

SYNESTHESIA

Transform your music into living fractals

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SYNESTHESIA

Transform your music into living fractals

Experiment with Fractals

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UPLOAD AN AUDIO FILE FIRST

Julia 2D

Iterations

Bass Strength

Treble Strength

Primary Color

Secondary Color

 Rainbow mode

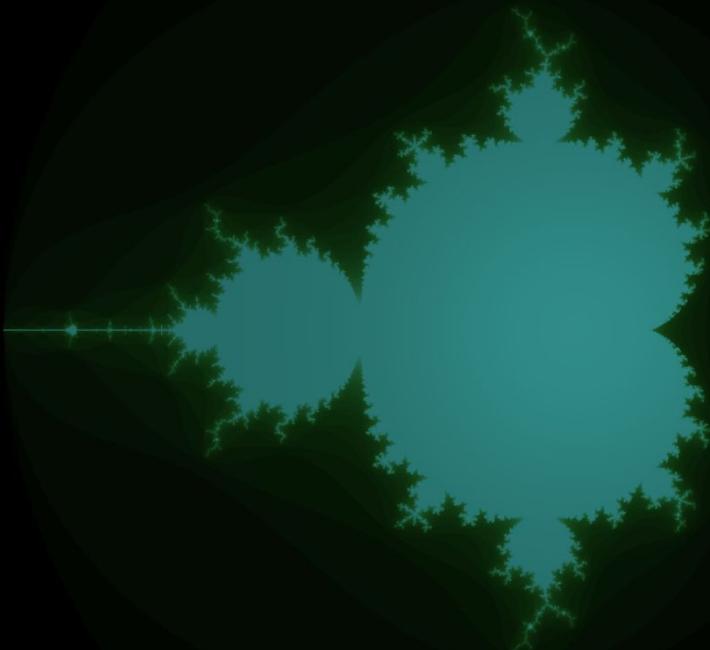
Julia Set

-0.4 – 0.59i

Julia Info

About Julia Sets:

Julia sets are 2D fractals derived from the Mandelbrot set. Each Julia set is generated by fixing a complex constant c and iterating the formula $z_{n+1} = z_n^2 + c$ for every pixel. While the Mandelbrot set varies c per pixel, a Julia

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UPLOAD AN AUDIO FILE FIRST

Mandelbrot 2D

Iterations

Bass Strength

Primary Color

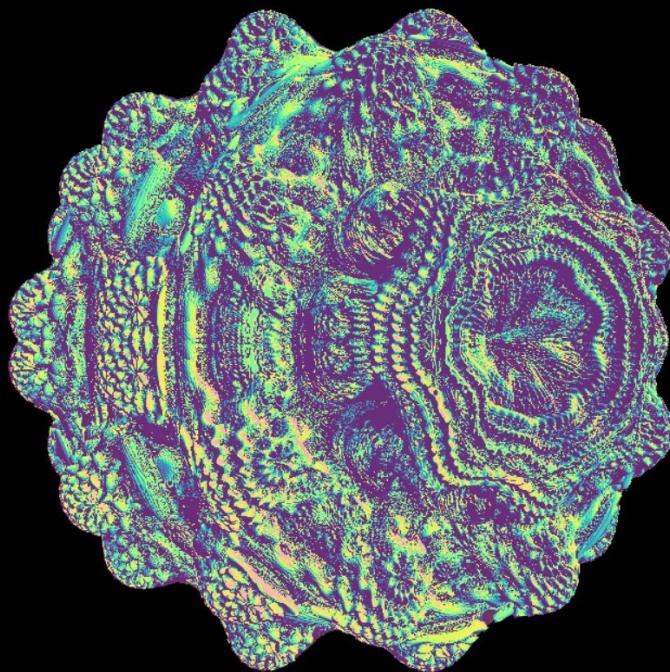
Secondary Color

 Rainbow mode**Mandelbrot Info****About Mandelbrot Sets:**

The Mandelbrot set is a famous 2D fractal defined by iterating the formula $z_{n+1} = z_n^2 + c$ for each pixel, where $z_0 = 0$ and c represents the complex coordinate of that pixel. Points that remain bounded after many iterations are part of the set; others escape to infinity. The resulting shape exhibits intricate, self-similar patterns at all scales.

