

A decorative graphic on the left side of the slide consisting of overlapping geometric shapes. It includes a blue parallelogram, a light green parallelogram, and a dark grey parallelogram, all with thin black outlines.

History of WYSIWYG

By Chris Kinzel

What is WYSIWYG?

- Key features of WYSIWYG

What is WYSIWYG?

- Key features of WYSIWYG
 - Content preview optimized for a particular type of output allowing users to visualize what they are producing

What is WYSIWYG?

- Key features of WYSIWYG
 - Content preview optimized for a particular type of output allowing users to visualize what they are producing
 - User interface to manipulate content

What is WYSIWYG?

- Preview not always a faithful reproduction

What is WYSIWYG?

- Preview not always a faithful reproduction
 - Sometimes not always possible to reproduce with 100% fidelity

What is WYSIWYG?

- Preview not always a faithful reproduction
 - Sometimes not always possible to reproduce with 100% fidelity
 - Performance tradeoffs

What is WYSIWYG?

- Preview not always a faithful reproduction
 - Sometimes not always possible to reproduce with 100% fidelity
 - Performance tradeoffs
 - Errors/bugs

The first WYSIWYG

- Before WYSIWYG

The first WYSIWYG

- Before WYSIWYG
 - Text appeared in editors using system typeface

The first WYSIWYG

- Before WYSIWYG
 - Text appeared in editors using system typeface
 - No margins, spacing, bold, italic etc.

The first WYSIWYG

- Before WYSIWYG
 - Text appeared in editors using system typeface
 - No margins, spacing, bold, italic etc.
 - Users specify formatting using special control characters or markup

The first WYSIWYG

- Bravo

The first WYSIWYG

- Bravo
 - Document preparation program invented by Xerox PARC for the Alto in 1974

The first WYSIWYG

- Bravo
 - Document preparation program invented by Xerox PARC for the Alto in 1974
 - Supported displaying justification, fonts, proportional spacing

The first WYSIWYG

- Bravo
 - Document preparation program invented by Xerox PARC for the Alto in 1974
 - Supported displaying justification, fonts, proportional spacing
 - The Alto monitor was a portrait design so 1 full page of text could be displayed as would be printed



Bravo

- Made extensive use of the mouse for selecting and marking text

Bravo

- Made extensive use of the mouse for selecting and marking text
 - Interestingly not used for “command entry”

Bravo

- Made extensive use of the mouse for selecting and marking text
 - Interestingly not used for “command entry”
 - Considered too ambitious at the time to use a purely graphical approach for entering commands

Bravo

- When text was laid out on the screen 72ppi font files were used, for printing 300ppi files were used

Bravo

- When text was laid out on the screen 72ppi font files were used, for printing 300ppi files were used
 - This could cause words and characters to appear slightly off

READY: Select operand or type command

Last command was LOOK

*{pewstyli...ravoulsu} {>>This.i...me;text.} {}

SampleDoc.bravo◀

Moving around the document is mostly intuitive. There's a hidden scroll bar to the left of the document text. It behaves a little like the old X-Windows scroll bars: a click on the left button scrolls you up, a click on the right button scrolls you down. This makes sense if you know that one version of the Alto's mouse had the buttons in a vertical column rather than a horizontal row.

We mentioned Bravo is a WYSIWYG editor with multiple type-faces and font sizes. You access them via the look mode. After entering the look mode by pressing the 'T' key, you select from a small collection of type-faces and font sizes by pressing the number keys.

- 0 Times Roman, 10 pt (default)
- 1 Times Roman, 8 pt
- 2 XEROX Logo
- 3 Math, 10 pt
- 4 Greek, 10 pt
- 5 Times Roman, 12 pt
- 6 Helvetica, 10 pt
- 7 Helvetica, 8 pt
- 8 Gacha, 10 pt (fixed-pitch typeface)
- 9 Helvetica, 18 pt

Type styling in Bravo is very, very odd.

If type styling in Bravo is odd, then paragraph styling is completely insane. Maybe it's not as insane as all that; to style a paragraph, you select the paragraph, enter the *look* mode and then select the look you want for the paragraph. But the way you select a paragraph is somewhat non-obvious.

First, you have to define a paragraph. In Bravo, paragraphs are all text between Control-CR's. So to get a paragraph, you append or insert a Control-CR, some text and then another Control-CR. Once you've done that, you select the paragraph by hitting the middle (*yellow*) button just to the left of the text (but not so far that you're in the invisible scroll bar.)

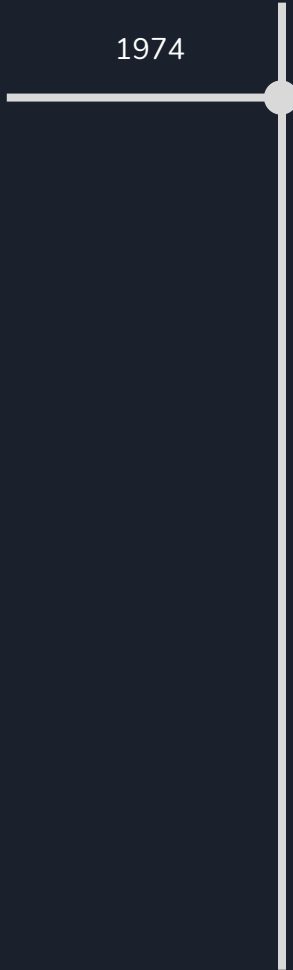
As an example, here's some centered text.

Filing Documents

Bravo

1974

- Text selection with mouse
- Text rendering



Bravo

- Text selection with mouse
- Text rendering

1974

1975



Bravo

- Text selection with mouse
- Text rendering

1974

1975

Gypsy

- Copy, cut, paste
- Mouse support!

Electric pencil

- Word wrap

Bravo

- Text selection with mouse
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1974

1975

Gypsy

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1980

Bravo

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1974

1975

Gypsy

- Copy, cut, paste
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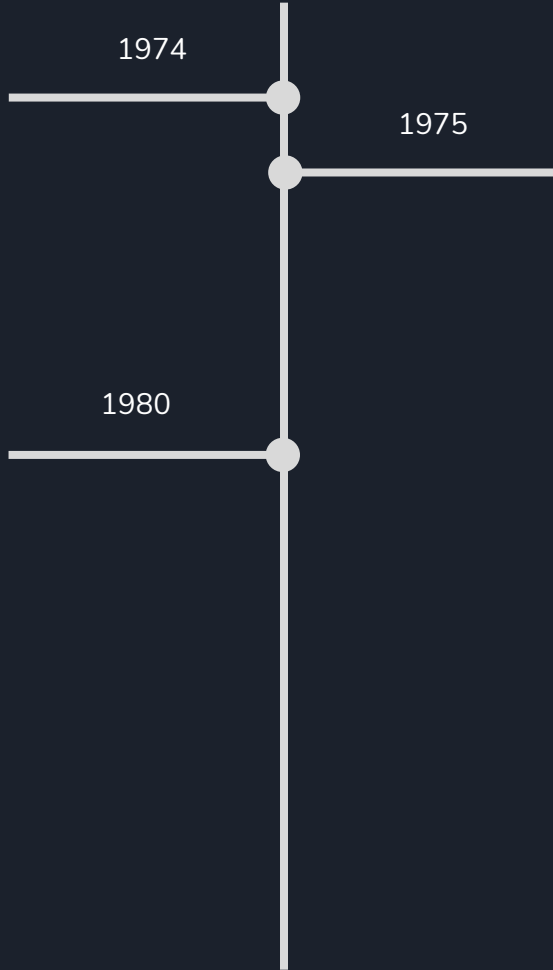
Electric pencil

- Word wrap

WordStar

- Accurate line, page breaks, and margins
- Typeface rendering

1980



< < <

M A I N

M E N U

> > >

--Cursor Movement--

-Delete-

-Miscellaneous-

-Other Menus-

^S char left ^D char right

^G char

^I Tab

^B Reform

(from Main only)

^A word left ^F word right

DEL chr lf

^V INSERT ON/OFF

^J Help ^K Block

^E line up ^X line down

^T word rt

^L Find/Replce again

^Q Quick ^P Print

--Scrolling--

^Y line

RETURN End paragraph

^O Onscreen

^Z line down ^W line up

^N Insert a RETURN

^C screen up ^R screen down

^U Stop a command

!----!----!----!----!----!----!----!----!----!----!----!-----R

1. Introducing WordStar

WordStar is highly flexible and very visible. Watch the screens as you give commands, and information in various parts of the screen will guide you. You won't see all the information all the time, but it will be there when you need it.

