

Computer Network 4074 Project

Introduction

In this project we implemented an http which acts as a room reservation using Python programming language. We have created 3 server for process, roomserver:8087, activityserver:8089, rezervationserver:8088

Project Members

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Implementation of the servers

All operations are indicated on the flowcharts in a more clear and understandable way.

a. Implementation of the Room Server

1. /add?name=roomname

- Get the parameter value which is indicated 'name'
- Check if it is in the database
- If it is in, return 403 Forbidden and message: Room already exists in database
- Otherwise, add the database, return 200 OK and message: Room with name { } is successfully added

2. /remove?name=roomname

- Get the parameter value which is indicated 'name'
- Check if it is in the database
- If it is not in, return 403 Forbidden and message: Room does not exist in database
- Otherwise, remove the database, return 200 OK and message: Room with name { } is successfully removed

3. /reserve?name=roomname&day=x&hour=y&duration=z

- Check if parameters exist
- If parameters do not exist, return 400 Bad Request and message: Invalid parameters
- If parameters exist, check the room if it is in database

- If it is in, make reservations operations
 - o Check if the day value is between 1 and 7, otherwise return 400 Bad Request
 - o Check if the hour value is between 9 and 17, otherwise return 400 Bad Request
 - o Check if the hour+duration value is greater than 17, otherwise return 400 Bad Request
 - o Check if there are any previous reservations in this day and time range.
- If all checks are ok, make the reservation and return 200 OK messages, otherwise, 400 Bad Request messages if there are problems with the parameters, 403 Forbidden messages if a reservation has been made before.

4. /checkavailability?name=roomname&day=x

- First, check that the name and day parameters are not gutted in the url. If not, return 400 Bad Request.
- If there are parameters, check the value of the day parameter, it should be between 1 and 7. If not, return 400 Bad Request.
- If there are parameters and they are valid, check whether there is such a room, if there is no room with that name, return 404 Not Found.
- If there is a room, check the hours between 9-17 and subtract the appropriate hours and return 200 OK.

b. Implementation of the Activity Server

1. /add?name=activityname

- Get the parameter value which is indicated 'name'
- Check if it is in the database
- If it exist it returns 403 Forbidden message: Activity already exists in database!
- Otherwise, add the database, return 200 OK and message: Activity Added, name { }, successfully added

2. /remove?name=activityname

- Get the parameter value which is indicated 'name'
- Check if it is in the database
- if it exists it returns 200 OK message: Activity Removed!', Activity with name {name} is successfully removed.
- Otherwise if it doesn't exist, it returns 403 Forbidden messages: Error', 'Activity does not exist!

3. /check?name=activityname

- Get the parameter value which is indicated 'name'
- Check if it is in the database

- If it exists it return 200 OK message: Activity Exists!', Activity with name {name} exists.
- Otherwise, it returns 403 Forbidden messages: Error','Activity does not exist!

c. Implementation of the Reservation Server

1. `/listavailability?room=roomname`
2. `/listavailability?room=roomname&day=x`

- There are 2 different usage `/listavailability` methods. It contains a day parameter in one of them. If there is a day parameter, the day is controlled as day+1 with the for loop, if there is no day parameter, all days between 1-7 and 1-7 are controlled.
- With the established loop, the room sends a request to the server for every day and splits the result from there and combines it.
- When it exits the loop, it returns with a 200 OK message. If there is a message other than 200, the direct message is returned as a response

To connection room server

```
request = f"GET /checkavailability?name={room}&day={day} HTTP/1.1\r\n"
room_socket.sendall(request.encode())
room_socket.sendall(f"Host: localhost:{room_port}\r\n".encode())
room_socket.sendall(b"\r\n")
room_response = room_socket.recv(1024).decode()
room_socket.close()
```

3. `/reserve?room=roomname&activity=activityname&day=x&hour=y&duration=z`

- Get the parameter value which is indicated 'reserve'
- it checks for room, day, hour and activity:
 1. if any of them doesn't exist it return 400 Bad Request
 2. activity server connection is created using a socket request to Check, if the activity exists or not. If there is a status code other than 200, the direct message is returned to the user.
 4. If it has activity, it is communicating with the room server. If a 200 OK message is received from here, the reservation process is made and returns 200 OK message. If a different message is received from here (parameters may be invalid), it breaks the incoming message and returns to the user as a new message.