Parameters:

Iterations: Number of iterations applied

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UPLOAD AN AUDIO FILE FIRST

Mandelbulb 3D

Ray Steps

Bass Strength

Treble Strength

Rotation Speed

Zoom Pulse

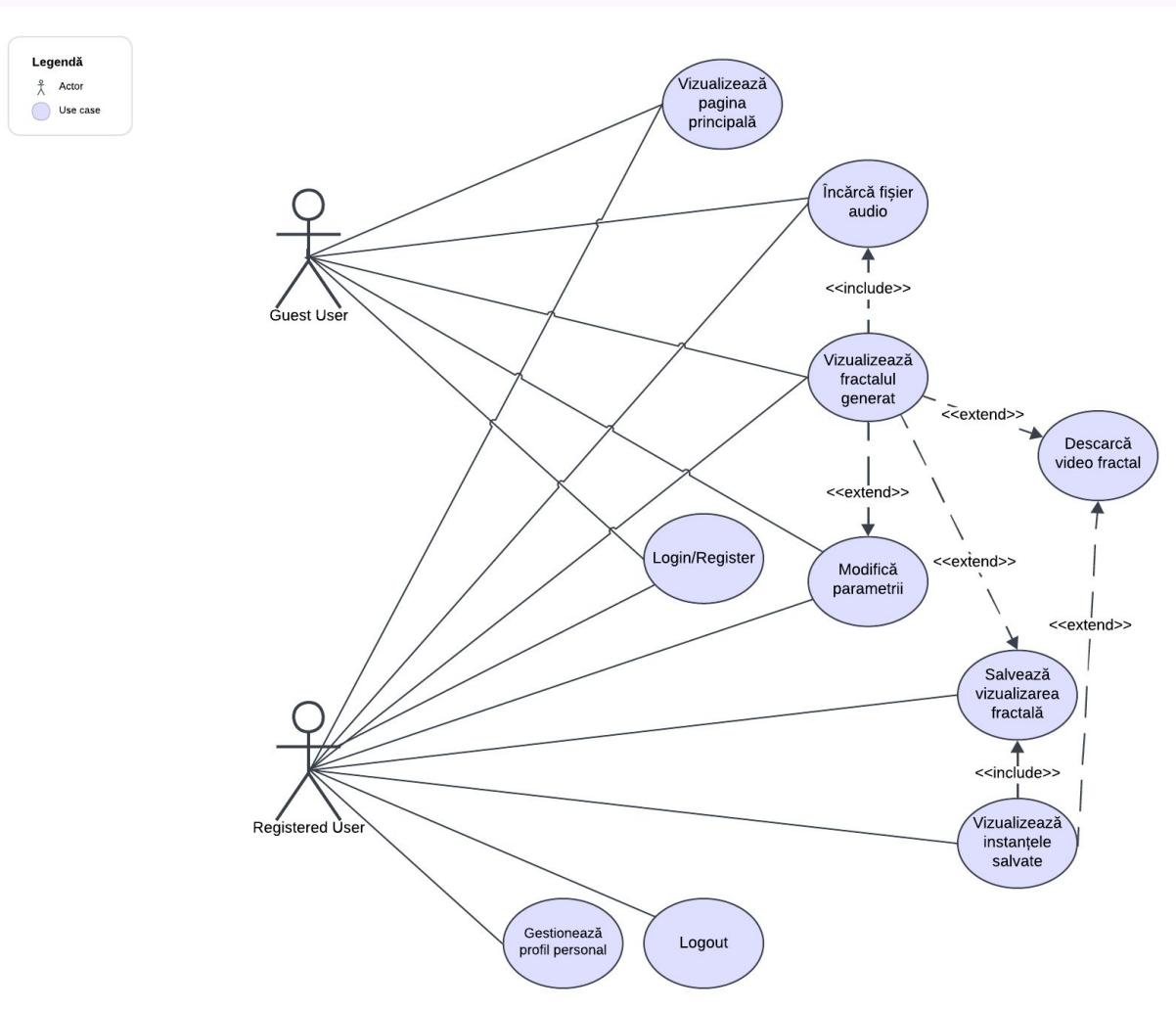
Primary Color

Secondary Color

 Rainbow mode

Mandelbulb Info

Use Case Diagram

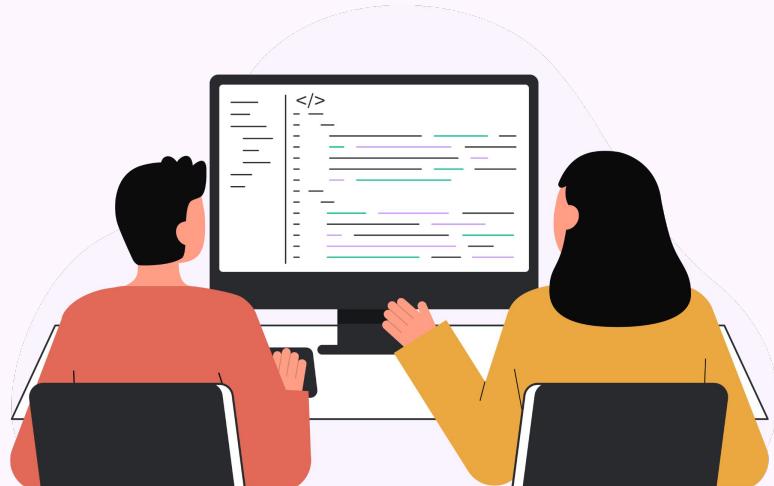




Playwright

Test-Driven Development

xUnit.net



Pair Programming

Test-Driven Development

Follow **Red** → **Green** → Refactor

PROS

- Helped clarify expected behavior early
- Safer refactoring because existing tests immediately detected mistakes

CONS

- TDD was only applied to C# backend logic
- Difficult for complex JavaScript logic
- Fractal logic evolved frequently, making early tests unstable or irrelevant

Pair Programming

Roles: **Driver** & **Navigator**

PROS

- Useful when working with complex logic
- Instant feedback
- Knowledge sharing
- Easier to continue work when one person is stuck
- When requirements evolved during development

CONS

- Effectiveness strongly depends on the compatibility of the two developers
- Requires good communication and similar coding styles or architectural visions

**Pragmatic approach: testing strategy
adapted to the nature of each technology.**

Test Coverage

```
(base) PS C:\Users\bianc\Desktop\Synesthesia-Web-App\Synesthesia.Web.Tests> ./run-coverage.bat
Restore complete (0.8s)
Synesthesia.Web succeeded (0.6s) → C:\Users\bianc\Desktop\Synesthesia-Web-App\Synesthesia.Web\bin\Debug\net8.0\Synesthesia.Web.dll