WHERE YOU ARE

The seven WordStar menus are your greatest aids. They are like signposts at the top of your screen, showing you where you are.

1HELP 2INDENT 3SET LM 4SET RM 5UNDLIN 6BLDFCE 7BEGBLK 8ENDBLK 9BEGFIL 10ENDFIL

Bravo

- Text selection with mouse
- Text rendering

1974

1975

Gypsy

- Copy, cut, paste
- Mouse support!

Electric pencil

- Word wrap

WordStar

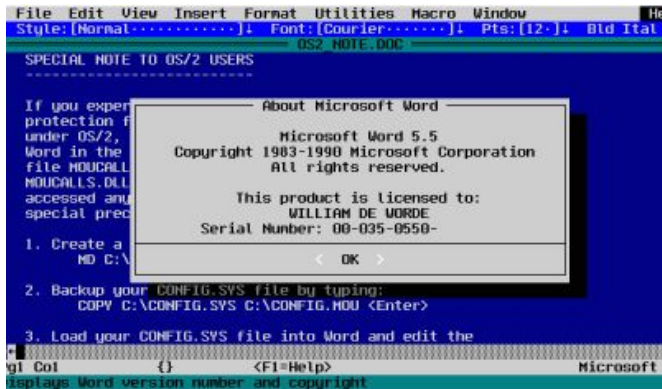
- Accurate line and page breaks
- Typeface rendering

1980

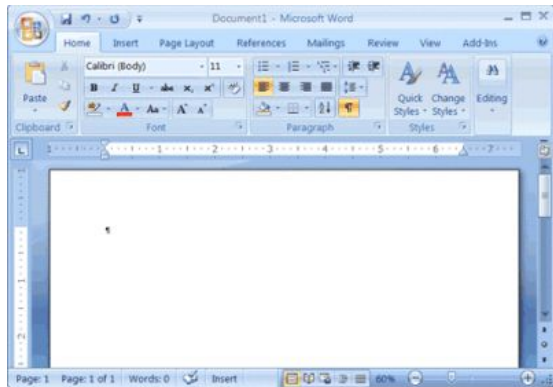
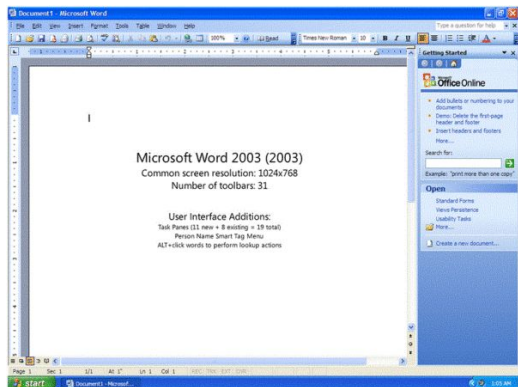
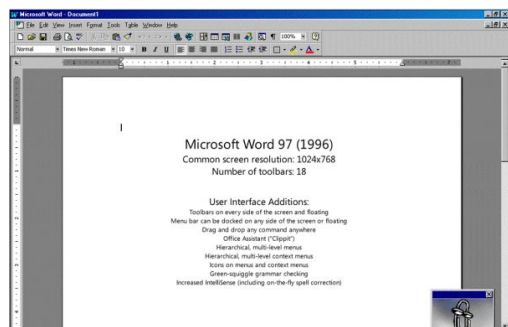
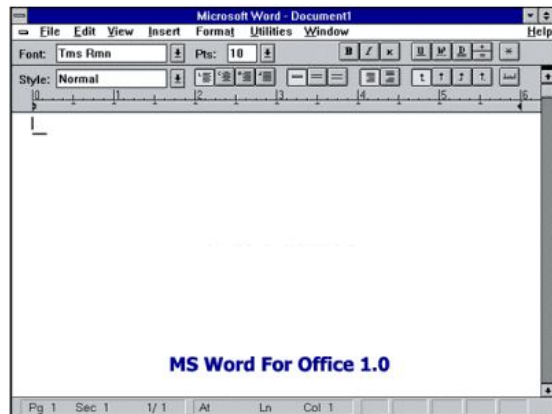
1981

Microsoft Word

- Undo/redo support
- Find/replace
- Macros



Microsoft Word For MS DOS 6.0



Other WYSIWYG Domains

- Photo editing

Other WYSIWYG Domains

- Photo editing
- Video editing

Other WYSIWYG Domains

- Photo editing
- Video editing
- Audio editing

Other WYSIWYG Domains

- Photo editing
- Video editing
- Audio editing
- Building websites

Other WYSIWYG Domains

- Photo editing
- Video editing
- Audio editing
- Building websites
- Building software (no code)

Other WYSIWYG Domains

- Photo editing
- Video editing
- Audio editing
- Building websites
- Building software (no code)
- Database queries

Other WYSIWYG Domains

- Photo editing
- Video editing
- Audio editing
- Building websites
- Building software (no code)
- Database queries
- Presentations

Other WYSIWYG Domains

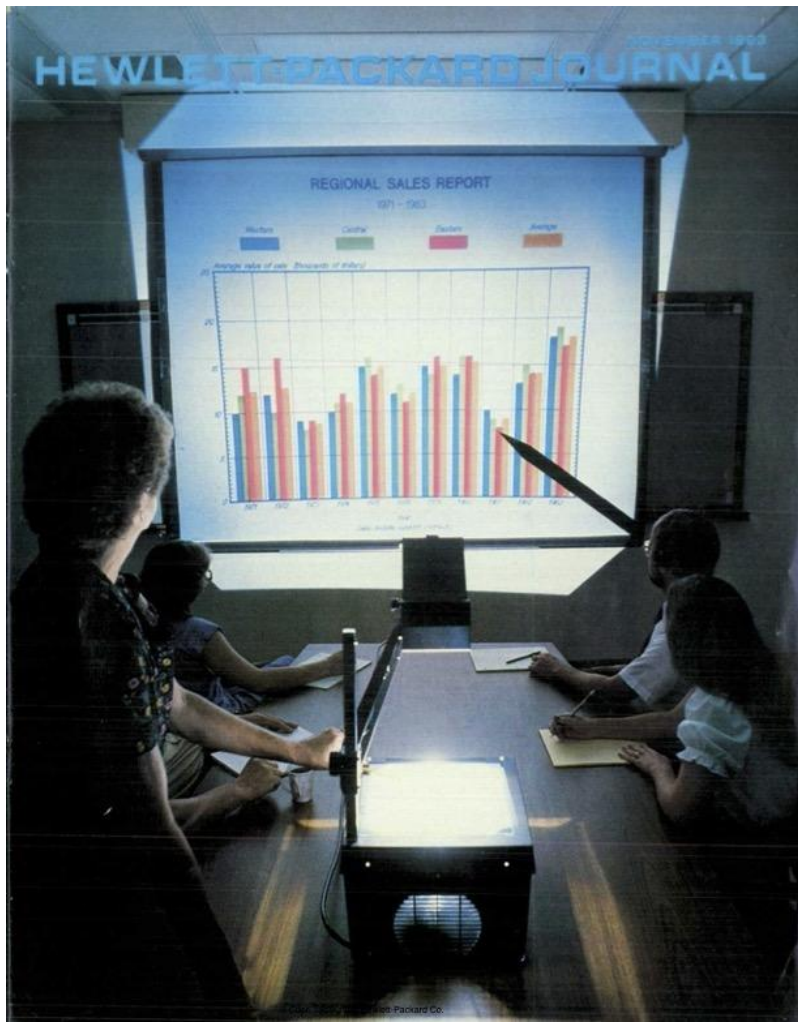
- Photo editing
- Video editing
- Audio editing
- Building websites
- Building software (no code)
- Database queries
- Presentations
- Spreadsheets

