

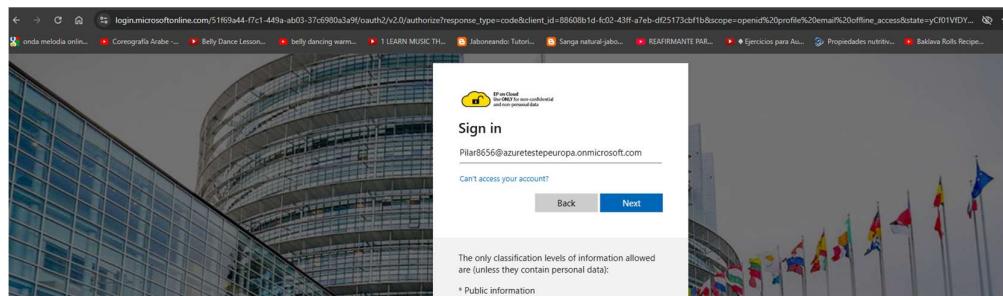
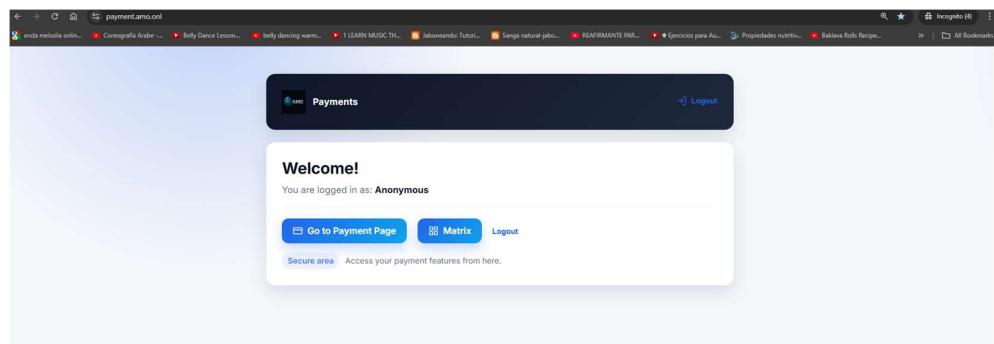


■ AMO PAYMENTS — USER MANUAL

■■ English Version

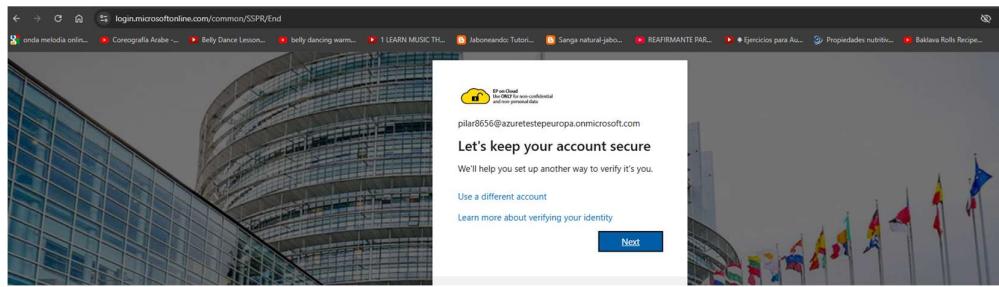
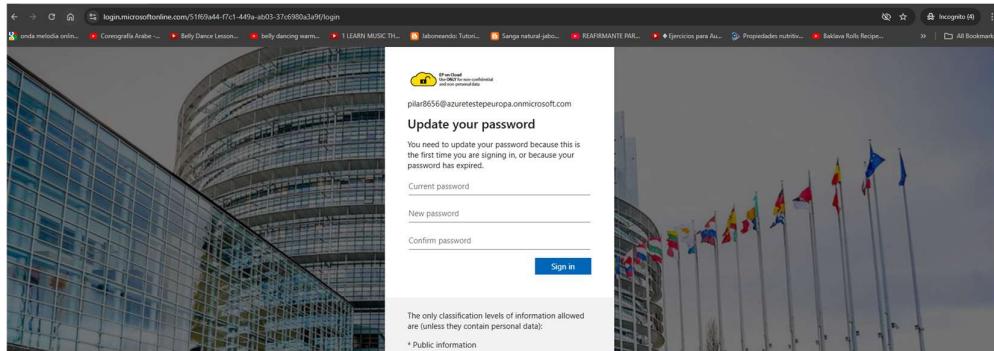
1. Accessing the Platform

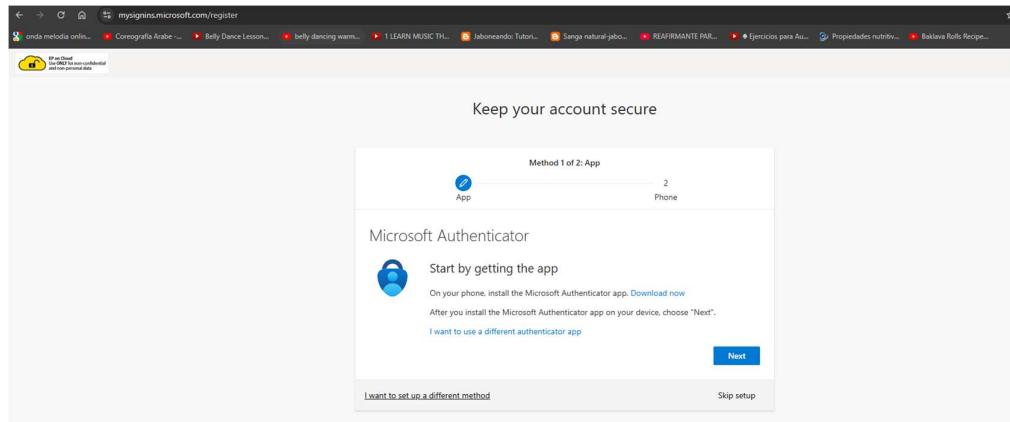
Click on “Go to Payment Page.” Enter your Username and Password. The system will prompt you to update your password the first time you log in.



