

API Testing & Validation

This document shows the results of testing the API endpoints. Each screenshot is followed by a short explanation.

1. Successful GET Request (All Transactions)

```
PS C:\Users\frank> $cred = Get-Credential

cmdlet Get-Credential at command pipeline position 1
Supply values for the following parameters:
Credential
PS C:\Users\frank> Invoke-WebRequest -Uri http://localhost:8000/transactions -Credential $cred

StatusCode      : 200
StatusDescription : OK
Content          : [{"id": 1682, "transaction_id": "37832903831", "category": "Payment to Code Holder", "sms_body":
                    "TxId: 37832903831. Your payment of 24,900 RWF to Robert Brown 23478 has been completed at
                    2025-01-16 0...
RawContent       : HTTP/1.0 200 OK
                    Content-Type: application/json
                    Date: Sun, 28 Sep 2025 01:23:16 GMT
                    Server: BaseHTTP/0.6 Python/3.13.7

Forms            : [{"id": 1682, "transaction_id": "37832903831", "category": "Payment to Code ...
Headers          : [{"Content-Type", application/json}, [Date, Sun, 28 Sep 2025 01:23:16 GMT], [Server, BaseHTTP/0.6
                    Python/3.13.7]}
Images           : {}
InputFields      : {}
Links            : {}
ParsedHtml       : mshtml.HTMLDocumentClass
RawContentLength : 768253
```

```
localhost:8000/transactions
Pretty-print ✓
[
  {
    "id": 1682,
    "transaction_id": "37832903831",
    "category": "Payment to Code Holder",
    "sms_body": "TxId: 37832903831. Your payment of 24,900 RWF to Robert Brown 23478 has been completed at 2025-01-16 00:13:22. Your new balance: 4,900 RWF. Fee was 0 RWF.",
    "sms_date": "2025-01-16",
    "sms_time": "00:13:29",
    "amount": "24900.00",
    "type": "debit",
    "currency": "RWF",
    "source": "SMS",
    "created_at": "2025-09-28 01:24:35"
  },
  {
    "id": 1681,
    "transaction_id": "51350491173",
    "category": "Payment to Code Holder",
    "sms_body": "TxId: 51350491173. Your payment of 1,500 RWF to Samuel Carter 58769 has been completed at 2025-01-15 20:34:58. Your new balance: 29,800 RWF. Fee was 0 RWF.",
    "sms_date": "2025-01-15",
    "sms_time": "20:35:06",
    "amount": "1500.00",
    "type": "debit",
    "currency": "RWF",
    "source": "SMS",
    "created_at": "2025-09-28 01:24:35"
  },
  {
    "id": 1680,
    "transaction_id": "26811810649",
    "category": "Payment to Code Holder",
    "sms_body": "TxId: 26811810649. Your payment of 27,000 RWF to Robert Brown 60033 has been completed at 2025-01-15 20:26:12. Your new balance: 31,300 RWF. Fee was 0 RWF.",
    "sms_date": "2025-01-15",
    "sms_time": "20:26:19",
    "amount": "27000.00",
    "type": "debit",
    "currency": "RWF",
    "source": "SMS",
    "created_at": "2025-09-28 01:24:35"
  }
]
```

```
PS C:\Users\frank\Searches\Group-5-C3> & C:/Users/frank/AppData/Local/Microsoft/WindowsApps/python3.13.exe c:/Users/frank/
Searches/Group-5-C3/http_server.py
Starting server at http://0.0.0.0:8000
127.0.0.1 - - [28/Sep/2025 03:00:16] "GET /transactions HTTP/1.1" 200 -
```

The request returned all stored transactions successfully.

2. Successful PUT Request (Update Transaction)

```

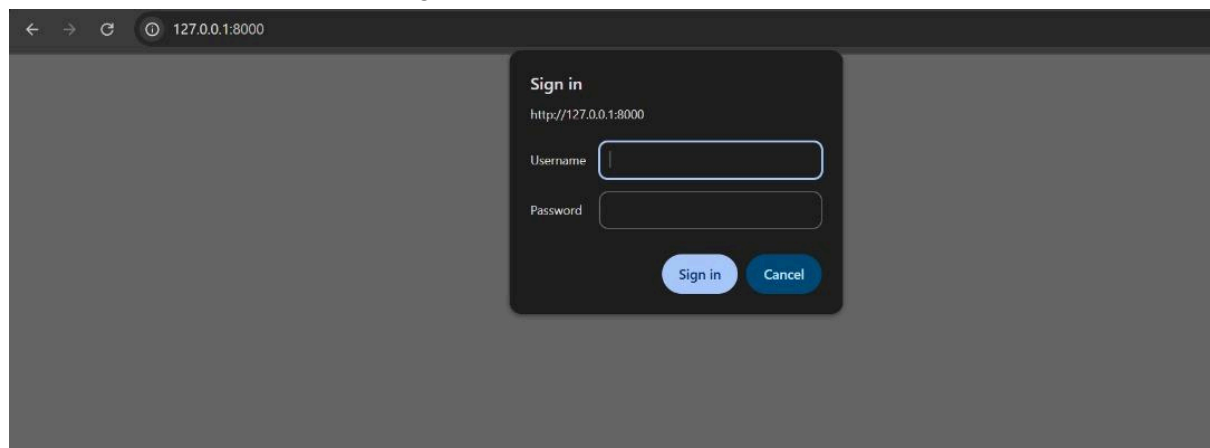
PS C:\Users\frank> $Id = 2 # second transaction
PS C:\Users\frank> $Body = @{
>> category = "Updated Category 2"
>> sms_body = "Updated SMS content 2"
>> sms_date = "2025-09-28"
>> sms_time = "15:00:00"
>> amount = 300.75
>> type = "debit"
>> currency = "RWF"
>> source = "SMS"
>> } | ConvertTo-Json
PS C:\Users\frank> $User = "frank"
PS C:\Users\frank> $Pass = "Group5@1"
PS C:\Users\frank> $Pair = "${User}:${Pass}"
PS C:\Users\frank> $Base64AuthInfo = [Convert]::ToBase64String([Text.Encoding]::ASCII.GetBytes($Pair))
PS C:\Users\frank> $response = Invoke-WebRequest -Uri "http://localhost:8000/transactions/$Id" `
>> -Method PUT `
>> -Body $Body `
>> -Headers @{ Authorization = "Basic $Base64AuthInfo" } `
>> -ContentType "application/json" `
>> -UseBasicParsing
PS C:\Users\frank> $response.Content | ConvertFrom-Json

message
-----
Transaction updated