BRUNO

1979

- Overhead slide production



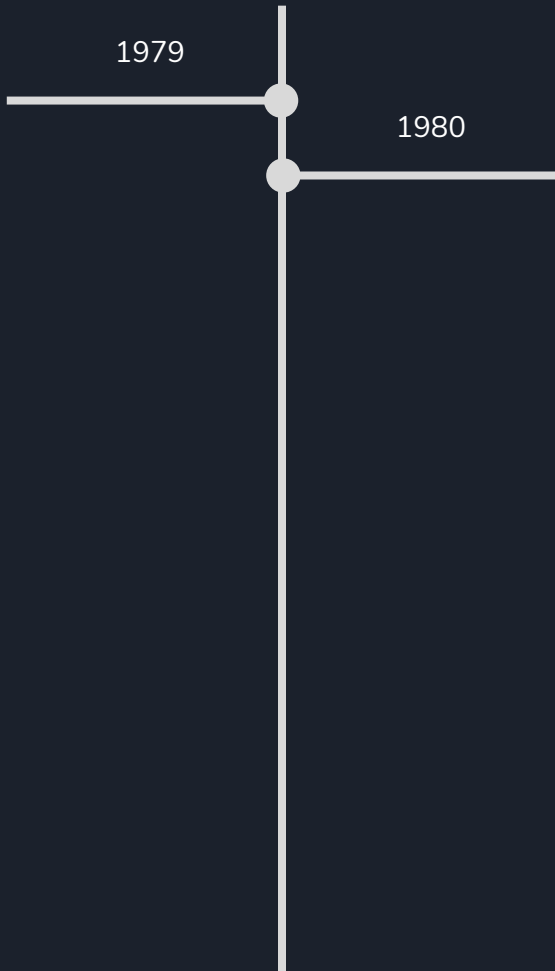


BRUNO

- Overhead slide production

1979

1980



BRUNO

- Overhead slide production

1979

1980

Lotus 1-2-3

- Spreadsheets



BRUNO

- Overhead slide production

1979

1980

Lotus 1-2-3

- Spreadsheets
- Drag and drop cell margins and define ranges

BRUNO

- Overhead slide production

1979

1980

Lotus 1-2-3

- Spreadsheets
- Drag and drop cell margins and define ranges
- Charting/graphing

1-2-3/G [69.4]

Ready

File Edit Worksheet Range Copy... Move... Print Graph Data Utility Quit...

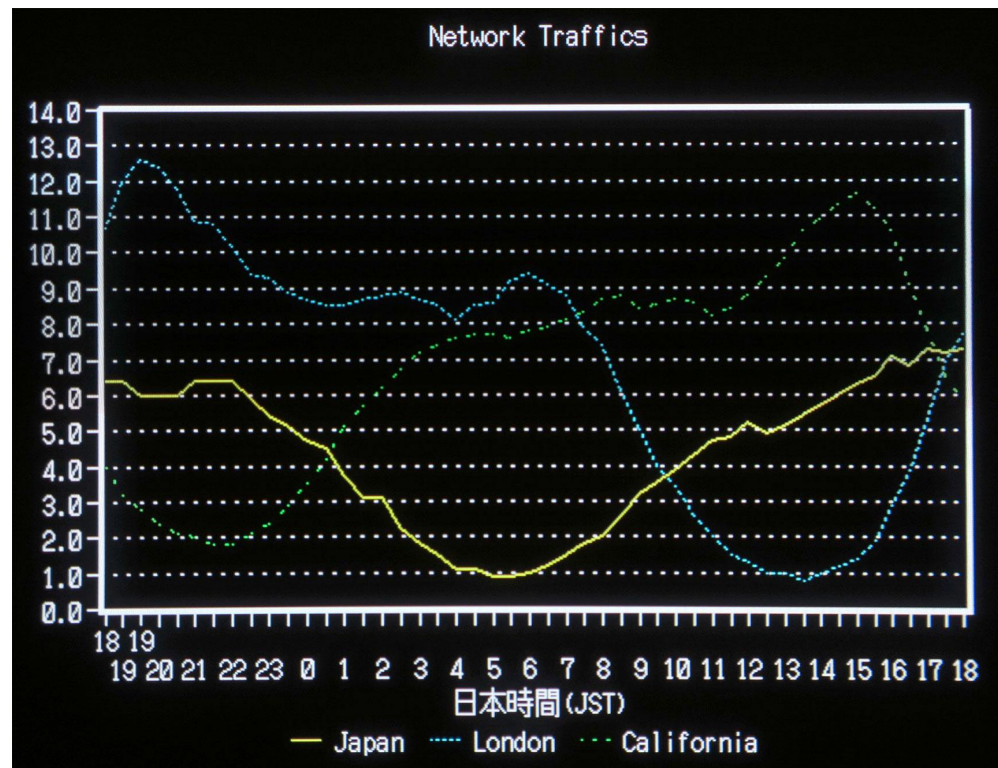
Help

A:A5

'Operating System

C:\123G\FEATURES.WG1

	A	B	C	D	E	F	G	H
1	NEW FEATURES IN 1-2-3/G (vs. other versions of 1-2-3)							
2								
3	123/G 123 Rel. 3 123 Rel. 2.2 123 Rel. 2							
4								
5	Operating System	OS/2 PM	DOS or OS/2	DOS	DOS			
6	Number of Colors:	18	1	1	1			
7	Number of Fonts	256	1	1	1			
8	Borders	Yes	No	No	No			
9	3D Worksheets	Yes	Yes*	No	No			
10	Collections	Yes	No	No	No			
11	Solver/Backsolver	Yes	No	No	No			
12	Links to other apps	Yes	No	No	No			
13	Groups	Yes	Yes*	No	No			
14	Select before command	Yes	No	No	No			
15	Screen Preview	Yes	No	No	No			
16	Keystroke Editor	Yes	No	Yes*	No			
17	Undo	Yes	Yes*	Yes*	No			
18	File templates	Yes	No	No	No			
19	Desktop files	Yes	No	No	No			
20	Multiple instances	Yes	No	No	No			
21	Data external	Yes	Yes	No	No			
22	Graph tool	Yes	No	No	No			
23	Clipboard access	Yes	No	No	No			
24	Copy options	Yes	No	No	No			
25	Row sizing	Yes	No	No	No			
26	Auto-column fit to entry	Yes	No	No	No			
27	Range Search	Yes	Yes	No	No			
28	Minimum recalc	Yes	Yes	No	No			



BRUNO

- Overhead slide production

1979

1980

1983

Lotus 1-2-3

- Spreadsheets
- Drag and drop cell margins and define ranges
- Charting/graphing

BRUNO

- Overhead slide production

1979

MacPaint

- “Marching ants” selection

1983

1980

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- Implemented many familiar graphics tools: lasso, paint bucket, eraser, shape drawing

1983



BRUNO

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- “Marching ants” selection
- Implemented many familiar graphics tools: lasso, paint bucket, eraser, shape drawing
- 1-level undo support

1983



File

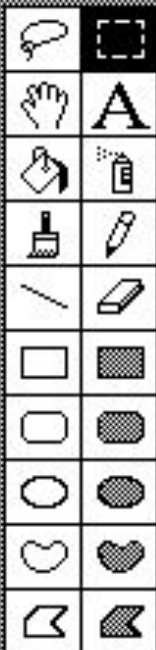
Edit

Goodies

Font

FontSize

Style



BRUNO

- Overhead slide production

1979

1980

Lotus 1-2-3

- Spreadsheets
- Drag and drop cell margins and define ranges
- Charting/graphing