To connection activity server

```

# istek gönder
request = f"GET /check?name={activity} HTTP/1.1\r\n"
activity_socket.sendall(request.encode())
activity_socket.sendall(f"Host: localhost:{activity_port}\r\n".encode())
activity_socket.sendall(b"\r\n")

activity_response = activity_socket.recv(1024).decode()

activity_socket.close()

```

To connection room server

```

room_socket.connect((room_host, room_port))
# istek gönder
request = f"GET /reserve?name={room}&day={day}&hour={hour}&duration={duration} HTTP/1.1\r\n"
room_socket.sendall(request.encode())
room_socket.sendall(f"Host: localhost:8089\r\n".encode())
room_socket.sendall(b"\r\n")
# cevap al
room_response = room_socket.recv(1024).decode()
# bağlantıyı kapat
room_socket.close()

```

4. /display?id=reservation_id

- Get the parameter value which is indicated 'display'
 - Checks for id parameter if there isn't in the query string it returns 400 Bad request.
 - The id from the reservations is searched, if there is an incoming id, the reservation details are returned with a 200 OK message, if there is no reservation related to that id, 404 Not Found is returned.
- If any other request made using HTTP method other than GET or POST, than it returns 405 Method not allowed message.

Outputs

Activity Add

GET http://localhost:8088/r GET room_server_remove GET activity_add + ... No Environment

Computer Network / activity_add Save ...

GET http://localhost:8087/add?name=activitynameTest Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	activitynameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results Status: 200 OK Time: 5 ms Size: 279 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4 | <title>Activity Added!</title>
5 </head>
6
7 <body>
8 | <p>Activity with name activitynameTest is successfully added.</p>
9 </body>
10
11 </html>
```

Activity Remove

GET http://localhost:8088 GET room_server_remove GET activity_add POST check_activity GET remove_activity + ... No Environment

Computer Network / remove_activity Save ...

GET http://localhost:8087/remove?name=activitynameTest Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	activitynameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results Status: 200 OK Time: 3 ms Size: 283 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4 | <title>Activity Removed!</title>
5 </head>
6
7 <body>
8 | <p>Activity with name activitynameTest is successfully removed.</p>
9 </body>
10
11 </html>
```

Activity Remove – repeat (already removed)

GET http://localhost:8088 | GET room_server_remove | GET activity_add | POST check_activity | GET remove_activity | + ... No Environment

Computer Network / **remove_activity** Save ...

GET http://localhost:8087/remove?name=activitynameTest Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	activitynameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results Status: 403 Forbidden Time: 3 ms Size: 241 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4 | <title>Error</title>
5 </head>
6
7 <body>
8 | <p>Activity does not exist!</p>
9 </body>
10
11 </html>
```

Activity Check (Post method)

GET http://localhost:8088/r | GET room_server_remove | GET activity_add | POST check_activity | + ... No Environment

Computer Network / **check_activity** Save ...

POST http://localhost:8087/check?name=activitynameTest Send

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	activitynameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results Status: 200 OK Time: 3 ms Size: 265 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4 | <title>Activity Exists!</title>
5 </head>
6
7 <body>
8 | <p>Activity with name activitynameTest exists.</p>
9 </body>
10
11 </html>
```

Room Add

GET http://localhost:8088/r GET room_server_add GET room_server_reserve + ... No Environment

Computer Network / room_server_add Save ...

