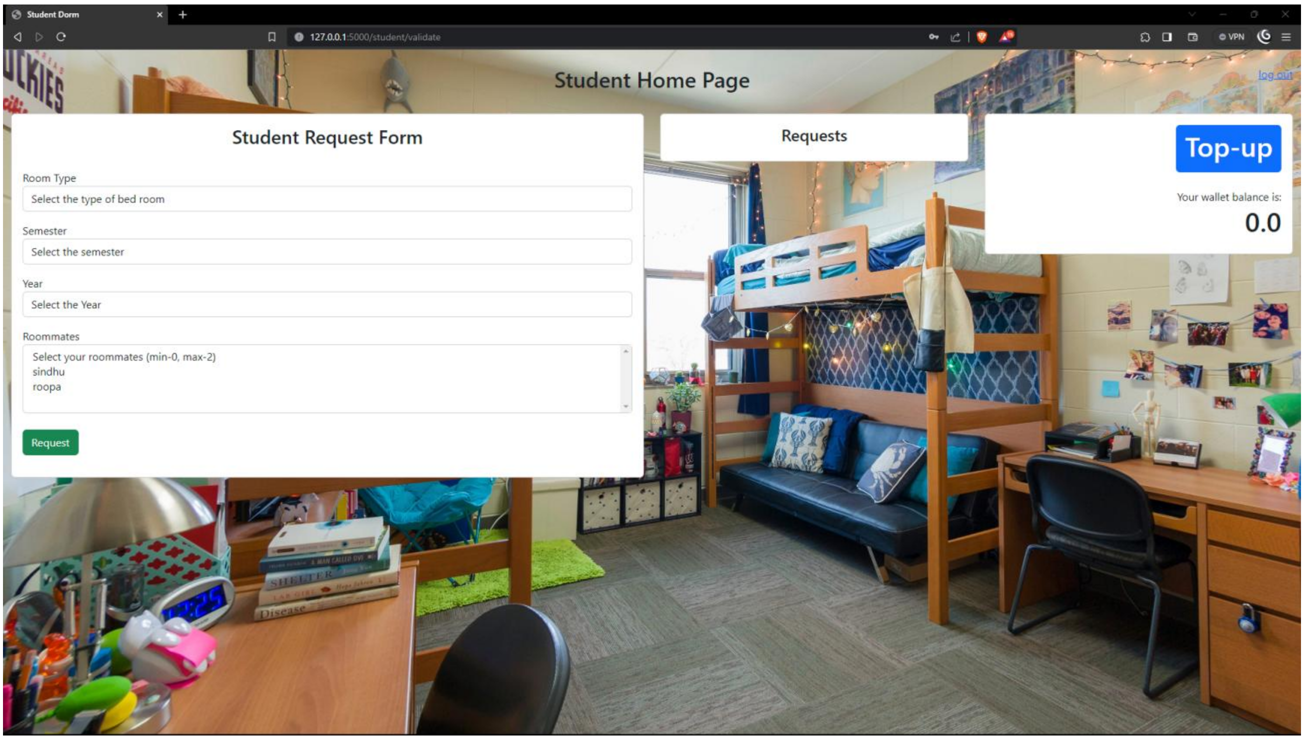
Password
Enter your password

Login failed. Please login with valid credentials

Student Home Page:

- Student Registration Form
- Student Request Details
- Student Wallet Details

Student home page after registration with no requests and no wallet balance:



Student Home Page

Student Request Form

Room Type
Select the type of bed room

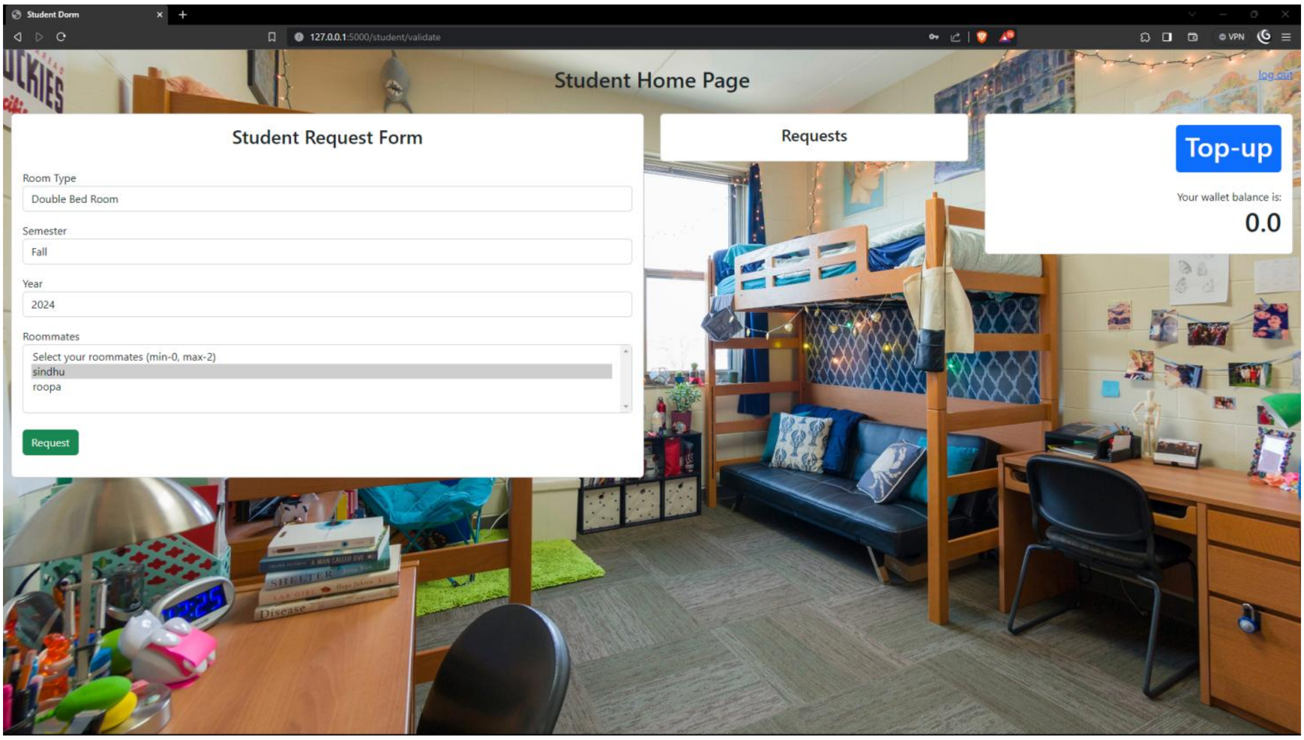
Semester
Select the semester

Year
Select the Year

Roommates
Select your roommates (min-0, max-2)
sindhu
roopa

Your wallet balance is:
0.0

Student trying to request with requirements:



Student Home Page

Student Request Form

Room Type
Double Bed Room

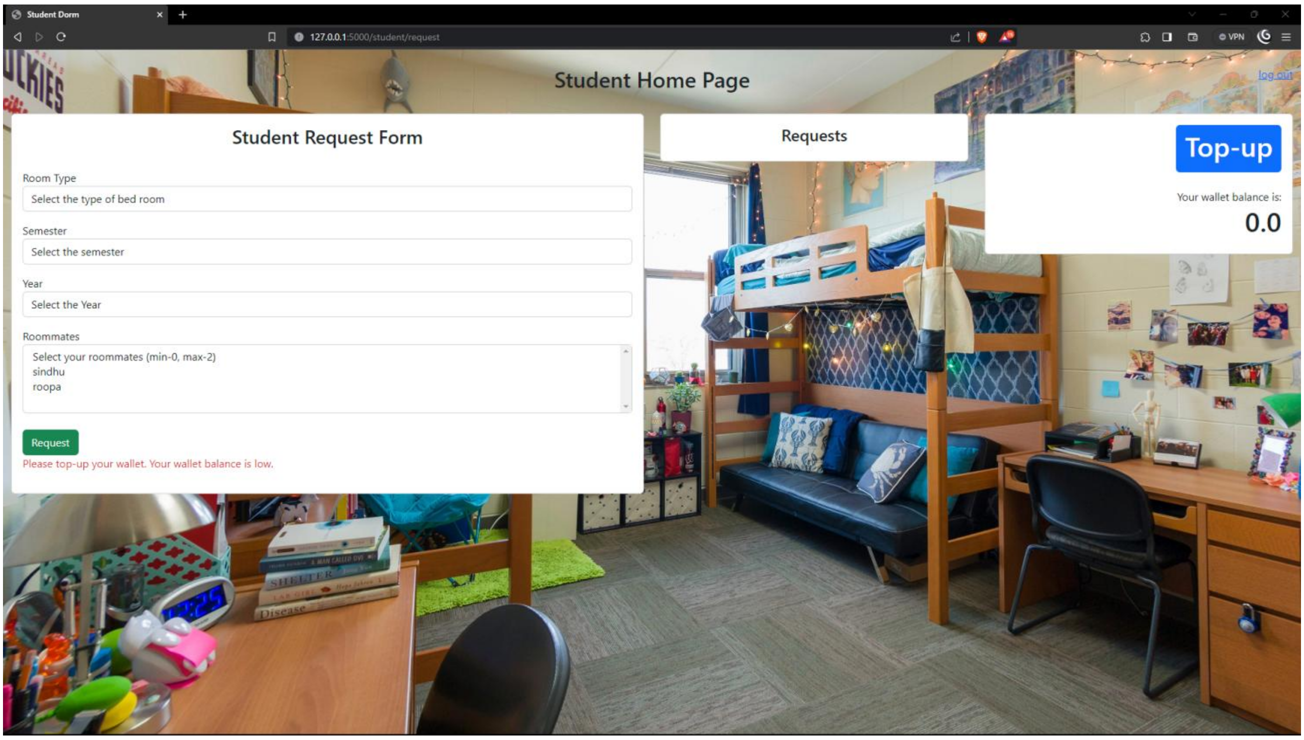
Semester
Fall

Year
2024

Roommates
Select your roommates (min-0, max-2)
sindhu
roopa

Your wallet balance is:
0.0

Student home page with alert message to top-up sufficient money to wallet to file a request:



Student Home Page

Student Request Form

Room Type

Select the type of bed room

Semester

Select the semester

Year

Select the Year

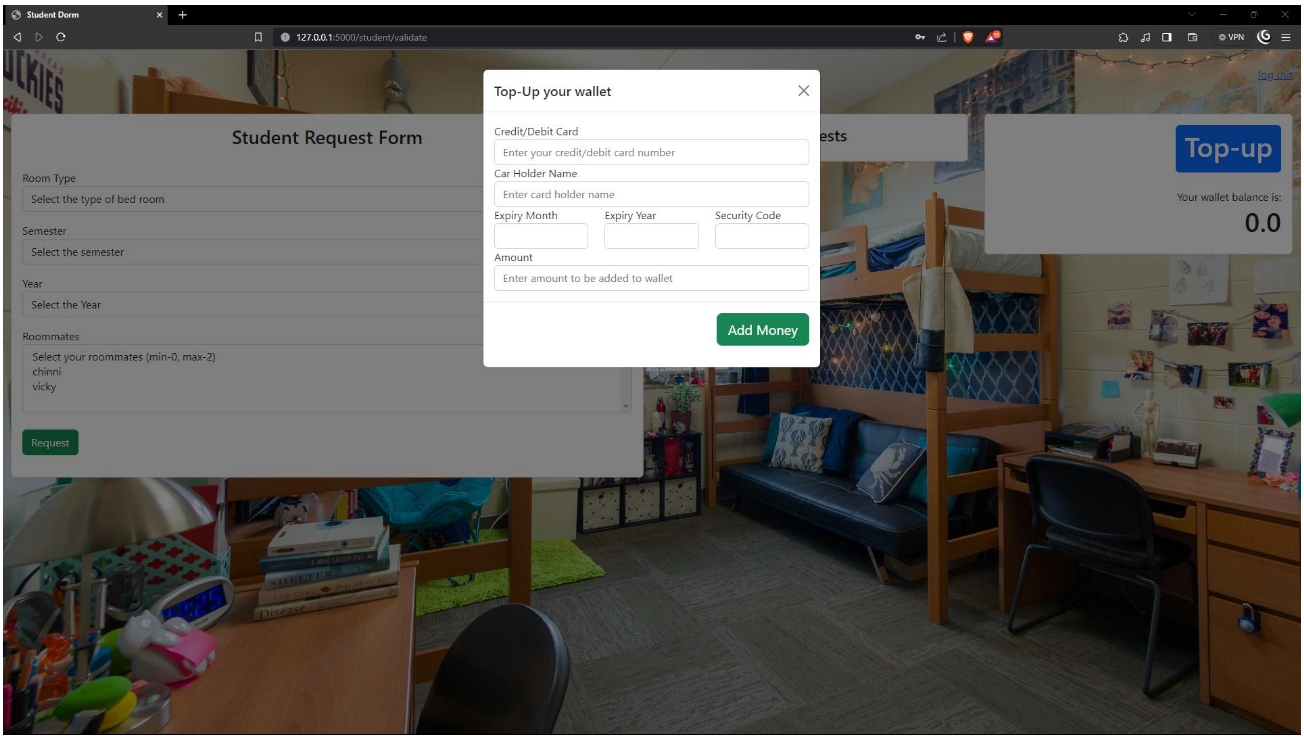
Roommates

Select your roommates (min-0, max-2)
sindhu
roopa

Please top-up your wallet. Your wallet balance is low.

Your wallet balance is:
0.0

Student wallet top-up window:



Top-Up your wallet

Credit/Debit Card

Enter your credit/debit card number

Car Holder Name

Enter card holder name

Expiry Month

Expiry Year

Security Code

Amount

Enter amount to be added to wallet

Student Request Form

Room Type

Select the type of bed room

Semester

Select the semester

Year

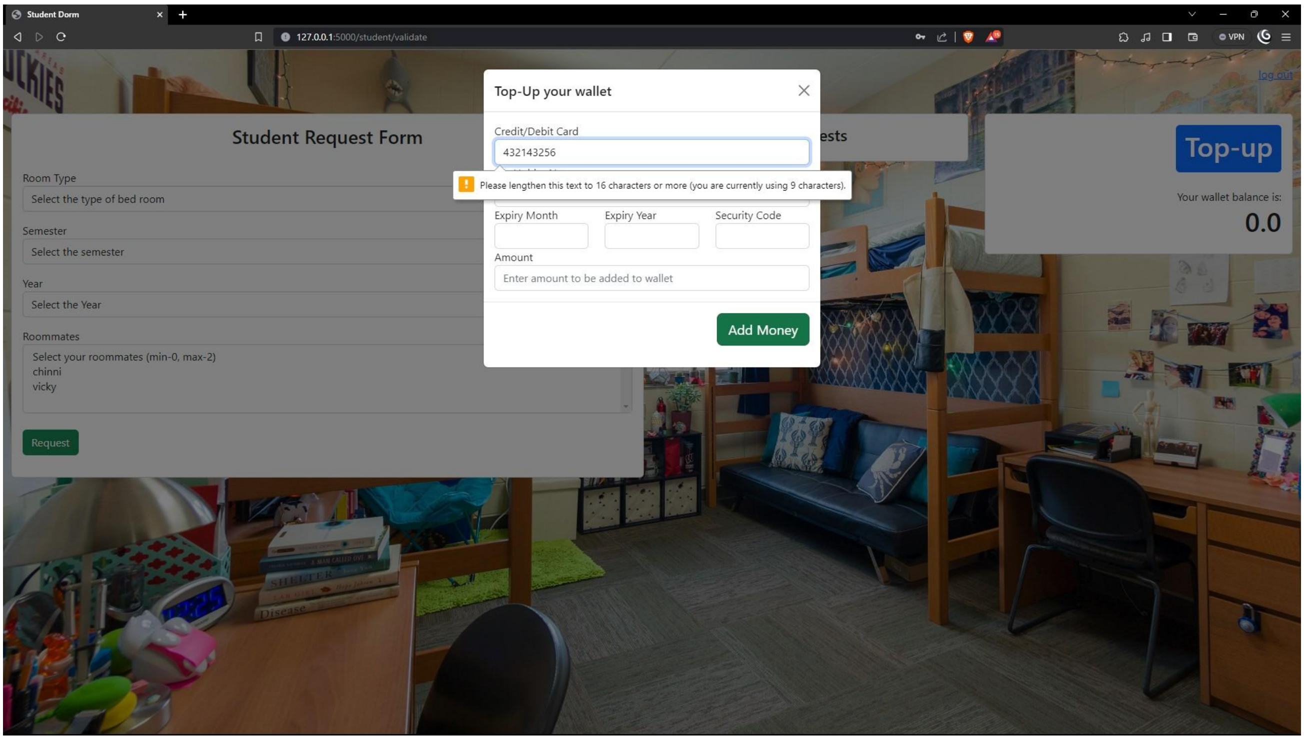
Select the Year

Roommates

Select your roommates (min-0, max-2)
chinni
vicky

Your wallet balance is:
0.0

Top-Up window with alert message to enter valid credit card details



Student Dorm

127.0.0.1:5000/student/validate

Top-Up your wallet

Credit/Debit Card

432143256

Please lengthen this text to 16 characters or more (you are currently using 9 characters).