```

The transaction with ID 2 was updated successfully. The response confirms "Transaction updated".

3. Unauthorized Request (Wrong Credentials)



```

Credential
PS C:\Users\frank> Invoke-WebRequest -Uri http://localhost:8000/transactions -Credential (New-Object System.Management.Automation.PSCredential("Tom",(ConvertTo-SecureString "HGJKVK" -AsPlainText -Force)))
Invoke-WebRequest : The remote server returned an error: (401) Unauthorized.
At line:1 char:1
+ Invoke-WebRequest -Uri http://localhost:8000/transactions -Credential ...
+ ~~~~~
+ CategoryInfo          : InvalidOperation: (System.Net.HttpWebRequest:HttpWebRequest) [Invoke-WebRequest], WebExc
+ FullyQualifiedErrorId : WebCmdletWebResponseException,Microsoft.PowerShell.Commands.InvokeWebRequestCommand

PS C:\Users\frank> Invoke-WebRequest -Uri http://localhost:8000/transactions -Credential (New-Object System.Management.Automation.PSCredential("frank",(ConvertTo-SecureString "Group5@1" -AsPlainText -Force)))

StatusCode      : 200
StatusDescription : OK
Content         : [{"id": 1682, "transaction_id": "37832903831", "category": "Payment to Code Holder", "sms_body": "TxId: 37832903831. Your payment of 24,900 RWF to Robert Brown 23478 has been completed at 2025-01-16 0...
RawContent      : HTTP/1.0 200 OK
                  Content-Type: application/json
                  Date: Sun, 28 Sep 2025 01:30:44 GMT
                  Server: BaseHTTP/0.6 Python/3.13.7

                  [{"id": 1682, "transaction_id": "37832903831", "category": "Payment to Code ...
Forms           : {}
Headers         : [{"Content-Type", application/json}, [Date, Sun, 28 Sep 2025 01:30:44 GMT], [Server, BaseHTTP/0.6 Python/3.13.7]]
Images          : {}
InputFields     : {}
Links           : {}
ParsedHtml      : mshhtml.HTMLDocumentClass

```

When wrong credentials are used, the API returns an unauthorized error. This shows authentication is enforced.

4. Successful POST Request (Create Transaction)

```
PS C:\Users\frank> $User = "frank"
PS C:\Users\frank> $Pass = "Group5@1"
PS C:\Users\frank> $Pair = "${User}:${Pass}"
PS C:\Users\frank> $Base64AuthInfo = [Convert]::ToBase64String([Text.Encoding]::ASCII.GetBytes($Pair))
PS C:\Users\frank>
PS C:\Users\frank> $Body = @{
>> category = "Mobile Money"
>> sms_body = "Alice sent Bob RWF 100"
>> sms_date = "2025-09-28"
>> sms_time = "14:30:00"
>> amount = 100.00
>> type = "credit"
>> currency = "RWF"
>> source = "SMS"
>> } | ConvertTo-Json
PS C:\Users\frank>
PS C:\Users\frank> Invoke-WebRequest -Uri "http://localhost:8000/transactions" `
>> -Method POST `
>> -Body $Body `
>> -Headers @{Authorization=("Basic {0}" -f $Base64AuthInfo)} `
>> -ContentType "application/json"

StatusCode      : 201
StatusDescription : Created
Content          : {"message": "Transaction added", "id": 1683}
RawContent       : HTTP/1.0 201 Created
                  Content-Type: application/json
                  Date: Sun, 28 Sep 2025 02:00:53 GMT
                  Server: BaseHTTP/0.6 Python/3.13.7

                  {"message": "Transaction added", "id": 1683}
Forms            : {}
```

A new transaction was added successfully. The API responds with the created record.

5. Successful DELETE Request (Remove Transaction)

```
PS C:\Users\frank> $Id = 2 #Delete the second transaction
PS C:\Users\frank> $User = "frank"
PS C:\Users\frank> $Pass = "Group5@1"
PS C:\Users\frank> $Pair = "${User}:${Pass}" # escape special characters
PS C:\Users\frank> $Base64AuthInfo = [Convert]::ToBase64String([Text.Encoding]::ASCII.GetBytes($Pair))
PS C:\Users\frank> $response = Invoke-WebRequest -Uri "http://localhost:8000/transactions/$Id" `
>> -Method DELETE `
>> -Headers @{ Authorization = "Basic $Base64AuthInfo" } `
>> -UseBasicParsing
PS C:\Users\frank> $response.Content | ConvertFrom-Json

message
-----
Transaction deleted
```

The transaction was deleted successfully. The API confirms with a success message.

Summary

- * Authentication works (only valid credentials succeed).
- * CRUD operations (Create, Read, Update, Delete) are all functioning.
- * Error handling is clear (e.g., Unauthorized with wrong credentials).