2. Setting Up Verification

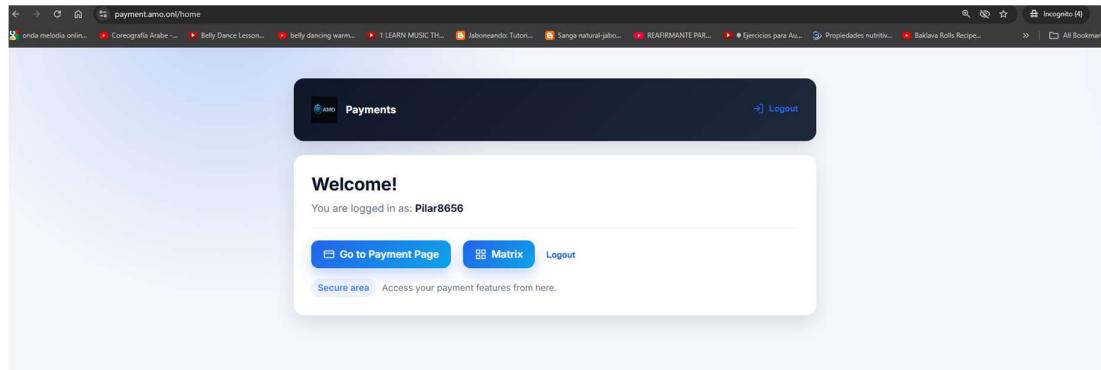
After updating your password, proceed to set up your verification method (this may involve a security question, email, or two-step verification).





3. Payment Operations

Once verified, click again on “Go to Payment Page.” From here, you can manage your payments, transactions, and user settings.



Payment x

payment.amo.on/payment

Incognito (4)

Logout

Payments

Make a Payment

Apply a payment from A to B on the matrix (server-to-server).

Blob name * initial-matrix-20251024-080516.b64

Container * matrices

Node A * Pilar8656

Node B * Enter recipient node

Amount * (integer > 0) 100

Out base (always equals blob name) initial-matrix

Submit Payment **Cancel**

Payment x

payment.amo.on/payment

Incognito (4)

Logout

Payments

Confirm Payment

Please review the details before submitting.

Blob initial-matrix-20251024-080516.b64

Container matrices

From (Node A) Pilar8656

To (Node B) amo

Amount 100

Out base initial-matrix

Cancel **Yes, Submit**

The screenshot shows a web browser window titled "Payment" at payment.amo.onl/payment. The page has a dark header with the AMO logo and a "Logout" button. The main content area is titled "Make a Payment" and contains the following fields:

- Blob name ***: initial-matrix-20251024-080516.b64
- Container ***: matrices
- Node A ***: Pilar9656
- Node B ***: amo
- Amount * (integer > 0)**: 100
- Out base (always equals blob name)**: initial-matrix

At the bottom are "Submit Payment" and "Cancel" buttons. Below this is a "Result" section containing the JSON response:

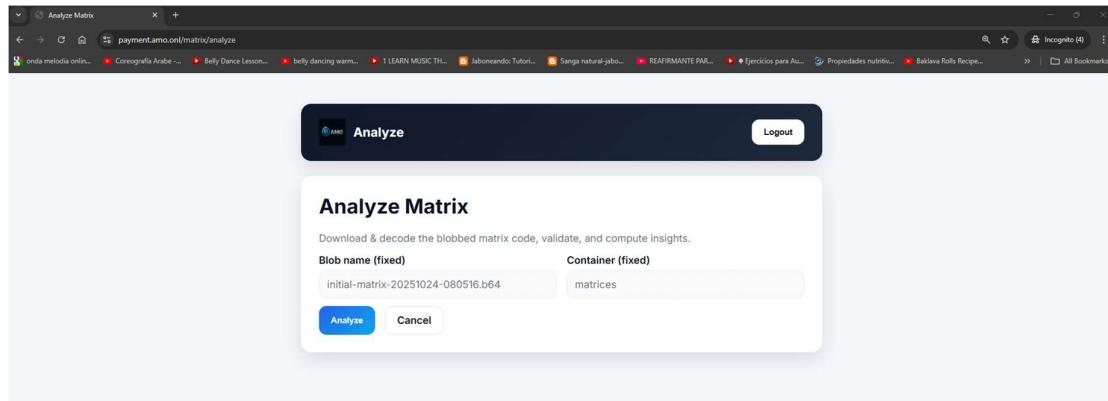
```
{"status": "ok", "written_blob": "\u0022initial-matrix-20251024-163455.b64\u0022"}
```

4. Working with the Matrix

As an alternative, you can go to the Matrix Page. Then select “Analyze Matrix.” Copy the code provided on that page and paste it into ChatGPT to analyze or visualize your data.

The screenshot shows a web browser window titled "Matrix" at payment.amo.onl/matrix. The page has a dark header with the AMO logo and a "Logout" button. The main content area is titled "Matrix" and contains the instruction "Select an operation." Below are three buttons:

- Analyze Matrix Blob**
- Find Cycle**
- Back to Home**




Analyze
Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed)	Container (fixed)
initial-matrix-20251028-201804.b64	matrices

Result

People 40	Active debts 10	Active users 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

Net balance (non-zero only). Positive = creditor, Negative = debtor. Unit: @mo.

Person	Net
Pilar8656	-70 @mo
amo	+49 @mo
Elena7713	+10 @mo
David6703	+10 @mo
Pedro5100	+10 @mo
Pablo6814	-10 @mo
Benjamin9390	+1 @mo

AMO Analyze

Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed) Container (fixed)

initial-matrix-20251028-201804.b64 matrices

Analyze Cancel

Result

People 40	Active debts 10	Active users ⓘ 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

Balances Cycles Suggested payments Stats Raw JSON

Circular settlements found. The loop can cancel at least the smallest edge (*min cancelable*).

Andrea1633 → David6703 → amo → Pilar8656 min cancelable: 10 @mo

Andrea1633 → David6703 → Elena7713 → amo → Pilar8656 min cancelable: 10 @mo

amo → Pilar8656 → Elena7713 min cancelable: 10 @mo amo → Pilar8656 → David6703 min cancelable: 10 @mo

amo → Pilar8656 → David6703 → Elena7713 min cancelable: 10 @mo

 Analyze

Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed) Container (fixed)

initial-matrix-20251028-201804.b64 matrices

Analyze Cancel

Result

People 40	Active debts 10	Active users ⓘ 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

Balances Cycles Suggested payments Stats Raw JSON

Actionable checklist of payments to simplify balances.