Expiry Month

Expiry Year

Security Code

Amount

Enter amount to be added to wallet

Add Money

Student Request Form

Room Type

Select the type of bed room

Semester

Select the semester

Year

Select the Year

Roommates

Select your roommates (min-0, max-2)
chinni
vicky

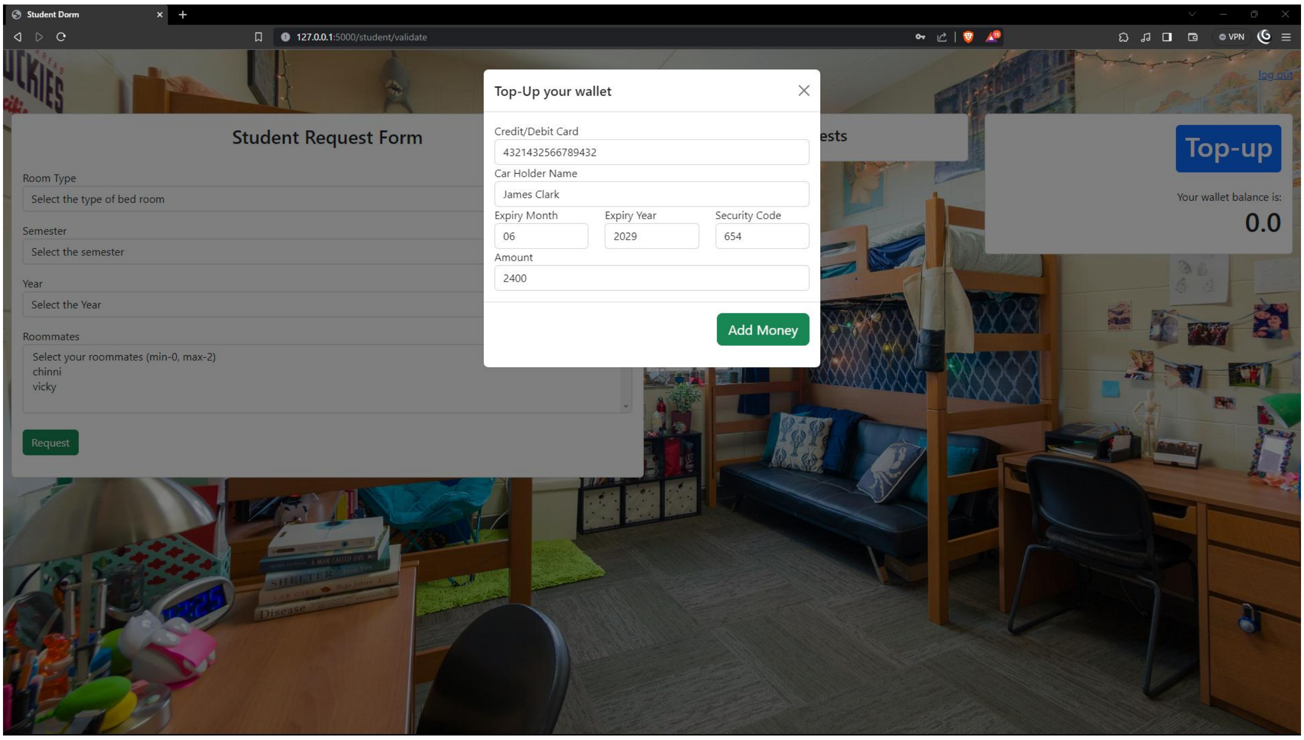
Request

Top-up

Your wallet balance is:

0.0

Top-Up window with valid card details



Student Dorm

127.0.0.1:5000/student/validate

Top-Up your wallet

Credit/Debit Card

4321432566789432

Car Holder Name

James Clark

Expiry Month	Expiry Year	Security Code
06	2029	654

Amount

2400

Add Money

Student Request Form

Room Type

Select the type of bed room

Semester

Select the semester

Year

Select the Year

Roommates

Select your roommates (min-0, max-2)
chinni
vicky

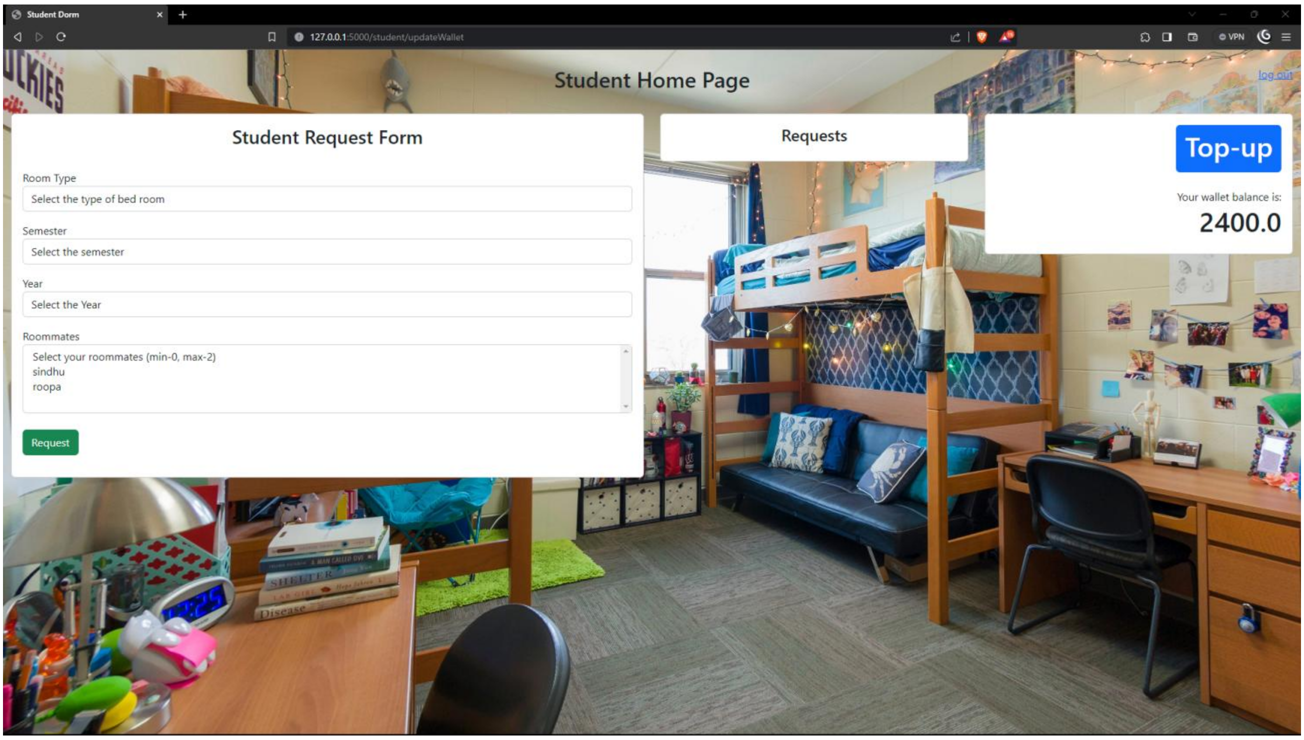
Request

Top-up

Your wallet balance is:

0.0

Student home page after top-up with balance updated



Student Home Page

Student Request Form

Room Type
Select the type of bed room

Semester
Select the semester

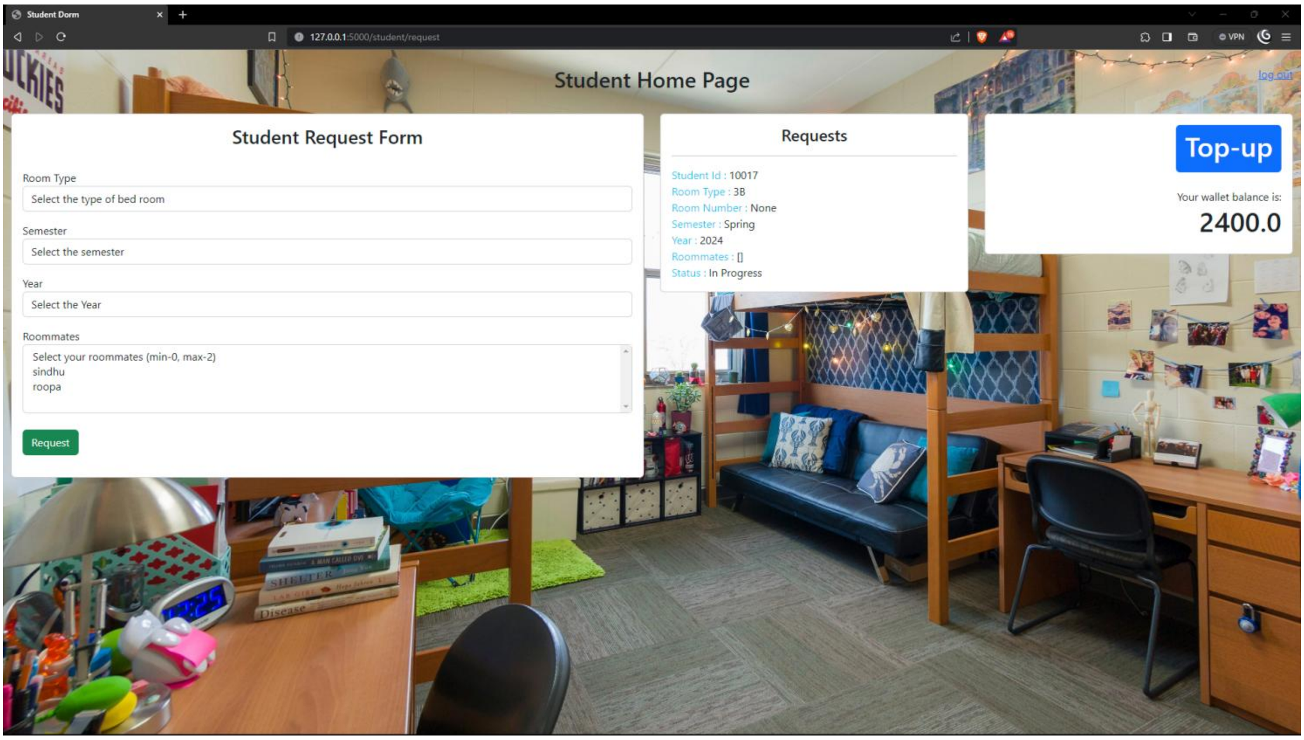
Year
Select the Year

Roommates
Select your roommates (min-0, max-2)
sindhu
roopa

Requests

Your wallet balance is:
2400.0

Student home page after request filed as student has sufficient wallet balance as per requirement