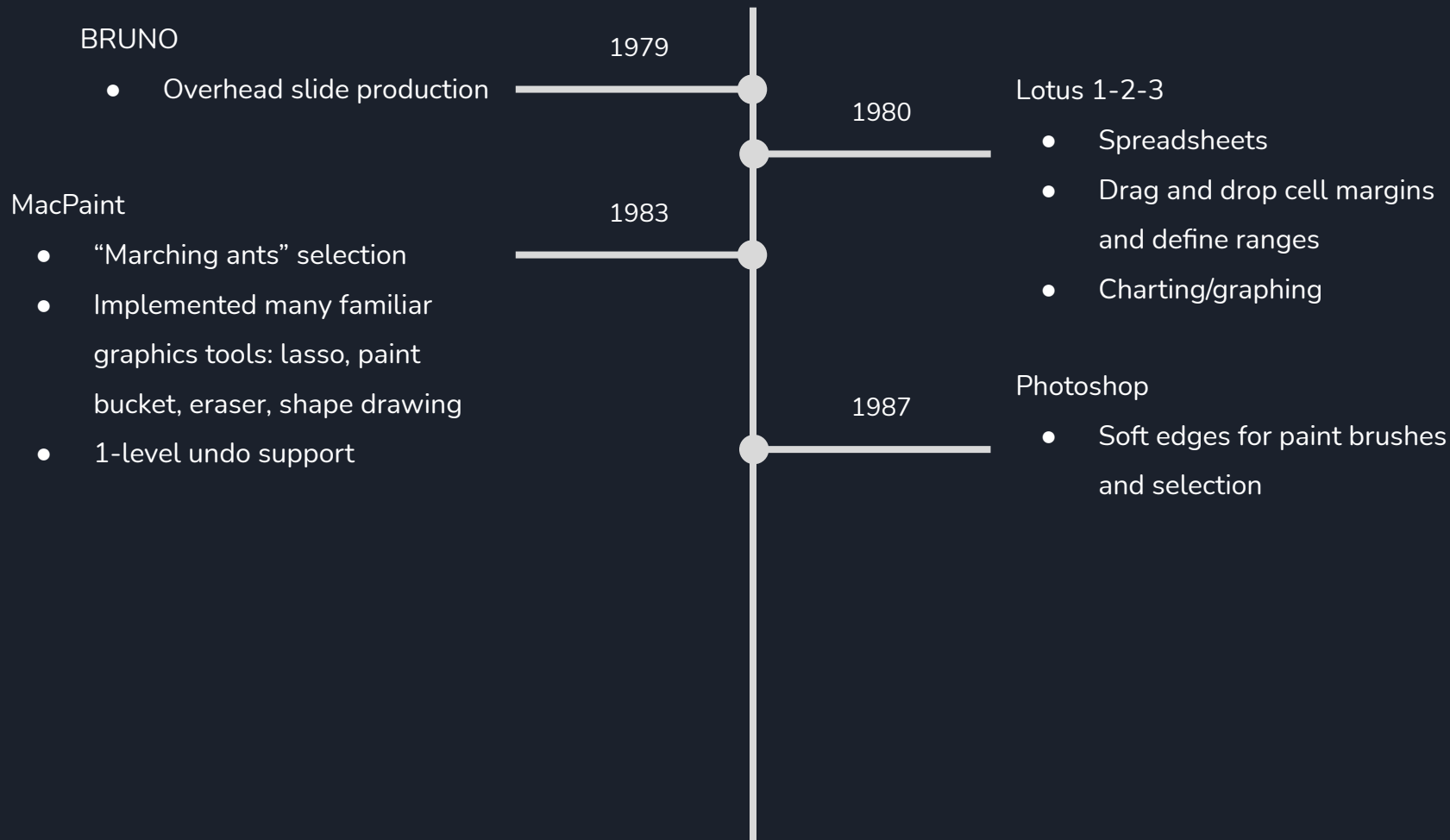
MacPaint

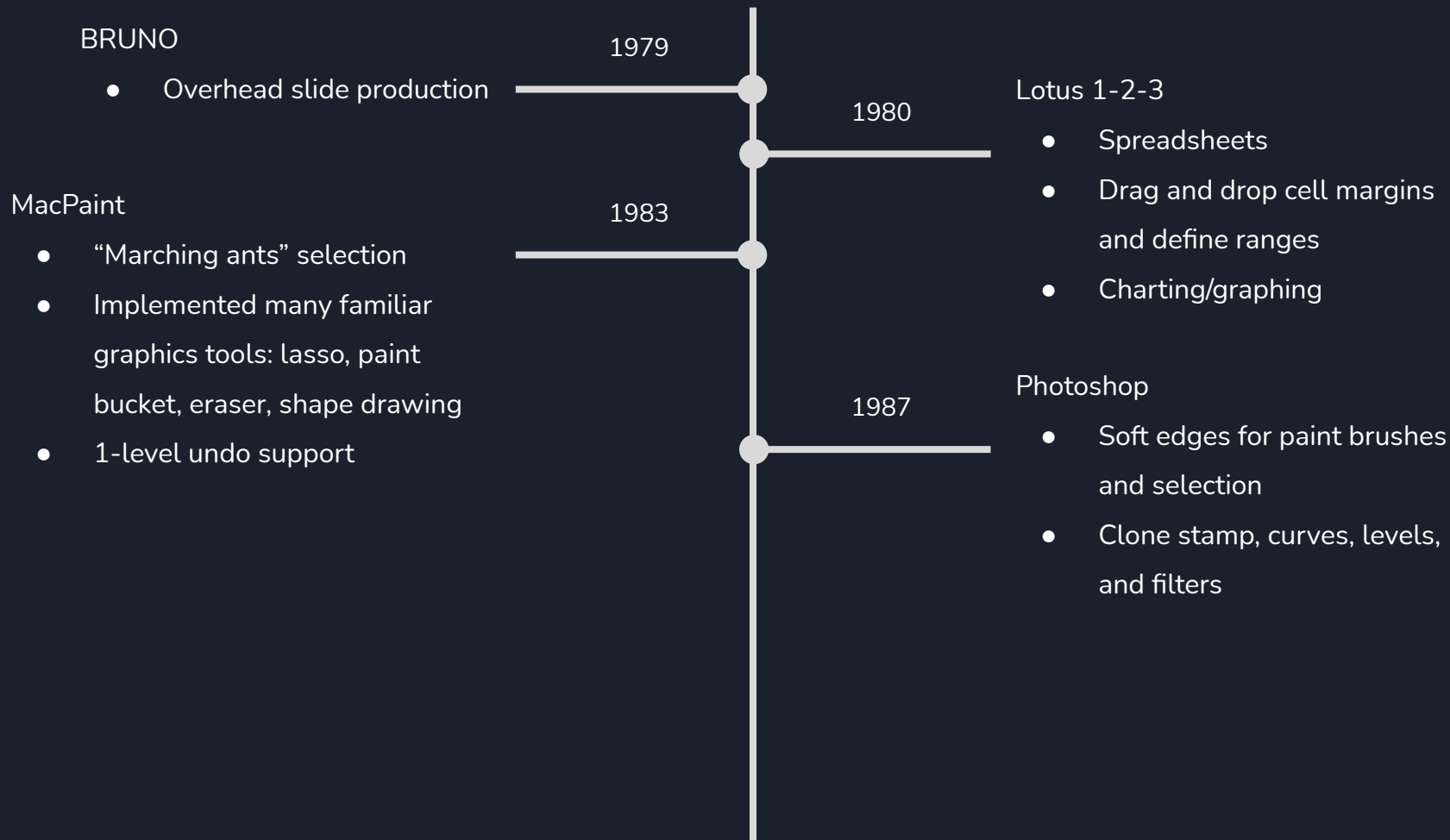
- “Marching ants” selection
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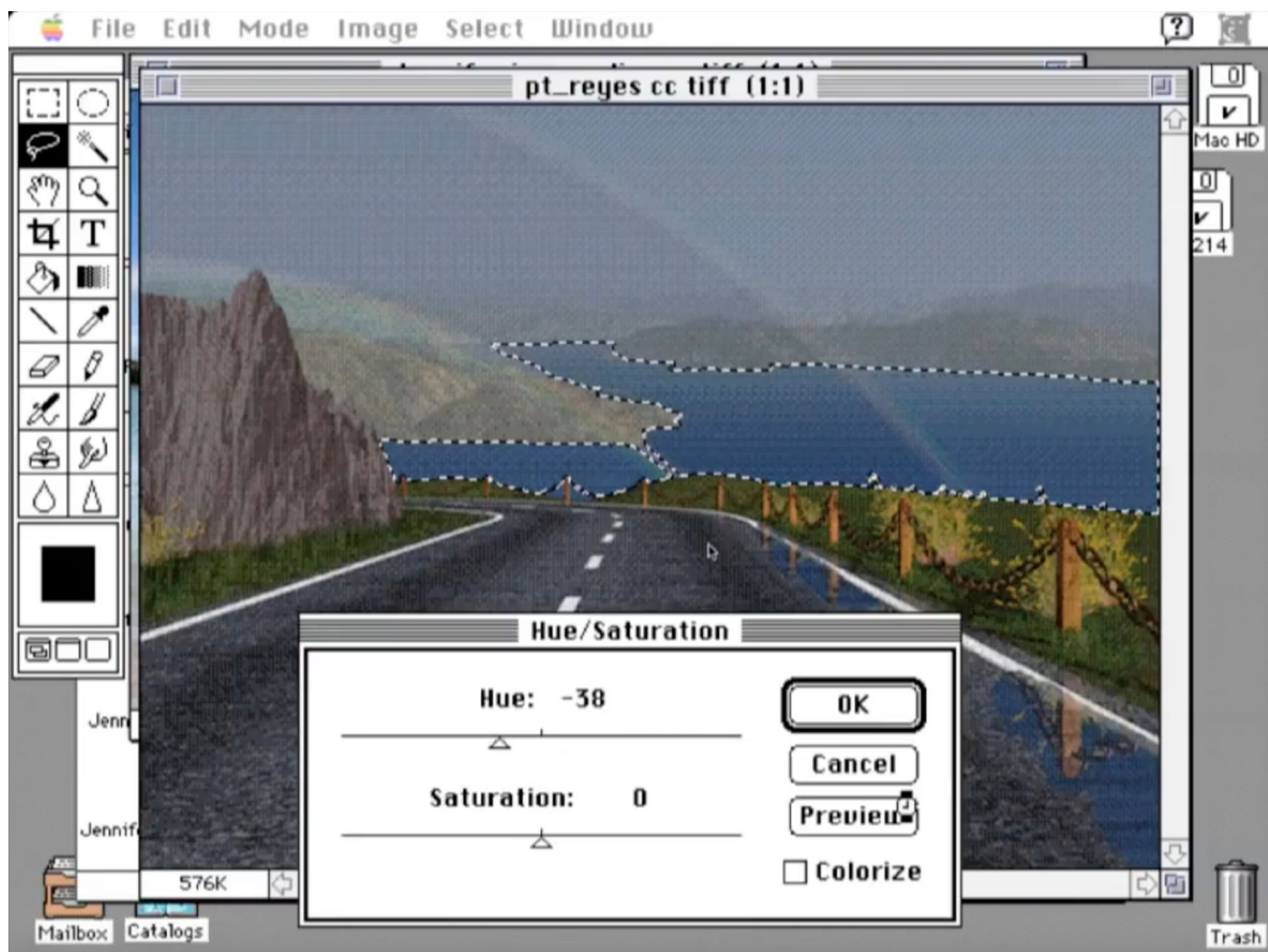
1983