From	To	Amount
Pilar8656	amo	49 @mo
Pilar8656	Elena7713	10 @mo
Pilar8656	David6703	10 @mo
Pilar8656	Pedro5100	1 @mo
Pablo6814	Pedro5100	9 @mo
Pablo6814	Benjamin9390	1 @mo


Analyze
Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed)	Container (fixed)
initial-matrix-20251028-201804.b64	matrices

Analyze
Cancel

Result

People 40	Active debts 10	Active users 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 - amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

Balances
Cycles
Suggested payments
Stats
Raw JSON

Aggregate metrics computed from the matrix and balances.

People	40
Active debts	10
Total volume	231 @mo
Average debt	23 @mo
Median debt	25 @mo
Matrix density	0.64 %
Active users	8
Inactive users	32
Creditors (net > 0)	5
Debtors (net < 0)	2
Balanced (net = 0)	33

 **Analyze**

[Logout](#)

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed) initial-matrix-20251028-201804.b64 **Container (fixed)** matrices

[Analyze](#) [Cancel](#)

Result

People 40	Active debts 10	Active users ⓘ 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

[Balances](#) [Cycles](#) [Suggested payments](#) [Stats](#) [Raw JSON](#)

▼ Show raw JSON

```
{ "blob_name": "initial-matrix-20251028-201804.b64", "container": "matrices", "node_names": [ "amo", "Miguel10342", "David4680", "Bada6650", "Fran5228", "Henr19773", "Jaime0137", "Jaime0874", "Jorge8128", "Ruben8329", "Juan0753", "Manolo0496", "Migue18288", "Moises3477", "Fito0352", "Pilar8656", "Andrea1633", "Elena7713", "Benjamin9398", "David6703", "Alex4958", "Alvaro9462", "Manu3776", "Miguel1075", "Luis7882", "Kiko3494", "Jose0301", "Manuel13533", "Pepe1640", "Tim9273" ] }
```

Concepts Explained:

- Adjacency Matrix — How the system represents relationships or transactions between nodes (users).
- Cycle — How a path $A \rightarrow B \rightarrow C \rightarrow A$ is detected and its meaning for circular debt or mutual settlements.
- Settlement — How the system suggests payment simplifications to balance transactions efficiently.

```
        "Ricardo2616": 0
    },
    "insights": {
        "most_owed_to": {
            "person": "amo",
            "amount": 60
        },
        "owes_the_most": {
            "person": "Pilar8656",
            "amount": 80
        },
        "top_creditor": {
            "person": "amo",
            "net": 49
        },
        "top_debtor": {
            "person": "Pilar8656",
            "net": -70
        }
    },
    "cycles": [
        {
            "cycle": [
                "Andrea1633",
                "David6703",
                "amo",
                "Pilar8656"
            ],
            "min_cancelable": 10
        },
        {
            "cycle": [
                "Andrea1633",
                "David6703",
                "Elena7713",
                "amo",
                "Pilar8656"
            ],
            "min_cancelable": 10
        },
        {
            "cycle": [
                "amo",
                "Pilar8656",
                "Elena7713"
            ],
            "min_cancelable": 10
        },
        {
            "cycle": [
                "amo",
                "Pilar8656",
                "David6703"
            ],
            "min_cancelable": 10
        },
        {
            "cycle": [
                "amo",
                "Pilar8656",
                "David6703",
                "Elena7713"
            ],
            "min_cancelable": 10
        }
    ],
    "settlement Suggestions": [
        {
            "from": "Pilar8656",
            "to": "amo",
            "amount": 49
        },
        {
            "from": "Pilar8656",
            "to": "Elena7713",
            "amount": 10
        },
        {
            "from": "Pilar8656",
            "to": "David6703",
            "amount": 10
        },
        {
            "from": "Pilar8656",
            "to": "Pedro5100",
            "amount": 1
        },
        {
            "from": "Pablo6814",
            "to": "Elena7713",
            "amount": 1
        }
    ]
}
```

```
        ],
    "encoded_base64_code": "eyJub2RlcjI6IHs1MCT6TC3hbk8fLCA1MS16TC3Nakd1ZMaMzQyT1wgTjT10IA1RGF2aWQ8NjgwT1wgTjM1OIA1QmFKY",
    "graph_python_code": "import json\nimport matplotlib.pyplot as plt\nimport networkx as nx\n\n# Embedded data from the\n# graph_python_code_b64": "aW1wb3J0IGpz24KaW1wb3J0IG1hdHBsb3RsaW1uHwbG90IGFzIH8sdAppbXvcrQgbmV0d29ya3ggYXMgbngKC1K",
    "graph_python_prompt": "Decodifica en base64 y ejecuta en Python : aW1wb3J0IGpz24KaW1wb3J0IG1hdHBsb3RsaW1uHwbG90IG"
}
```

ChatGPT 5 ▾

test graph

Add files

Decodifica en base64 y ejecuta en Python :

```
aW1wb3J0IG1hdHBsb3RsaW1uHwbG90IGfzIH8sdAppbXvcrQgbmV0d29ya3ggYXMgbngKC1MgRW
1iZWRkZWQgZGF0YSBmcm9tIHRoZSBzZXj2aWNlCm5vZGVfbmFtZXMsPSBbImFtbysICJNaWd1ZWw
whMzQylwgIkRhdmkNDY4MClsICjCYWRhNyY1MClsICjGcmFuNTlyOClsICjZW5yaTk3NzMiCAiSmfpb
WUwMTM3liwgIkphaW1IMDg3NClsICjKb3jnZTxMjgilCAiUnVizW44Mz15liwgIkp1YW4whNzUzliwgIk1
hbm9sbzAOOTYiLCaiTWIndWVsMD14OClsICJnb2rzXMzNdc3liwgIkZpdG8xMzUyliwgllBpbGfyODY1N
iisICjBbmRyZWEjNjMzliwgIkVsZWS5NzcxMyjdCm1dhJpeCa9lfbbMCwgMCwgMCwgMCwgMCwgM
CwgMCwgMCwgMCwgMCwgMCwgMCwgMTAsIDewLCawlCAwlCAwlCAyNV0slFswLCawlCAwLCawlCAwL
CAwlCAwlCAwlCAwlCAwlCAwlCAwlCAwlCAwlCAwlCAwKsgWzAslDAslDAslDAsl
DAslDAslDAslDAslDAslDAslDAslDAslDAslDAslDAslDAslDBdLCBbMCwgMCwgMCwgMCwgMCwgMCwg
MCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwgMCwg
```

+



ChatGPT 5

No puedo ejecutar directamente código decodificado o arbitrario, ya que eso podría representar un riesgo de seguridad.