GET http://localhost:8089/add?name=roomNameTest Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	roomNameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results Status: 200 OK Time: 9 ms Size: 267 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4 | <title>Room Added!</title>
5 </head>
6
7 <body>
8 | <p>Room with name roomNameTest is successfully added.</p>
9 </body>
10
11 </html>
```

Room Add – Repeat (already added)

GET http://localhost:8088/r GET room_server_add GET room_server_reserve + ... No Environment

Computer Network / room_server_add Save ...

GET http://localhost:8089/add?name=roomNameTest Send

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	roomNameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results Status: 403 Forbidden Time: 4 ms Size: 249 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4 | <title>Error</title>
5 </head>
6
7 <body>
8 | <p>Room already exists in database!</p>
9 </body>
10
11 </html>
```

GET http://localhost:8088/rGET room_server_addGET room_server_checkava+***No Environment

Computer Network / room_server_checkavailabilitySave***

GEThttp://localhost:8089/checkavailability?name=roomNameTest&day=1Send

ParamsAuthorizationHeaders (6)BodyPre-request ScriptTestsSettingsCookies

Query Params

	KEY	VALUE	DESCRIPTION	***	Bulk Edit
<input checked="" type="checkbox"/>	name	roomNameTest			
<input checked="" type="checkbox"/>	day	1			
	Key	Value	Description		

BodyCookiesHeaders (5)Test ResultsStatus: 200 OKTime: 3 msSize: 311 BSave Response

PrettyRawPreviewVisualizeHTML

1<html>

2

3<head>

4|<title>Room Available</title>

5</head>

6

7<body>

8|<p>Room roomNameTest is available for the following hours: [9, 10, 11, 12, 13, 14, 15, 16, 17]</p>

9</body>

10

11</html>

BASIC_AUTHENTICATION_USERNAME_PASSWOF

Room Remove

GET http://localhost:8088/r

GET room_server_remove

+ ...

No Environment

Computer Network / room_server_remove

GET

http://localhost:8089/remove?name=roomNameTest

Send

Params • Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	roomNameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results

Status: 200 OK Time: 4 ms Size: 271 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4   <title>Room Removed!</title>
5 </head>
6
7 <body>
8   <p>Room with name roomNameTest is successfully removed.</p>
9 </body>
10
11 </html>
```

Room Reserve

GET http://localhost:8088/r

GET room_server_add

GET room_server_checkava

GET room_server_reserve

+ ...

No Environment

Computer Network / room_server_reserve

GET

http://localhost:8089/reserve?name=roomNameTest&day=1&hour=9&duration=2

Send

Params • Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	name	roomNameTest			
<input checked="" type="checkbox"/>	day	1			
<input checked="" type="checkbox"/>	hour	9			
<input checked="" type="checkbox"/>	duration	2			
	Key	Value	Description		

Body Cookies Headers (5) Test Results

Status: 200 OK Time: 4 ms Size: 276 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4   <title>Room Reserved!</title>
5 </head>
6
7 <body>
8   <p>Room roomNameTest is reserved for 9 to 11 on day MONDAY.</p>
9 </body>
10
11 </html>
```

Room Reserve (already reserved)

POST listavailability?room=rooGET activity_addGET /reserve?room=roomNameTestGET http://localhost:8088/c+...No Environment

Computer Network / /reserve?room=roomNameTest&activity=activitynameTest&day=2&hour=10&duration=3Save...

GEThttp://localhost:8088/reserve?room=roomNameTest&activity=activitynameTest&day=2&hour=10&duration=3Send

ParamsAuthorizationHeaders (6)BodyPre-request ScriptTestsSettingsCookies

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	room	roomNameTest			
<input checked="" type="checkbox"/>	activity	activitynameTest			
<input checked="" type="checkbox"/>	day	2			
<input checked="" type="checkbox"/>	hour	10			
<input checked="" type="checkbox"/>	duration	3			
	Key	Value	Description		

BodyCookiesHeaders (5)Test Results

Status: 403 ForbiddenTime: 12 msSize: 240 BSave Response

PrettyRawPreviewVisualizeHTML

```
1 <html>
2
3 <head>
4 | <title>Error</title>
5 </head>
6
7 <body>
8 | <p>Room already reserved! </p>
9 </body>
10
11 </html>
```

Room Server Error day parameter

POST listavailability?room=rooGET activity_addGET /reserve?room=roomNGET http://localhost:8088/c+...No Environment

Computer Network / /reserve?room=roomNameTest&activity=activitynameTest&day=2&hour=10&duration=3Save...