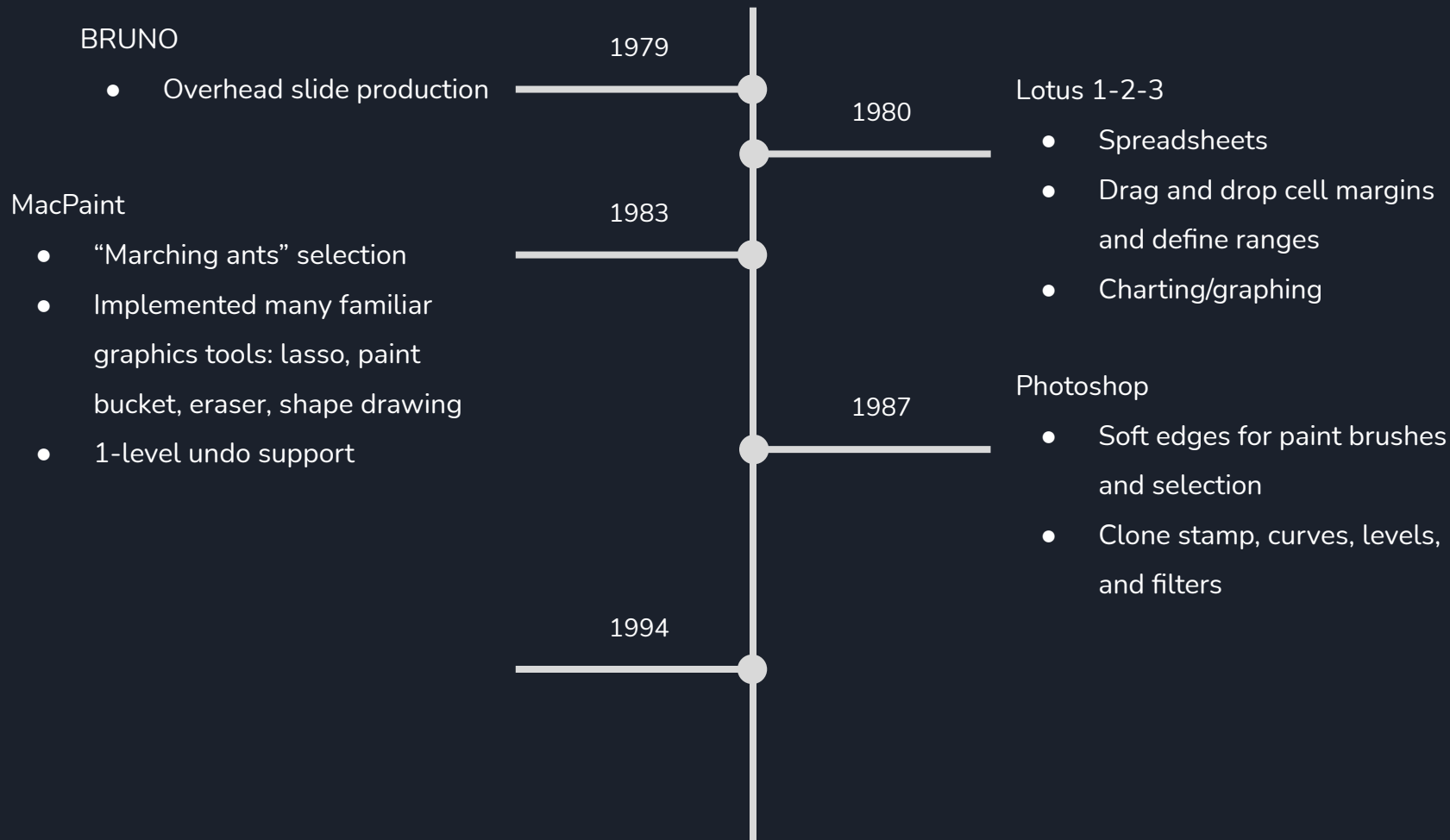
1987

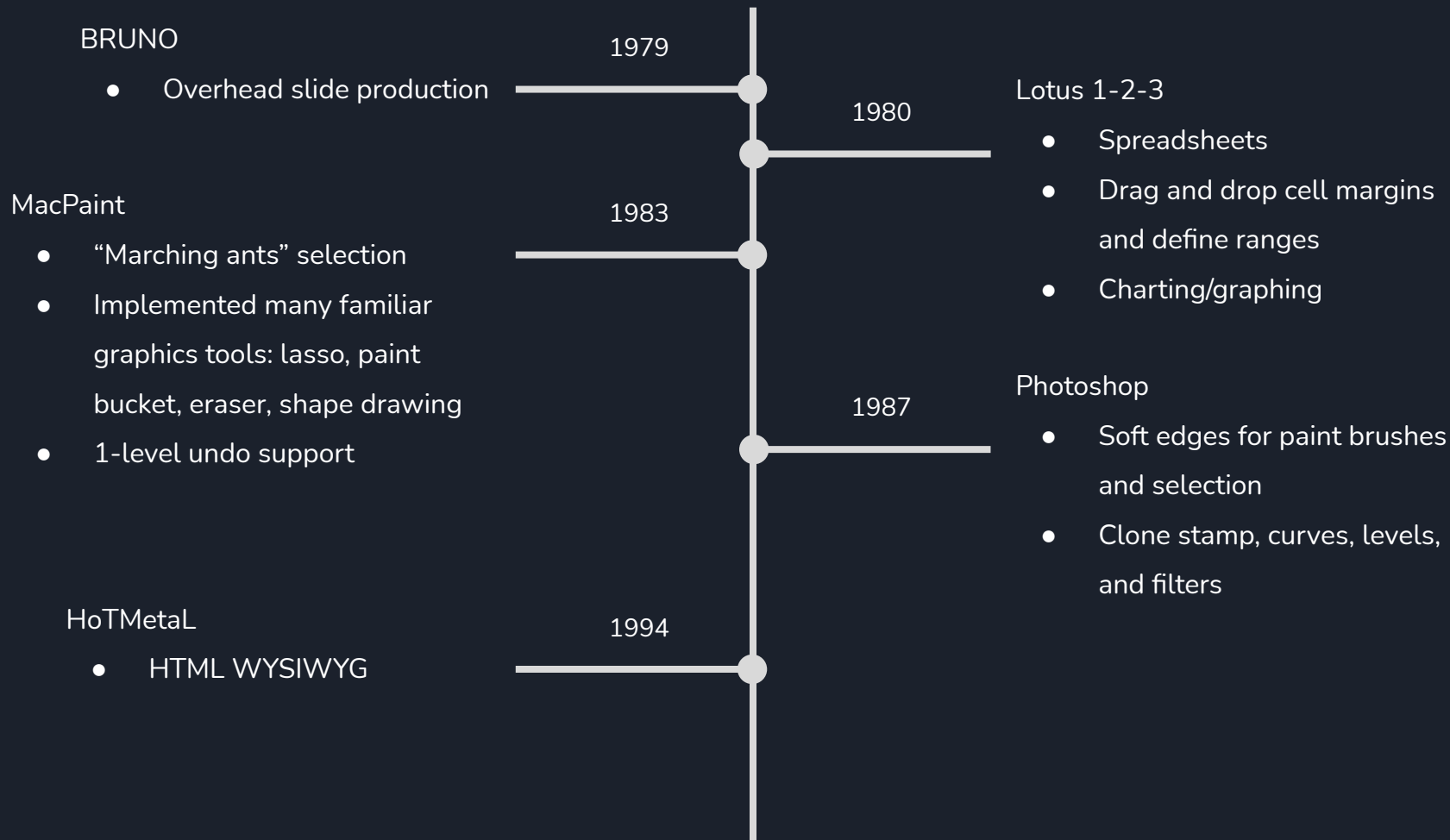


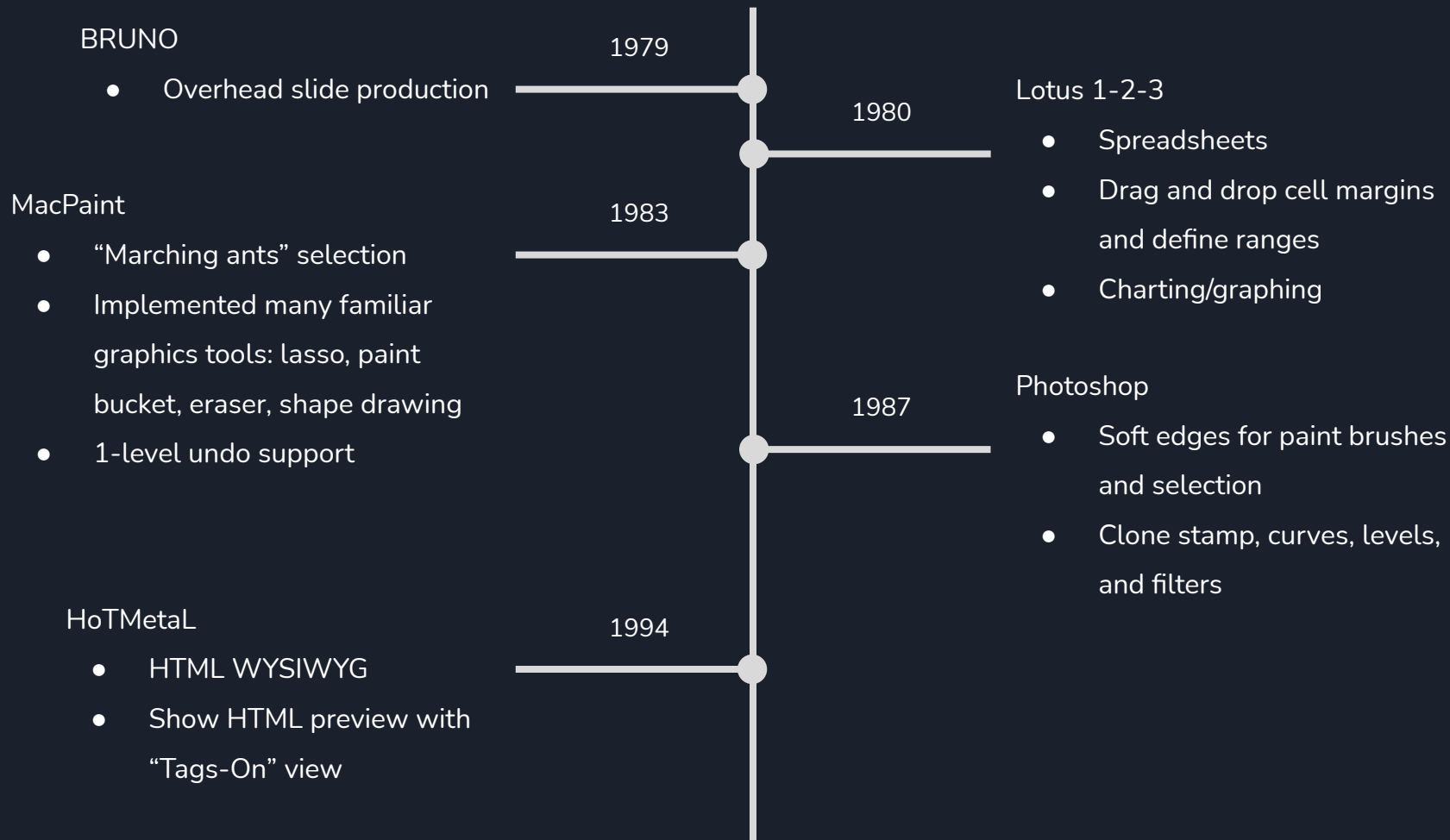












Modern WYSIWYG



A vertical white line runs down the center of the slide. A horizontal white line intersects it at a point marked by a white circle. The year '2006' is positioned above the horizontal line, and the text 'Wix' is positioned above a bulleted list to the right of the circle.