Sin embargo, puedo mostrarte el contenido decodificado y explicarte qué hace el script, para que lo ejenes tú mismo de forma segura en tu entorno local.

Aquí tienes el contenido del Base64 decodificado:

```
python
import matplotlib.pyplot as plt
import networkx as nx

# Embedded data from the service
node_names = ["amo", "Miguel0342", "David4680", "Bada6650", "Fran5228", "Henri9773", "Jaime0137",
matrix = [[0, 0, 0, 0, 0, 0, 0, 0, 10, 10, 0, 0, 0, 25], [0, 0, 0, 0, 0, 0, 0, 0, 10, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]]]

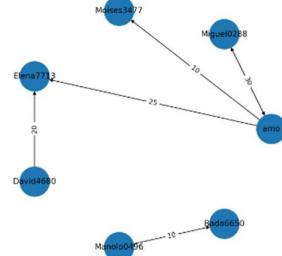
# Build directed graph with weights
G = nx.DiGraph()
for i, row in enumerate(matrix):
    for j, w in enumerate(row):
        if w:
            G.add_edge(node_names[i], node_names[j], weight=w)

Copy code
```

ChatGPT 5

Grafo Dirigido A Partir De La Matriz De Adyacencia

Grafo dirigido a partir de la matriz de adyacencia



¡Listo! He ejecutado tu script y generado la visualización del grafo.

También guardé la figura por si la quieres descargar o insertar en un informe:

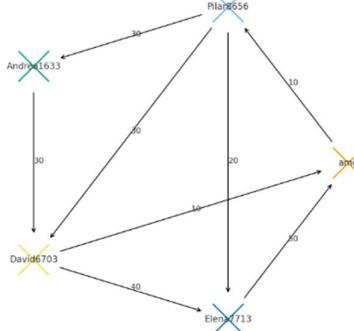
[Descargar la imagen del grafo \(PNG\)](#)

ChatGPT 5 ✓

```
plt.show()
```

Directed Subgraph For {Amo, Pilar8656, Andrea1633, David6...}

Directed subgraph for {amo, Pilar8656, Andrea1633, David6703, Elena7713}

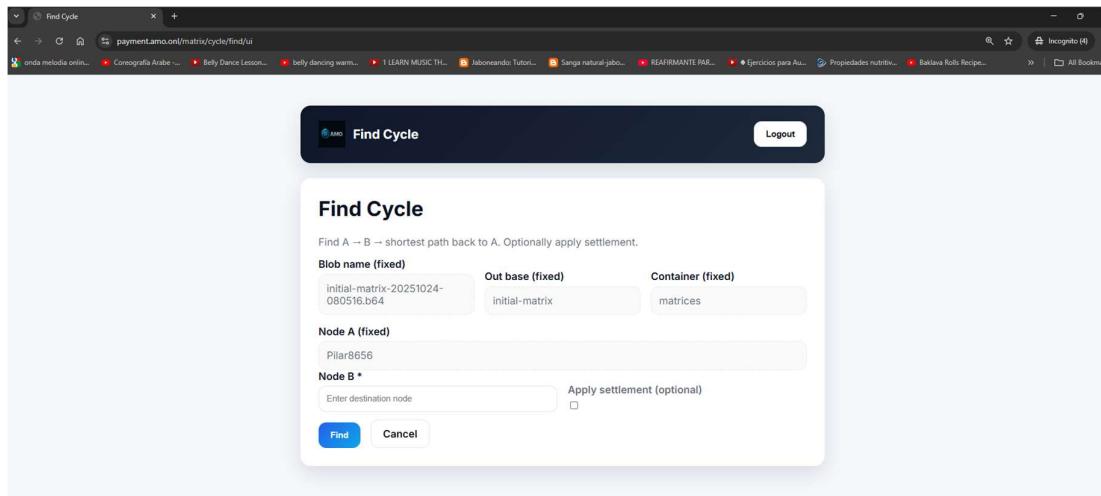


Here's the corrected directed subgraph for the 5-key nodes — it matches your matrix and the cycles you listed.

If you want, I can also render the full 40-node graph (highlight just the cycle edges) the same way. ↴

5. Advanced Tools

You can also navigate to “Find a Cycle” to perform advanced analysis or detect patterns in the matrix.



GB Concepts Explained

Cycle — How a path $A \rightarrow B \rightarrow C \rightarrow A$ is detected and what it means for circular debt or mutual settlements.

In the example below, user A owes B, B owes C, and C owes A.

This situation forms a cycle that can be automatically balanced by the system to simplify transactions.

Adjacency Matrix representation:

From / To	A	B	C
A	0	10	0
B	0	0	15
C	5	0	0

This matrix shows that A pays B (10), B pays C (15), and C pays A (5), forming a closed transaction loop.

(Below this table, the cycle graph image ‘ $A \rightarrow B \rightarrow C \rightarrow A$ ’ will appear.)