Synesthesia.Web.Tests succeeded (0.5s) → bin\Debug\net8.0\Synesthesia.Web.Tests.dll
[xUnit.net 00:00:00.00] xUnit.net VSTest Adapter v2.5.3.1+6b60a9e56a (64-bit .NET 8.0.22)
[xUnit.net 00:00:00.19] Discovering: Synesthesia.Web.Tests
[xUnit.net 00:00:00.22] Discovered: Synesthesia.Web.Tests
[xUnit.net 00:00:00.22] Starting: Synesthesia.Web.Tests
[xUnit.net 00:00:00.96] Finished: Synesthesia.Web.Tests
Synesthesia.Web.Tests                                         Testing (2.2s)

Synesthesia.Web.Tests                                     GenerateCoverageResult (2.2s)
Generating report '.\TestResults\coverage.cobertura.xml'          (2.3s)

+-----+-----+-----+-----+
| Module | Line | Branch | Method |
+-----+-----+-----+-----+
| Synesthesia.Web | 98.24% | 50% | 92.85% |
+-----+-----+-----+-----+

+-----+-----+-----+-----+
|      | Line | Branch | Method |
+-----+-----+-----+-----+
| Total | 98.24% | 50% | 92.85% |
+-----+-----+-----+-----+
| Average | 98.24% | 50% | 92.85% |
+-----+-----+-----+-----+
Synesthesia.Web.Tests test succeeded (2.3s)

Test summary: total: 22, failed: 0, succeeded: 22, skipped: 0, duration: 1.7s
Build succeeded in 4.7s

Generating HTML report...
2026-01-13T02:24:35: Arguments
2026-01-13T02:24:35: -reports:../TestResults/coverage.cobertura.xml
2026-01-13T02:24:35: -targetdir:../TestResults/CoverageReport
2026-01-13T02:24:35: -reporttypes:Html
```

Test Coverage

Summary

Sponsor

Star

Information

Parser: Cobertura
Assemblies: 1
Classes: 7
Files: 7
Coverage date: 1/13/2026 - 2:24:35 AM

Line coverage

98%

Covered lines: 56
Uncovered lines: 1
Coverable lines: 57
Total lines: 505
Line coverage: 98.2%