2006

Wix

- Drag and drop WYSIWYG for web pages

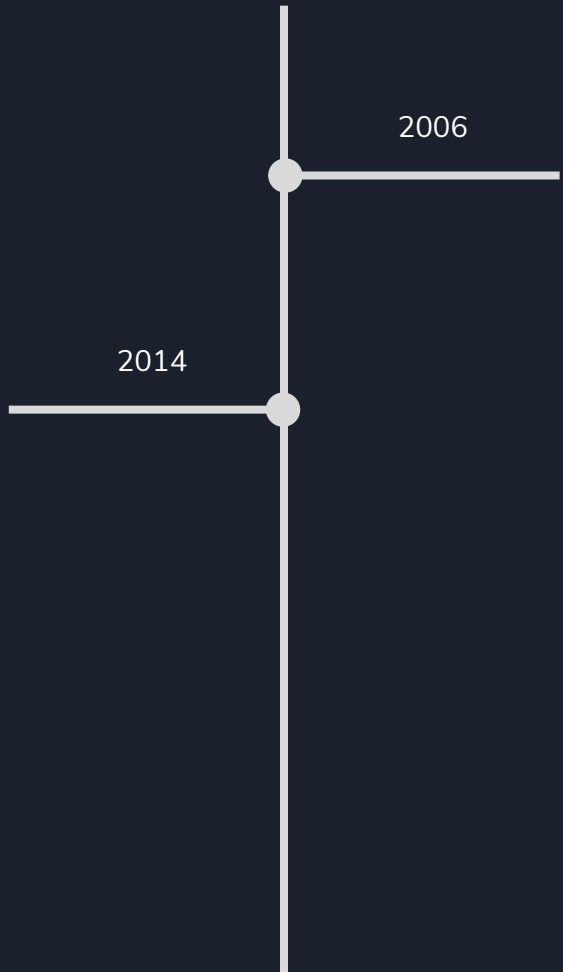


2006

Wix

- Drag and drop WYSIWYG for web pages
- Simple column and grid layout for positioning

Layers



Wix

- Drag and drop WYSIWYG for web pages
- Simple column and grid layout for positioning

Overleaf

- WYSIWYG LaTeX editor

2014

2006

Wix

- Drag and drop WYSIWYG for web pages
- Simple column and grid layout for positioning

Overleaf

- WYSIWYG LaTeX editor
- Removes LaTeX environment setup

2014

2006

Wix

- Drag and drop WYSIWYG for web pages
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Overleaf

- WYSIWYG LaTeX editor
- Removes LaTeX environment setup
- Collaborative

2014

2006

Wix

- Drag and drop WYSIWYG for web pages
- Simple column and grid layout for positioning



Menu



Source

Rich Text



Recompile

Download PDF

View warnings (6)



images

homework.cls

main.tex

File outline

We can't find any sections or subsections in this file.

[Find out more about the file outline](#)

```

96 would be 2. If convergence rate is quadratic, then
97
98 \begin{equation} \tag{4}
99   V^{\text{tree}}_0(\Delta t) = V^{\text{exact}}_0 + \alpha
   (\Delta t)^2 + o((\Delta t)^2)
100 \end{equation}
101
102 where  $\alpha$  is some constant independent of  $\Delta t$ . What
103 is the ratio when convergence is quadratic? Does your convergence
104 table indicate a linear or quadratic convergence rate? Explain.
105
106 \begin{gather*}
107   \lim_{\Delta t \rightarrow 0} \frac{V^{\text{tree}}_0(\Delta t)^2 / 2 - V^{\text{tree}}_0(\Delta t)^2 / 4 - V^{\text{tree}}_0(\Delta t)^2 / 2}{V^{\text{tree}}_0(\Delta t)^2 / 2 - V^{\text{tree}}_0(\Delta t)^2 / 4} \\
108   = \lim_{\Delta t \rightarrow 0} \frac{V^{\text{exact}}_0 + \alpha(\Delta t)^2 + o((\Delta t)^2) - V^{\text{exact}}_0 - \alpha(\Delta t)^2 - o((\Delta t)^2)}{V^{\text{exact}}_0 + \alpha(\Delta t)^2 + o((\Delta t)^2) - V^{\text{exact}}_0 - \alpha(\Delta t)^2 - o((\Delta t)^2)} \\
109   = \lim_{\Delta t \rightarrow 0} \frac{-\frac{3}{4}\alpha(\Delta t)^2 + \frac{1}{4}c(\Delta t)^2 - c(\Delta t)^2}{-\frac{3}{4}\alpha(\Delta t)^2 + \frac{1}{4}c(\Delta t)^2 - \frac{1}{4}c(\Delta t)^2} \\
110   = \lim_{\Delta t \rightarrow 0} \frac{-\frac{3}{4}(\Delta t)^2(-a - c)}{-\frac{3}{4}(\Delta t)^2(-a - c)} \\
111   = \lim_{\Delta t \rightarrow 0} \frac{-\frac{3}{4}}{-\frac{3}{4}} = 4

```

$$V_0^{\text{tree}}(\Delta t) = V_0^{\text{exact}} + \alpha(\Delta t)^2 + o((\Delta t)^2) \quad [4]$$

where α is some constant independent of Δt . What is the ratio when convergence is quadratic? Does your convergence table indicate a linear or quadratic convergence rate? Explain.

$$\lim_{\Delta t \rightarrow 0} \frac{V_0^{\text{tree}}((\Delta t)^2/2) - V_0^{\text{tree}}((\Delta t)^2)}{V_0^{\text{tree}}((\Delta t)^2/4) - V_0^{\text{tree}}((\Delta t)^2/2)}$$

$$\lim_{\Delta t \rightarrow 0} \frac{V_0^{\text{exact}} + \alpha(\frac{\Delta t}{2})^2 + o((\frac{\Delta t}{2})^2) - V_0^{\text{exact}} - \alpha(\Delta t)^2 - o((\Delta t)^2)}{V_0^{\text{exact}} + \alpha(\frac{\Delta t}{4})^2 + o((\frac{\Delta t}{4})^2) - V_0^{\text{exact}} - \alpha(\frac{\Delta t}{2})^2 - o((\frac{\Delta t}{2})^2)}$$

$$\lim_{\Delta t \rightarrow 0} \frac{-\frac{3}{4}\alpha(\Delta t)^2 + \frac{1}{4}c(\Delta t)^2 - c(\Delta t)^2}{-\frac{3}{16}\alpha(\Delta t)^2 + \frac{1}{16}c(\Delta t)^2 - \frac{1}{4}c(\Delta t)^2}$$

$$\lim_{\Delta t \rightarrow 0} \frac{-\frac{3}{4}(\Delta t)^2(-a - c)}{-\frac{3}{16}(\Delta t)^2(-a - c)}$$

$$\lim_{\Delta t \rightarrow 0} \frac{-\frac{3}{4}}{-\frac{3}{16}} = 4$$

My convergence table does not show either a linear or a quadratic convergence rate. The ratio does not appear to be converging to any specific value. I believe this is because smoothing is required due to the lattice not having a node at the strike price.

- (b) Generate tables of fair values of the same call and put options using $\Delta t = 0.005$, assuming dividend yield $\rho = 0, 2\%, 5\%, 10\%$ respectively. How do call and put values change with the dividend yield ρ ?