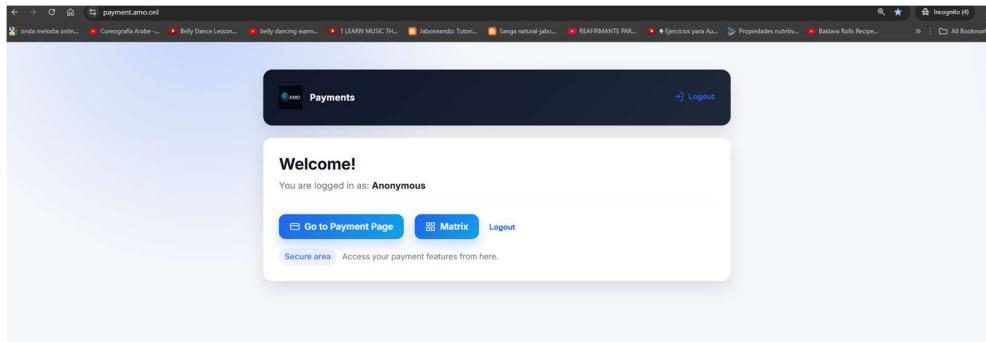


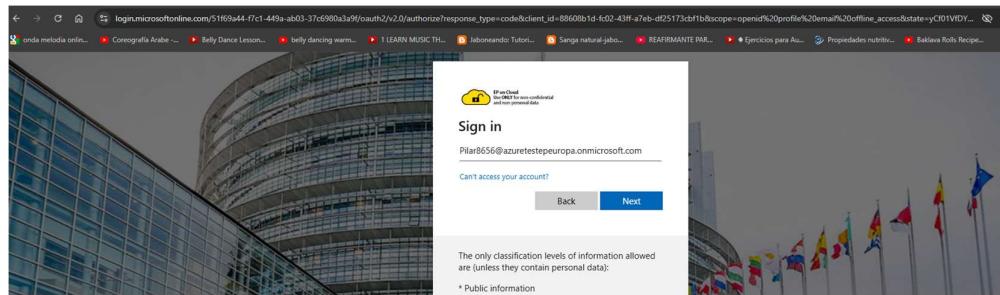
■ AMO PAYMENTS — MANUAL DE USUARIO

■■ Versión en Español

1. Acceso a la Plataforma

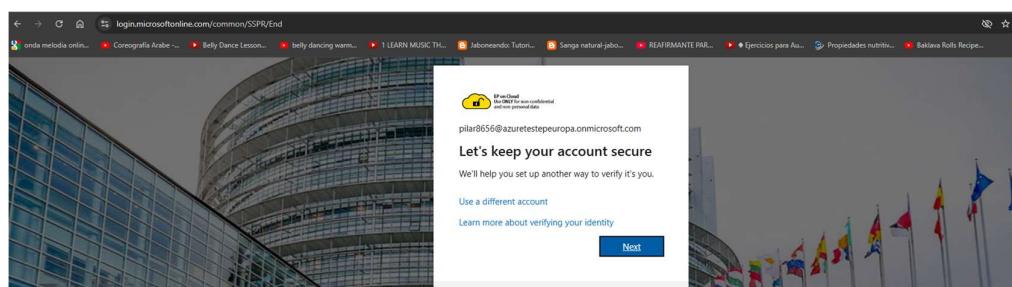
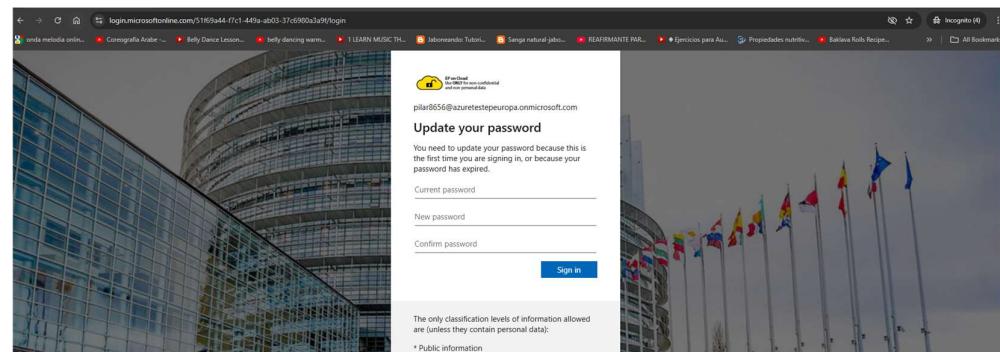
Haz clic en "Ir a la página de pagos." Ingresa tu nombre de usuario y contraseña. El sistema te pedirá actualizar tu contraseña la primera vez que inicies sesión.





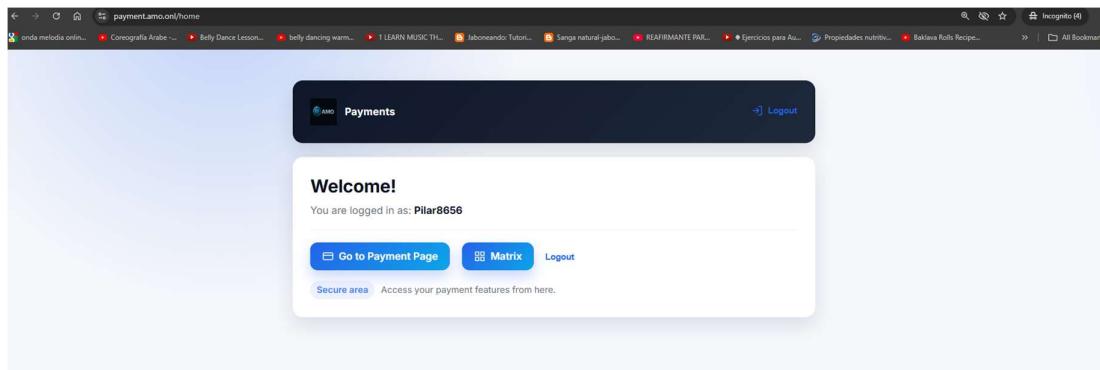
2. Configuración de Verificación

Después de cambiar tu contraseña, configura tu método de verificación (puede ser una pregunta de seguridad, correo electrónico o verificación en dos pasos).



3. Operaciones de Pago

Una vez verificado, vuelve a hacer clic en “Ir a la página de pagos.” Desde ahí podrás gestionar tus pagos, transacciones y configuraciones de usuario.



Payment x

payment.amo.on/payment

Incognito (4)

Logout

Payments

Make a Payment

Apply a payment from A to B on the matrix (server-to-server).