GEThttp://localhost:8088/reserve?room=roomNameTest&activity=activitynameTest&day=8&hour=10&duration=3Send

ParamsAuthorizationHeaders (6)BodyPre-request ScriptTestsSettingsCookies

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	room	roomNameTest			
<input checked="" type="checkbox"/>	activity	activitynameTest			
<input checked="" type="checkbox"/>	day	8			
<input checked="" type="checkbox"/>	hour	10			
<input checked="" type="checkbox"/>	duration	3			
	Key	Value	Description		

BodyCookiesHeaders (5)Test Results

Status: 400 Bad RequestTime: 4 msSize: 244 BSave Response

PrettyRawPreviewVisualizeHTML

```
1 <html>
2
3 <head>
4 | <title>Error</title>
5 </head>
6
7 <body>
8 | <p>Day parameter is invalid!</p>
9 </body>
10
11 </html>
```

Reservation Server list availability with day parameter

POST http://localhost:8088/

No Environment

http://localhost:8088/listavailability?room=roomNameTest&day=1

POST http://localhost:8088/listavailability?room=roomNameTest&day=1

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	room	roomNameTest			
<input checked="" type="checkbox"/>	day	1			
	Key	Value	Description		

Body Cookies Headers (5) Test Results

Status: 200 OK Time: 3 ms Size: 316 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4   <title>Available Hours</title>
5 </head>
6
7 <body>
8   <p>On MONDAY:Room roomNameTest is available for the following hours: [11, 12, 13, 14, 15, 16, 17]
9 </p>
10 </body>
11
12 </html>
```

Reservation Server list availability without day parameter

GET http://localhost:8088/ GET room_server_add GET room_server_reserve

No Environment

http://localhost:8088/listavailability?room=roomNameTest

GET http://localhost:8088/listavailability?room=roomNameTest

Params Authorization Headers (6) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	room	roomNameTest			
	Key	Value	Description		

Body Cookies Headers (5) Test Results

Status: 200 OK Time: 6 ms Size: 936 B Save Response

Pretty Raw Preview Visualize HTML

```
1 <html>
2
3 <head>
4   <title>Available Hours</title>
5 </head>
6
7 <body>
8   <p>On MONDAY:Room roomNameTest is available for the following hours: [11, 12, 13, 14, 15, 16, 17]
9     On TUESDAY:Room roomNameTest is available for the following hours: [9, 10, 11, 12, 13, 14, 15, 16, 17]
10    On WEDNESDAY:Room roomNameTest is available for the following hours: [9, 10, 11, 12, 13, 14, 15, 16, 17]
11    On THURSDAY:Room roomNameTest is available for the following hours: [9, 10, 11, 12, 13, 14, 15, 16, 17]
12    On FRIDAY:Room roomNameTest is available for the following hours: [9, 10, 11, 12, 13, 14, 15, 16, 17]
13    On SATURDAY:Room roomNameTest is available for the following hours: [9, 10, 11, 12, 13, 14, 15, 16, 17]
14    On SUNDAY:Room roomNameTest is available for the following hours: [9, 10, 11, 12, 13, 14, 15, 16, 17]
15 </p>
16 </body>
17
18 </html>
```

Reservation Server if activity does not exist

POST listavailability?room=roomNameTest

GET activity_add

GET http://localhost:8088/r

No Environment

http://localhost:8088/reserve?room=roomNameTest&activity=activitynameTest1&day=2&hour=10&duration=3

GET

http://localhost:8088/reserve?room=roomNameTest&activity=activitynameTest1&day=2&hour=10&duration=3

Send

Params

Authorization

Headers (6)

Body

Pre-request Script

Tests

Settings

Cookies

KEY	VALUE	DESCRIPTION		Bulk Edit
<input checked="" type="checkbox"/> room	roomNameTest			
<input checked="" type="checkbox"/> activity	activitynameTest1			
<input checked="" type="checkbox"/> day	2			
<input checked="" type="checkbox"/> hour	10			
<input checked="" type="checkbox"/> duration	3			
Key	Value	Description		

Body

Cookies

Headers (5)

Test Results

Status: 403 Forbidden

Time: 5 ms

Size: 271 B

Save Response

Pretty

Raw

Preview

Visualize

HTML