Branch coverage

50%

Covered branches: 3
Total branches: 6
Branch coverage: 50%

Method coverage

Feature is only available for sponsors

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Name	Covered	Uncovered	Coverable	Total	Percentage	Covered	Total	Percentage
Synesthesia.Web	56	1	57	505	98.2%	3	6	50%
Synesthesia.Web.Data.ApplicationDbContext	15	0	15	34	100%	0	0	
Synesthesia.Web.Models BaseEntity	8	0	8	27	100%	0	0	
Synesthesia.Web.Pages ErrorModel	8	0	8	28	100%	3	4	75%
Synesthesia.Web.Pages IndexModel	6	0	6	20	100%	0	0	
Synesthesia.Web.Pages PrivacyModel	6	0	6	20	100%	0	0	
Synesthesia.Web.Pages ProfileModel	8	0	8	202	100%	0	0	
Synesthesia.Web.Pages StudioModel	5	1	6	174	83.3%	0	2	0%

Project Management and Issue Tracking

The screenshot shows a Trello board titled "Synesthesia". The board is organized into columns: "To Do", "Doing", "Done - Sprint 1", "Done - Sprint 2", and "Done - Sprint 3". Each column contains cards representing user stories or tasks.

- To Do:** Contains a card with the text: "Ca utilizator, vreau să mă pot autentifica în contul meu deja existent, pentru a accesa vizualizările mele salvate." and another card with the text: "Ca vizitator, vreau să îmi pot crea un cont, pentru a salva vizualizările mele preferate."
- Doing:** Contains a card with the text: "Ca vizitator, vreau să mă pot autentifica în contul creat, pentru a accesa funcțiile complete ale aplicației."
- Done - Sprint 1:** Contains a card with the text: "Ca utilizator, vreau să văd în timp real fractali 2D/3D animați sincron cu ritmul și frecvențele piesei."
- Done - Sprint 2:** Contains a card with the text: "Ca utilizator, vreau să pot selecta tipul fractalului dintr-un meniu, pentru a comuta instant între Mandelbrot, Julia și Mandelbulb."
- Done - Sprint 3:** Contains a card with the text: "Ca utilizator, vreau să pot modifica în timp real zoom-ul, culorile, rotația și viteza fractalului."
- Done - Sprint 3:** Contains a card with the text: "Ca utilizator, vreau să pot salva vizualizarea generată, pentru a o accesa ulterior."

At the bottom of the board, there are navigation links: "Inbox", "Planner", "Board", and "Switch boards".

Communication



slack → sharing docs etc.

The screenshot shows the Slack web interface. On the left, the sidebar displays the MOPS-Team channel, which has a 3-day trial left. Below the sidebar, there are sections for Threads, Huddles, Directories, Starred items, and a placeholder for dragging important stuff. The main area shows the #synesthesia-general channel. A message from Andreea Capitanu at 3:39 PM says "Bună! 😊 Am adăugat la documentul cu user story-urile inițiale următoarele lucruri:". Below this, a PDF file named "User_Stories.pdf" is attached. The PDF content is as follows:

User Stories inițiale:
Pentru Utilizator Autenticat (User)

1. Ca utilizator, vreau să mă pot autentifica în contul meu deja existent, pentru a accesa vizualizările și interacțiunile mele.
2. Ca utilizator, vreau să îl pot vedea o pagină demo cu vizualizările și funcțiile predefinite, pentru a înțelege cum funcționează aplicația.
3. Ca utilizator, vreau să îl pot face să audă prin drag & drop, pentru a genera vizualizările fizice pentru produs.
4. Ca utilizator, vreau să îl pot vedea în timp real fixatul 2D și 3D animat pe baza mea și a mei.
5. Ca utilizator, vreau să îl pot crea un tip de instalație din un meniu, pentru a consulta instant între Model și Jocuri și Aplicații.
6. Ca utilizator, vreau să îl pot accesa în rang real parametri fixatului.
7. Ca utilizator, vreau să îl pot apăsa și extinere la harta și trebui, pentru a vedea animații care urmează rîndul.

Below the PDF, there is a message from Andreea Capitanu: "Message #synesthesia-general".

The screenshot shows a Slack thread. Bianca Dogareci posted a message 7 minutes ago: "Bună! 😊 Dațeți aici Requirements Document și Use Case Diagram pentru proiectul nostru. Vă rog să le parcurgeți și să-mi spuneți dacă aveți întrebări sau observații. Le vom discuta în următorul standup. (edited)" She attached two files: "Requirements_Document.pdf" and "UseCase_Diagram.png". Andreea Capitanu responded 5 minutes ago: "Mulțumim pentru documente! Le vom include în backlog refinement și ne asigurăm că sunt clar înțelese înainte de următorul sprint. Dacă apar întrebări, le discutăm la standup." There is one reply to Andreea's message.



Discord → pair programming, meetings etc.

A screenshot of a Discord message notification. It shows a call icon and the text: "Bianca started a call that lasted 6 hours. Yesterday at 22:16".