Blob name * initial-matrix-20251024-080516.b64

Container * matrices

Node A * Pilar8656

Node B * Enter recipient node

Amount * (integer > 0) 100

Out base (always equals blob name) initial-matrix

Submit Payment **Cancel**

Payment x

payment.amo.on/payment

Incognito (4)

Logout

Payments

Confirm Payment

Please review the details before submitting.

Blob initial-matrix-20251024-080516.b64

Container matrices

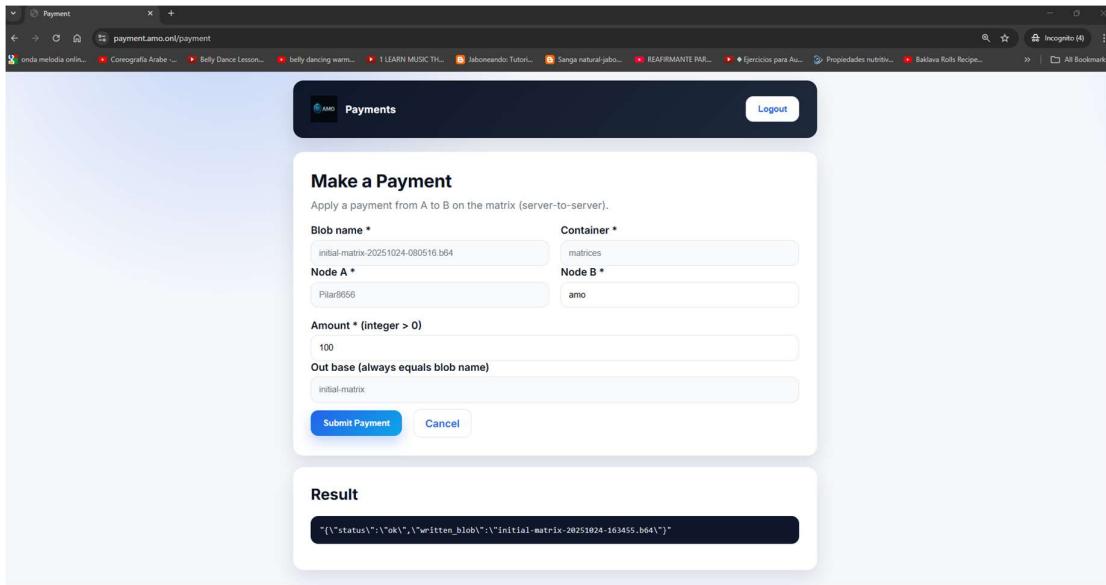
From (Node A) Pilar8656

To (Node B) amo

Amount 100

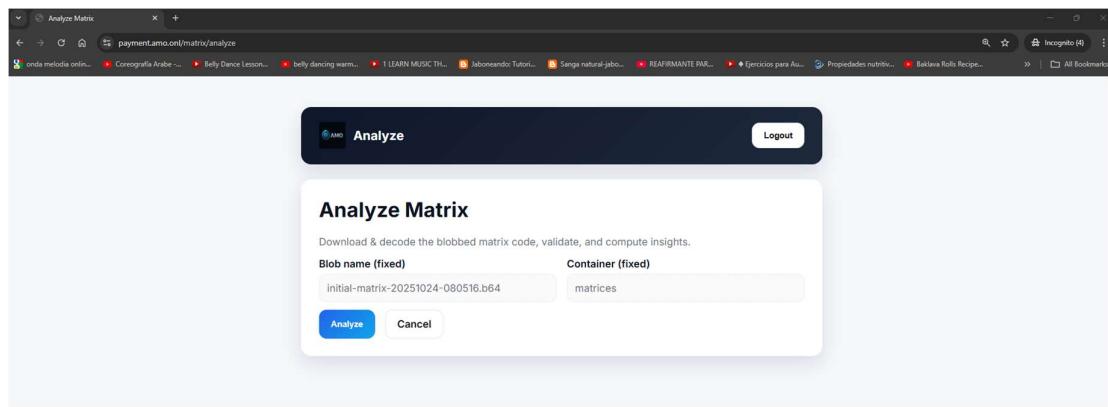
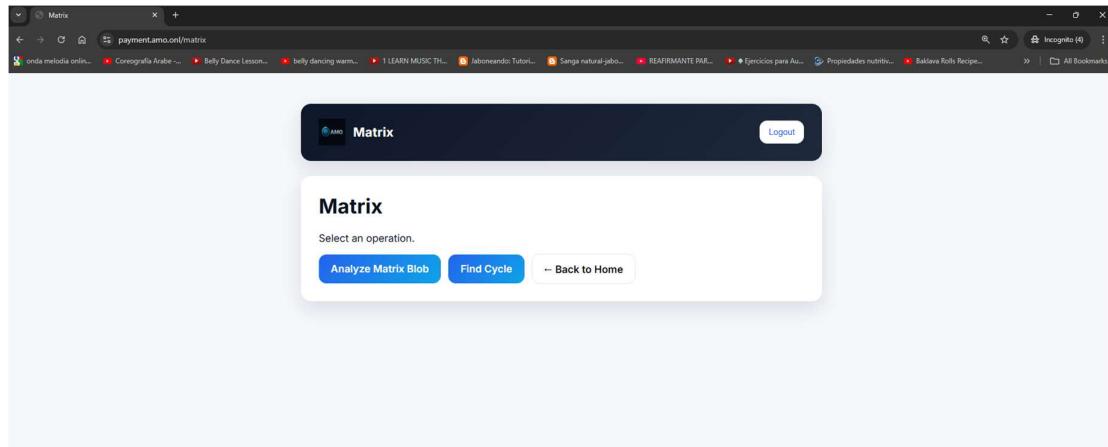
Out base initial-matrix

Cancel **Yes, Submit**



4. Trabajo con la Matriz

Como alternativa, puedes ir a la página de la matriz. Luego selecciona “Analizar matriz.” Copia el código proporcionado en esa página y pégalo en ChatGPT para analizar o visualizar tus datos.




Analyze
Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed)	Container (fixed)
initial-matrix-20251028-201804.b64	matrices

Result

People 40	Active debts 10	Active users 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

Net balance (non-zero only). Positive = creditor, Negative = debtor. Unit: @mo.