Student Home Page

Student Request Form

Room Type
Select the type of bed room

Semester
Select the semester

Year
Select the Year

Roommates
Select your roommates (min-0, max-2)
sindhu
roopa

Requests

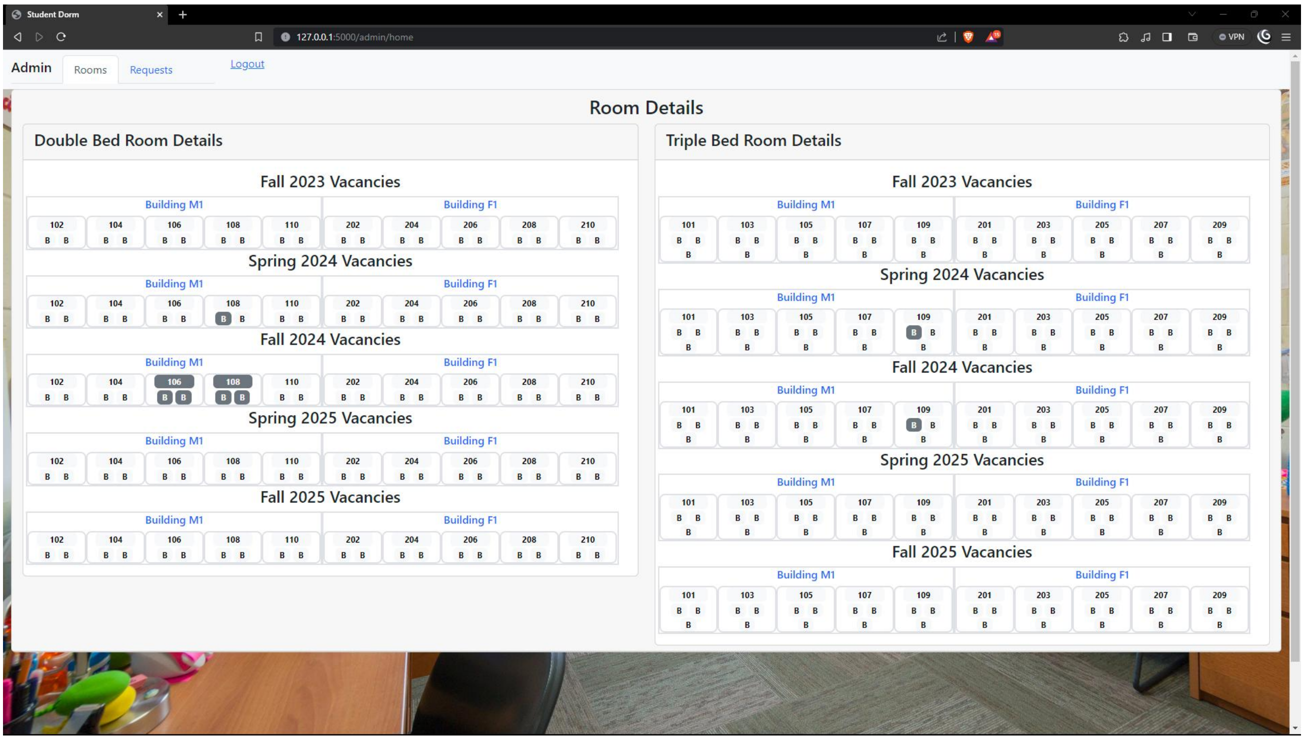
Student Id : 10017
Room Type : 3B
Room Number : None
Semester : Spring
Year : 2024
Roommates : []
Status : In Progress

Your wallet balance is:
2400.0

Admin Home Page:

- Student request details
- Room vacancy details as per semester

Admin Rooms page with all room details separated with semester



Room Details

Double Bed Room Details

Fall 2023 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Spring 2024 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Fall 2024 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Spring 2025 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Fall 2025 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Triple Bed Room Details

Fall 2023 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Spring 2024 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Fall 2024 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

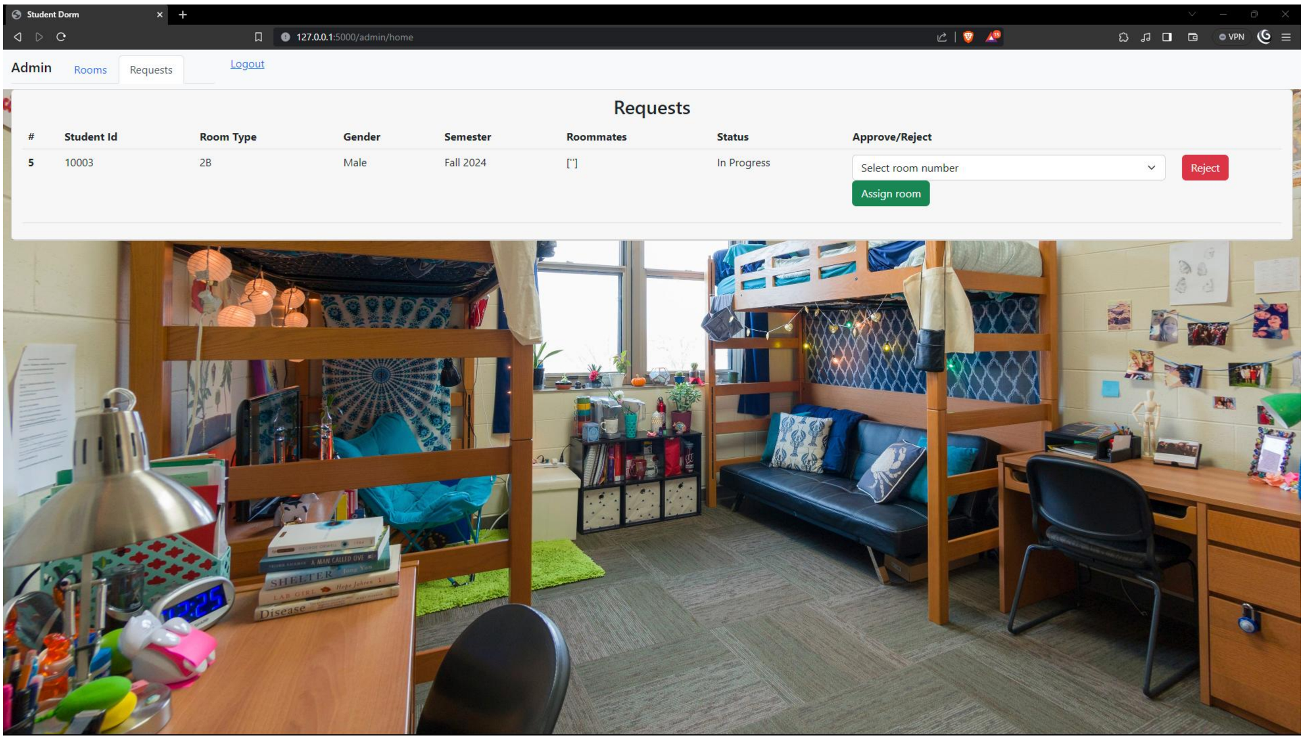
Spring 2025 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Fall 2025 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