Impediments

- 01 Code coverage tool including files like:
migrations, ApplicationDbContext.cs etc.
- 02 Making fractal parameters change with
music, not the viewport/camera
- 03 Recording video at a higher quality

Version Control & Collaboration



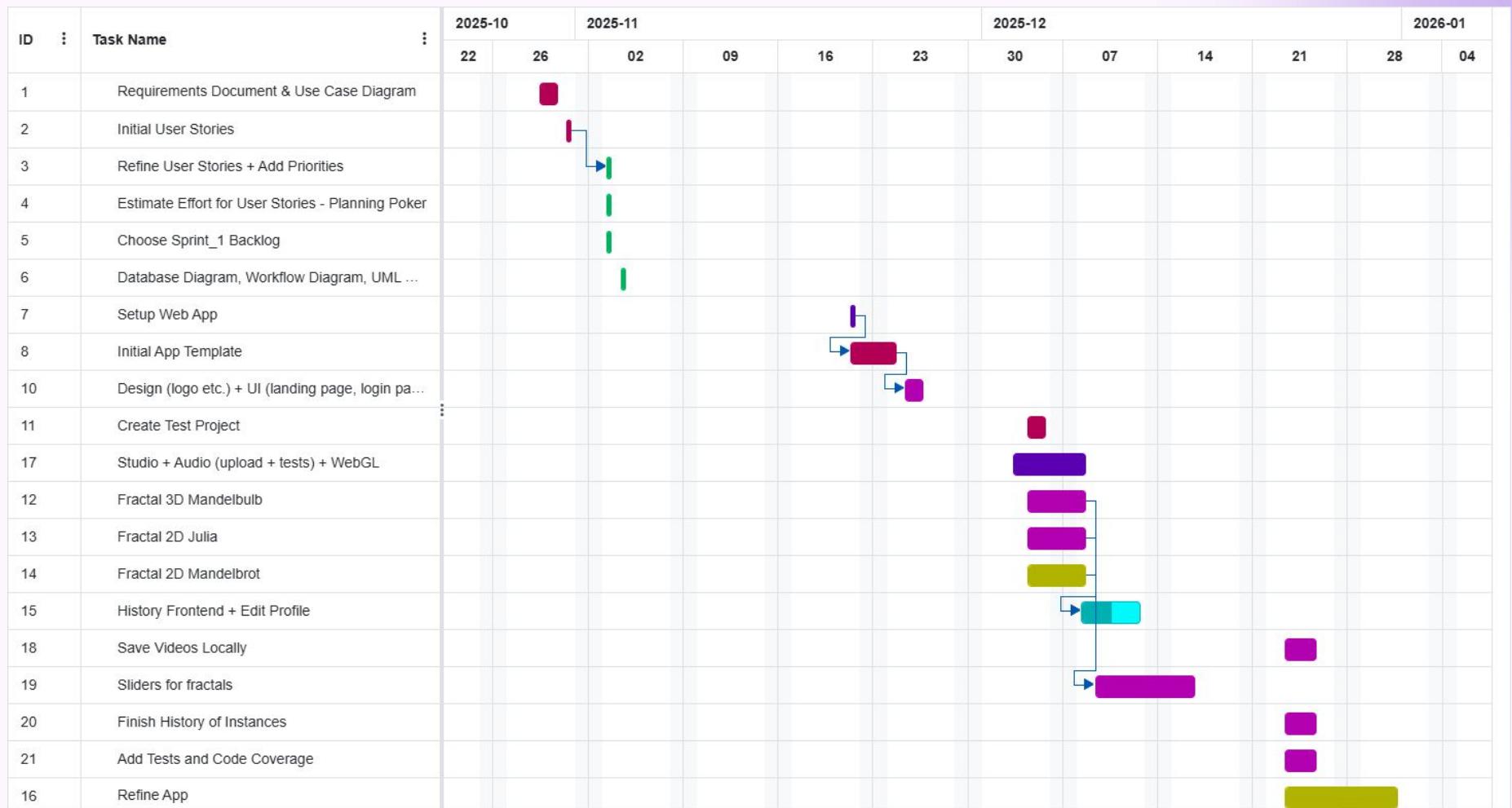
git



[Link to our GitHub repository!](#)

Contribution of each member

- Căpitanu Andreea – **35%**
- Dogăreci Bianca-Alexandra – **35%**
- Ionaşcu Dragoş-Adrian – **20%**
- Dițoiu Andrei-Adelin – **10%**





Thank you!