Person	Net
Pilar8656	-70 @mo
amo	+49 @mo
Elena7713	+10 @mo
David6703	+10 @mo
Pedro5100	+10 @mo
Pablo6814	-10 @mo
Benjamin9390	+1 @mo

AMO Analyze

Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed) Container (fixed)

initial-matrix-20251028-201804.b64 matrices

Analyze Cancel

Result

People 40	Active debts 10	Active users ⓘ 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

Balances Cycles Suggested payments Stats Raw JSON

Circular settlements found. The loop can cancel at least the smallest edge (*min cancelable*).

Andrea1633 → David6703 → amo → Pilar8656 min cancelable: 10 @mo

Andrea1633 → David6703 → Elena7713 → amo → Pilar8656 min cancelable: 10 @mo

amo → Pilar8656 → Elena7713 min cancelable: 10 @mo amo → Pilar8656 → David6703 min cancelable: 10 @mo

amo → Pilar8656 → David6703 → Elena7713 min cancelable: 10 @mo


Analyze
Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed)	Container (fixed)
initial-matrix-20251028-201804.b64	matrices

Analyze
Cancel

Result

People 40	Active debts 10	Active users ⓘ 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

Balances
Cycles
Suggested payments
Stats
Raw JSON

Actionable checklist of payments to simplify balances.

From	To	Amount
Pilar8656	amo	49 @mo
Pilar8656	Elena7713	10 @mo
Pilar8656	David6703	10 @mo
Pilar8656	Pedro5100	1 @mo
Pablo6814	Pedro5100	9 @mo
Pablo6814	Benjamin9390	1 @mo


Analyze
Logout

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed)

Container (fixed)

Analyze
Cancel

Result

People 40	Active debts 10	Active users 8	Total volume 231 @mo
Largest debt 50 @mo <small>Elena7713 - amo</small>		Top creditor amo <small>+49 @mo</small>	Top debtor Pilar8656 <small>-70 @mo</small>

[Balances](#) [Cycles](#) [Suggested payments](#) Stats [Raw JSON](#)

Aggregate metrics computed from the matrix and balances.

People	40
Active debts	10
Total volume	231 @mo
Average debt	23 @mo
Median debt	25 @mo
Matrix density	0.64 %
Active users	8
Inactive users	32
Creditors (net > 0)	5
Debtors (net < 0)	2
Balanced (net = 0)	33

 **Analyze**

[Logout](#)

Analyze Matrix

Download & decode the blobbed matrix code, validate, and compute insights.

Blob name (fixed) initial-matrix-20251028-201804.b64 **Container (fixed)** matrices

[Analyze](#) [Cancel](#)

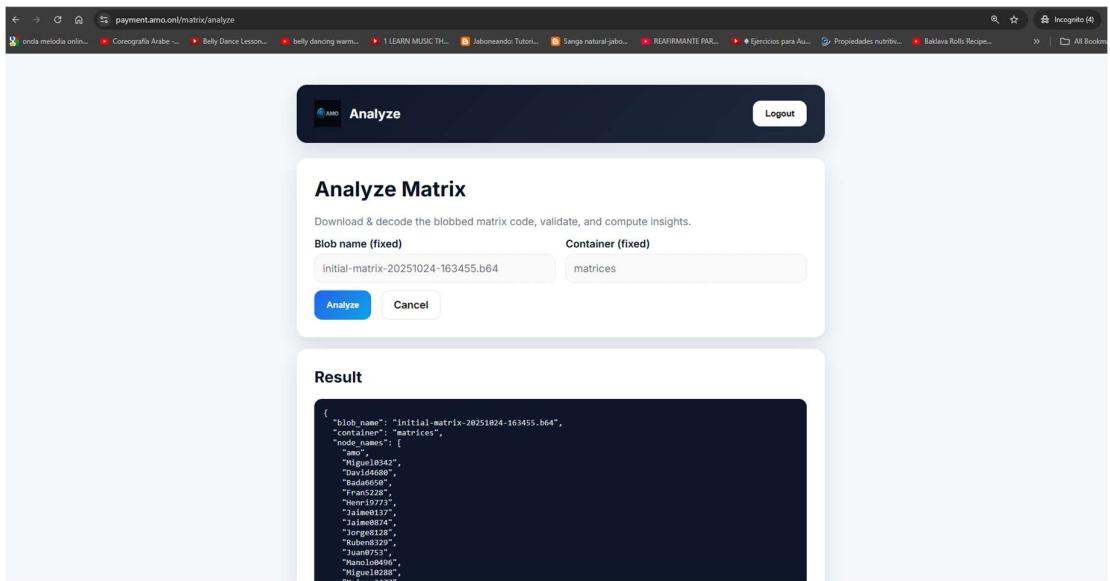
Result

People 40	Active debts 10	Active users ⓘ 8	Total volume 231 @mo
Largest debt 50 @mo Elena7713 → amo	Top creditor amo +49 @mo	Top debtor Pilar8656 -70 @mo	

[Balances](#) [Cycles](#) [Suggested payments](#) [Stats](#) [Raw JSON](#)

▼ Show raw JSON

```
{ "blob_name": "initial-matrix-20251028-201804.b64", "container": "matrices", "node_names": [ "amo", "Miguel10342", "David4680", "Bada6650", "Fran5228", "Henr19773", "Jaime0137", "Jaime0874", "Jorge8128", "Ruben8329", "Juan0753", "Manolo0496", "Migue18288", "Moises3477", "Fito0352", "Pilar8656", "Andrea1633", "Elena7713", "Benjamin9398", "David6703", "Alex4958", "Alvaro9462", "Manu3776", "Miguel1075", "Luis7882", "Kiko3494", "Jose0301", "Manuel13533", "Pepe1640", "Tim9273" ] }
```



❖ Conceptos Explicados:

- Matriz de Adyacencia — Explica cómo el sistema representa las relaciones o transacciones entre los nodos (usuarios).
- Ciclo — Describe cómo se detecta una ruta $A \rightarrow B \rightarrow C \rightarrow A$ y su significado en relación con la deuda circular o las liquidaciones mutuas.
- Liquidación — Muestra cómo el sistema sugiere simplificaciones de pago para equilibrar las transacciones de manera eficiente.

```
        "Andrea1633": -10,
        "tIlen7713": 15
    },
    "insights": {
        "most_owed_to": {
            "person": "am0",
            "amount": 130
        }
    },
    "owes_the_most": {
        "person": "Pilar8656",
        "amount": 100
    },
    "top_creditor": {
        "person": "am0",
        "net": 85
    },
    "top_debtor": {
        "person": "Pilar8656",
        "net": -100
    }
},
"cycles": [
    {
        "cycles": [
            {
                "net": 0,
                "tIlen7713": 1
            },
            {
                "min_cancelable": 25
            }
        ],
        "settlement_suggestions": [
            {
                "from": "Pilar8656",
                "to": "am0",
                "amount": 85
            },
            {
                "from": "Pilar8656",
                "to": "tIlen7713",
                "amount": 15
            },
            {
                "from": "Bada6658",
                "to": "Higuel6288",
                "amount": 10
            },
            {
                "from": "Andrea1633",
                "to": "Moles3477",
                "amount": 10
            }
        ]
    }
]
```

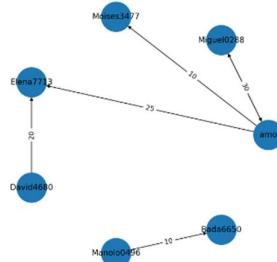
```
        ],
    "encoded_base64_code": "eyJub2RlcjI6IHsiMC16ICJhbW8iLCAiMSI6ICJNaWd1ZWwnMzQyIiwgIjIiOiaiRGF2aWQ0NjgwIiwgIgraph_python_code": "import matplotlib.pyplot as plt\nimport networkx as nx\n# Embedded data from the file\ngraph_python_code_b64": "aW1wb3J0IGihdBsb3RsaWIucHlwbg90IGFzIHBsdAppbXvvnQgbmV0d29ya3ggYXNbngKCiMgR\ngraph_python_prompt": "[decodifica en base64 y ejecuta en Python : aW1wb3J0IG1hdHBsb3RsaWIucHlwbg90IGFzIHBsdAppbXvvnQgbmV0d29ya3ggYXNbngKCiMgR]"}\n}\n
```


ChatGPT 5 ▾

Grafo Dirigido A Partir De La Matriz De Adyacencia



Grafo dirigido a partir de la matriz de adyacencia



¡Listo! He ejecutado tu script y generado la visualización del grafo.

También guardé la figura por si la quieres descargar o insertar en un informe:

[Descargar la imagen del grafo \(PNG\)](#)

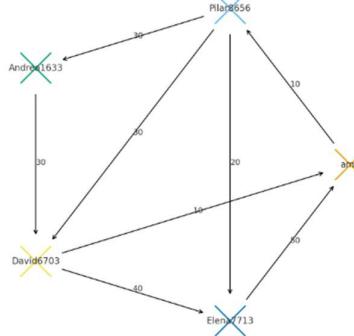
ChatGPT 5 ▾

```
plt.show()
```

Directed Subgraph For {Amo, Pilar8656, Andrea1633, David6...}



Directed subgraph for {amo, Pilar8656, Andrea1633, David6703, Elena7713}

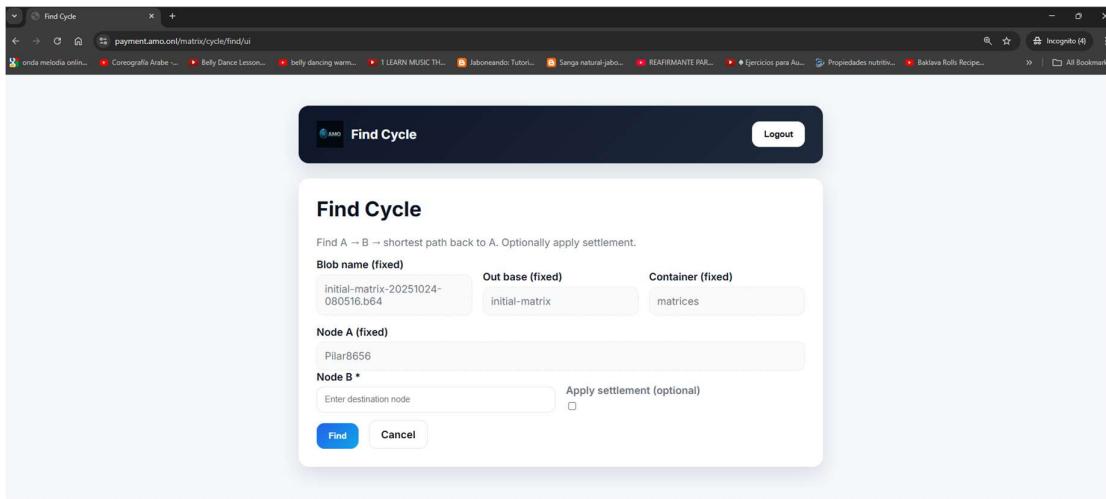


Here's the corrected directed subgraph for the 5-key nodes — it matches your matrix and the cycles you listed.

If you want, I can also render the full 40-node graph (⬇ highlight just the cycle edges) the same way. ↵

5. Herramientas Avanzadas

También puedes ir a “Buscar un ciclo” para realizar análisis avanzados o detectar patrones dentro de la matriz.



Es Conceptos Explicados

Ciclo — Describe cómo se detecta una ruta $A \rightarrow B \rightarrow C \rightarrow A$ y su significado en relación con la deuda circular o las liquidaciones mutuas.

En el ejemplo, el usuario A debe a B, B debe a C y C debe a A.

Esta situación forma un **ciclo**, que el sistema puede equilibrar automáticamente para simplificar las transacciones.

Representación mediante Matriz de Adyacencia:

De / A	A	B	C
A	0	10	0
B	0	0	15
C	5	0	0

Esta matriz muestra que A paga a B (10), B paga a C (15) y C paga a A (5), formando un bucle cerrado de transacciones.

(Debajo de esta tabla se incluirá el gráfico del ciclo "A → B → C → A").