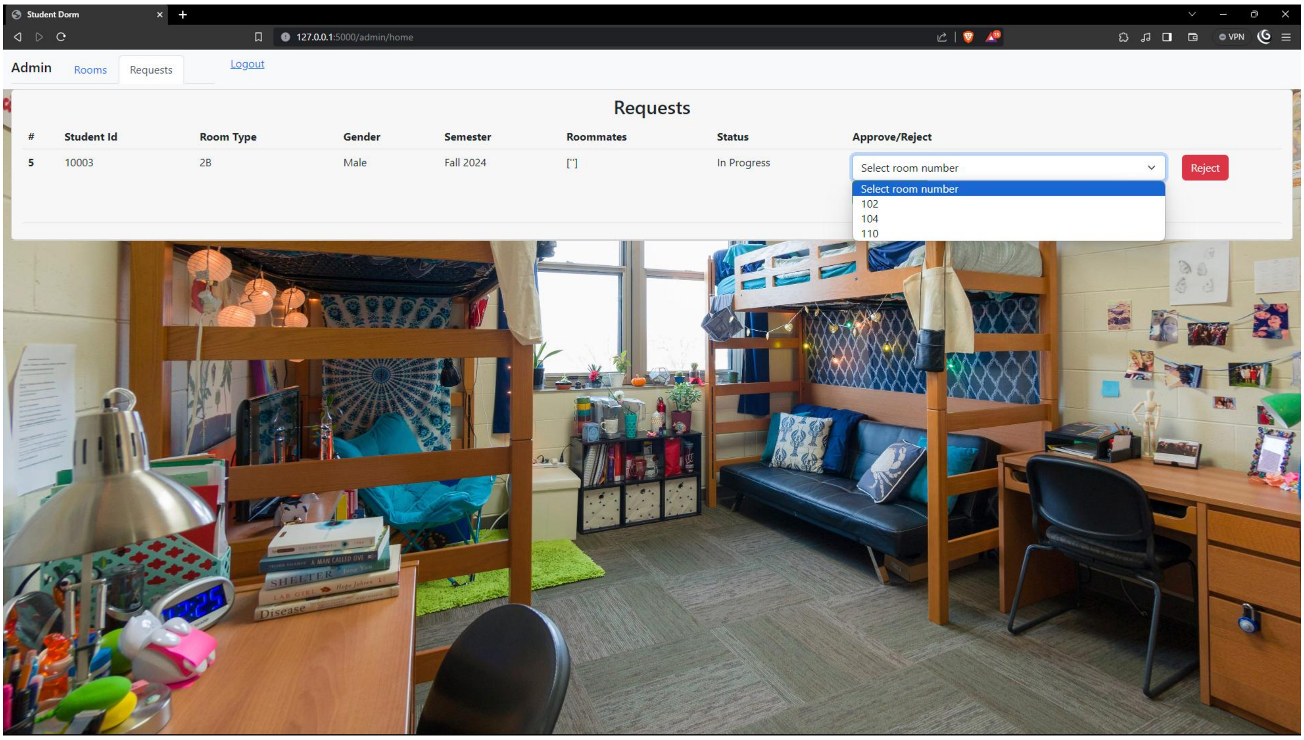
Admin Requests page with pending requests details from students



Requests

#	Student Id	Room Type	Gender	Semester	Roommates	Status	Approve/Reject	
5	10003	2B	Male	Fall 2024	['']	In Progress	Select room number Assign room	Reject

Admin home page with drop down showing available rooms for specific semester and room type