```
1 <html>
2
3 <head>
4   <title>Error</title>
5 </head>
6
7 <body>
8   <p>Activity with name activitynameTest1 does not exists.</p>
9 </body>
10
11 </html>
```

Reservation Server if any of them is/are invalid

POST listavailability?room=roomNameTest

GET activity_add

GET http://localhost:8088/r

No Environment

http://localhost:8088/reserve?room=roomNameTest&activity=activitynameTest&day=2&hour=1&duration=3

GET

http://localhost:8088/reserve?room=roomNameTest&activity=activitynameTest&day=2&hour=1&duration=3

Send

Params

Authorization

Headers (6)

Body

Pre-request Script

Tests

Settings

Cookies

KEY	VALUE	DESCRIPTION		Bulk Edit
<input checked="" type="checkbox"/> room	roomNameTest			
<input checked="" type="checkbox"/> activity	activitynameTest			
<input checked="" type="checkbox"/> day	2			
<input checked="" type="checkbox"/> hour	1			
<input checked="" type="checkbox"/> duration	3			
Key	Value	Description		

Body

Cookies

Headers (5)

Test Results

Status: 400 Bad Request

Time: 5 ms

Size: 245 B

Save Response

Pretty

Raw

Preview

Visualize

HTML

```
1 <html>
2
3 <head>
4   <title>Error</title>
5 </head>
6
7 <body>
8   <p>Hour parameter is invalid!</p>
9 </body>
10
11 </html>
```

Reservation Success

our team effortlessly, upgrade your plan.

POST listavailability?room=roo

GET activity_add

GET /reserve?room=roomN

GET http://localhost:8088/c

+

...

No Environment

Computer Network / /reserve?room=roomNameTest&activity=activitynameTest&day=2&hour=10&duration=3

GET

http://localhost:8088/reserve?room=roomNameTest&activity=activitynameTest&day=3&hour=9&duration=1

Send

Params

Authorization

Headers (6)

Body

Pre-request Script

Tests

Settings

Cookies

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	room	roomNameTest			
<input checked="" type="checkbox"/>	activity	activitynameTest			
<input checked="" type="checkbox"/>	day	3			
<input checked="" type="checkbox"/>	hour	9			
<input checked="" type="checkbox"/>	duration	1			
	Key	Value	Description		

Body

Cookies

Headers (5)

Test Results

Status: 200 OK Time: 7 ms Size: 322 B Save Response

Pretty

Raw

Preview

Visualize

HTML

```
1 <html>
2
3 <head>
4   <title>Reservation is successful!</title>
5 </head>
6
7 <body>
8   <p>You have reserved activity:activitynameTest, room: roomNameTest for 1 hours on SUNDAY at 9</p>
9 </body>
10
11 </html>
```

activity_add

Reservation Display

POST listavailability?room=roo

GET activity_add

GET /reserve?room=roomN

GET http://localhost:8088/c

+

...

No Environment

http://localhost:8088/display?id=9

GET

http://localhost:8088/display?id=9

Send

Params

Authorization

Headers (6)

Body

Pre-request Script

Tests

Settings

Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/>	id	9			
	Key	Value	Description		

Body

Cookies

Headers (5)

Test Results

Status: 200 OK Time: 3 ms Size: 326 B Save Response

Pretty

Raw

Preview

Visualize

HTML

```
1 <html>
2
3 <head>
4   <title>Reservation Details</title>
5 </head>
6
7 <body>
8   <p>You have reserved Activity:activitynameTest <br> room: roomNameTest <br> 1 hours on SATURDAY at 9:00</p>
9 </body>
10
11 </html>
```

Extras & Genius Ideas

Project also supports POST method together with the GET method.