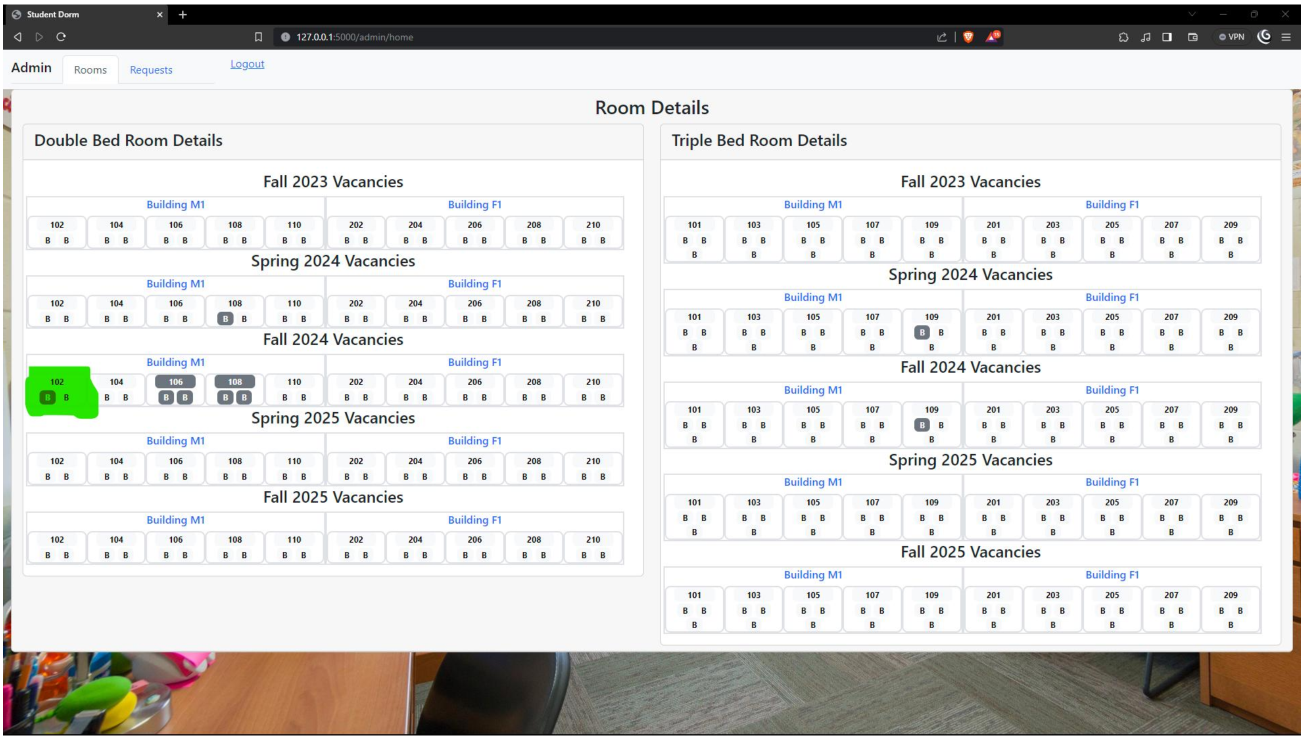


Requests

#	Student Id	Room Type	Gender	Semester	Roommates	Status	Approve/Reject
5	10003	2B	Male	Fall 2024	['']	In Progress	Select room number Select room number 102 104 110

Admin home page with request disappeared and room birth highlighted (booked Room:102 and semester Fall 2024) in grey .

Note: Highlighted in green for your reference



Room Details

Double Bed Room Details

Fall 2023 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Spring 2024 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Fall 2024 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Spring 2025 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Fall 2025 Vacancies

Building M1					Building F1				
102	104	106	108	110	202	204	206	208	210
B B	B B	B B	B B	B B	B B	B B	B B	B B	B B

Triple Bed Room Details

Fall 2023 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Spring 2024 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Fall 2024 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Spring 2025 Vacancies

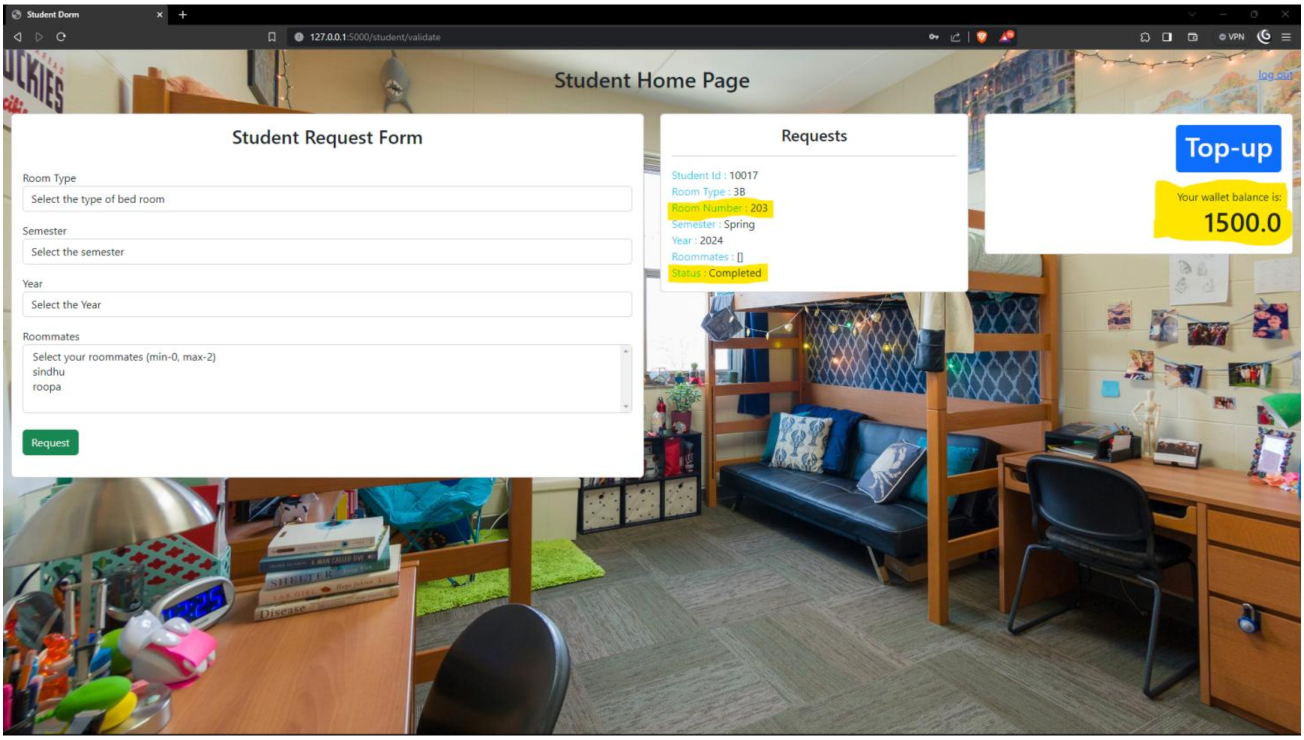
Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Fall 2025 Vacancies

Building M1					Building F1				
101	103	105	107	109	201	203	205	207	209
B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B	B B B

Student home page with the request details (status, room number) updated and wallet balance deducted.

Note: Highlighted in yellow for your reference



Student Home Page

Student Request Form

Room Type

Select the type of bed room

Semester

Select the semester

Year

Select the Year

Roommates

Select your roommates (min-0, max-2)
sindhu
roopa

Requests

Student Id : 10017
Room Type : 3B
Room Number : 203
Semester : Spring
Year : 2024
Roommates : []
Status : Completed

Your wallet balance is:
1500.0