2

Yield Value bpsrice

Overleaf

- WYSIWYG LaTeX editor
- Removes LaTeX environment setup
- Collaborative

2014

2006

Wix

- Drag and drop WYSIWYG for web pages
- Simple column and grid layout for positioning

2016

Overleaf

- WYSIWYG LaTeX editor
- Removes LaTeX environment setup
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2014

2006

Wix

- Drag and drop WYSIWYG for web pages
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2016

Figma

- Collaborative design prototyping tool

Overleaf

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2014

2006

Wix

- Drag and drop WYSIWYG for web pages
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2016

Figma

- Collaborative design prototyping tool
- Rapid high fidelity prototypes

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2006

Wix

- Drag and drop WYSIWYG for web pages
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2016

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- Collaborative design prototyping tool
- Rapid high fidelity prototypes
- Drag and drop interface

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2014

2006

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- Drag and drop WYSIWYG for web pages
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Figma

- Collaborative design prototyping tool
- Rapid high fidelity prototypes
- Drag and drop interface
- Scalable vector graphics

Overleaf

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- Removes LaTeX environment setup
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2014

2006

Wix

- Drag and drop WYSIWYG for web pages
- Simple column and grid layout for positioning

2016

Figma

- Collaborative design prototyping tool
- Rapid high fidelity prototypes
- Drag and drop interface
- Scalable vector graphics
- Springs and struts positioning as well as flexbox style layout

Overleaf

- WYSIWYG LaTeX editor
- Removes LaTeX environment setup
- Collaborative

2014

2006

Wix

- Drag and drop WYSIWYG for web pages
- Simple column and grid layout for positioning

2016

Figma

- Collaborative design prototyping tool
- Rapid high fidelity prototypes
- Drag and drop interface
- Scalable vector graphics
- Springs and struts positioning as well as flexbox style layout
- Supports simple animations and triggers on user events

Layers Assets Theme Config... ▾

Pages +

✓ Theme Configuration

Theme Overview

Material Components

Master Components

Disclaimer

Iconography

Shape

Typography

Color

Disclaimer

Figma + Material Theme Configuration Kit

[Download](#)

Welcome

Welcome to the unofficial Figma + Material Theme Kit. It's a great way to explore the possibilities of themes in Figma and Google's own Material Design Themes.

For more info on this kit, see [our GitHub](#).

Notes

The results of this kit may not be 100% congruent with output from Google's official Material Theming tool.

For more info on this kit, see [our GitHub](#).

Version 0.5 - Updated: Sep 20, 2018

Based on Material 0.2.2 from Material.io

Color

Theme color palette

Choose primary/secondary app colors

Primary

Secondary

Choose your surface background colors

Color preview

Typography

Typography

Choose your typefaces

H1 / Roboto Light

H2 / Roboto Light

H3 / Roboto Regular

Font preview

Shape

Shape

Choose a button shape

Choose a matching surface shape

Shape preview

Iconography

Iconography

Choose an icon style

Get the Figma material icon libraries

Icon preview

Design Prototype Inspect

Background

 E5E5E5 100% 

Text Styles

- H1
- H2
- H3
- H4
- H5
- H6
- Body 1
- Body 2
- Subtitle 1
- Subtitle 2
- Button
- Caption
- Overline



WYSIWYG and the Future

AI/Machine Learning

- Recent advances in deep learning are making it possible to build systems that can learn from examples

AI/Machine Learning

- Recent advances in deep learning are making it possible to build systems that can learn from examples
- Image, audio, and natural language domains can now be processed in complex ways that were not possible before

StyleGAN

- Special type of Generative Adversarial Network created by NVIDIA in December 2018

StyleGAN

- Special type of Generative Adversarial Network created by NVIDIA in December 2018
- Technique for creating realistic synthetic images based on a set of sample images

StyleGAN

- Special type of Generative Adversarial Network created by NVIDIA in December 2018
- Technique for creating realistic synthetic images based on a set of sample images
- Extended into audio and video domains, NVIDIA has created a GAN to recreate Pac-Man from gameplay frames

<https://www.thispersondoesnotexist.com>







GPT-3

- Autoregressive language model

GPT-3

- Autoregressive language model
- Largest NLP model ever produced with over 175 billion parameters

GPT-3

- Autoregressive language model
- Largest NLP model ever produced with over 175 billion parameters
- Trained on a large corpus of text obtained from web crawlers (includes text from websites, Wikipedia, and books)

GPT-3

- Capable of few-shot learning, produces interesting output from small prompts:

GPT-3

- Capable of few-shot learning, produces interesting output from small prompts:
 - Writing short essays

GPT-3

- Capable of few-shot learning, produces interesting output from small prompts:
 - Writing short essays
 - Answering questions

GPT-3

- Capable of few-shot learning, produces interesting output from small prompts:
 - Writing short essays
 - Answering questions
 - Producing snippets of code

GPT-3

- Capable of few-shot learning, produces interesting output from small prompts:
 - Writing short essays
 - Answering questions
 - Producing snippets of code
 - Generating images (DALL-E)

TEXT PROMPT

an armchair in the shape of an avocado. an armchair imitating an avocado.

AI-GENERATED
IMAGES





Describe your layout:

a black button saying "OpenAI" and an orange button saying "Themesberg":

Generate

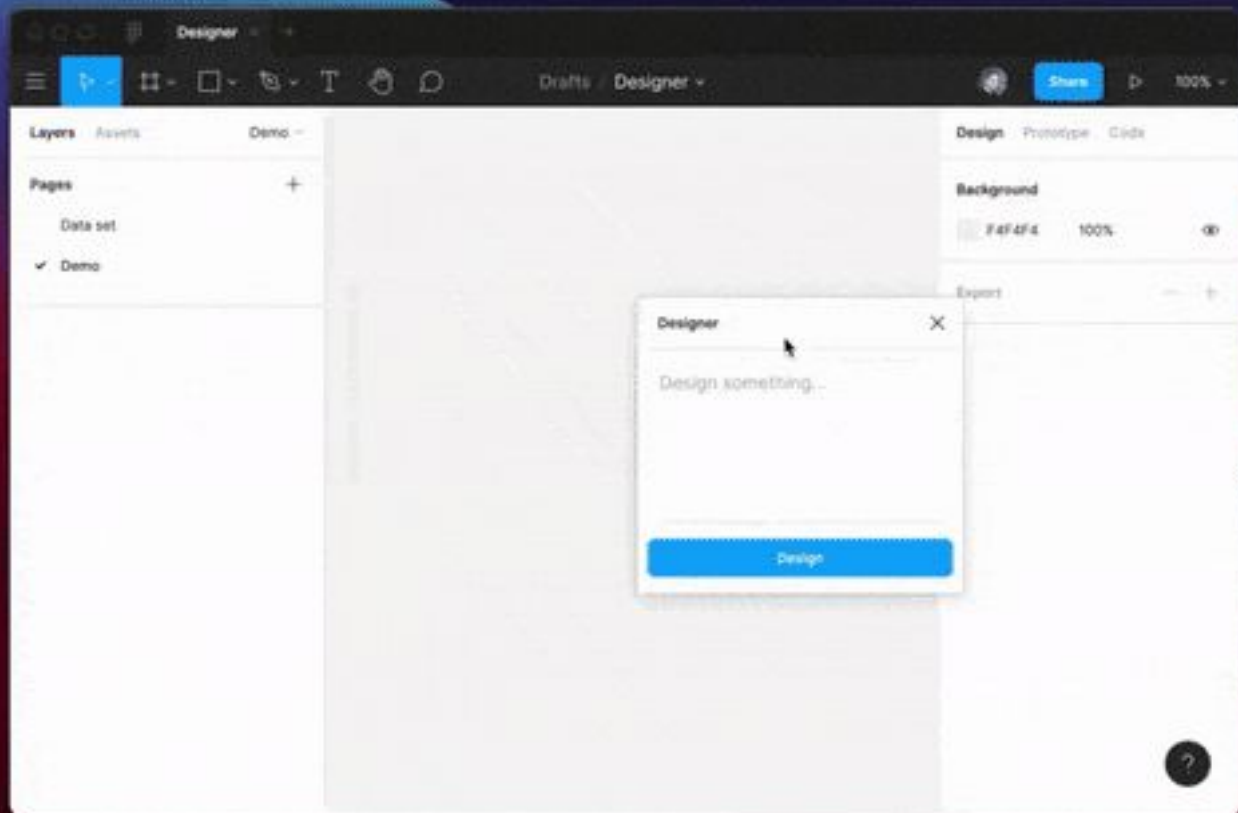
Generated code:

```
<button class="btn bg-black text-white rounded py-2 px-2">  
OpenAI  
</button>  
<button class="btn bg-orange-600 bg-black text-white rounded py-2 px-2">  
Themesberg  
</button>
```

Result:

OpenAI

Themesberg



stripe

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Payments infrastructure for the internet

Millions of businesses of all sizes—from startups to large enterprises—use Stripe's software and APIs to accept payments, send payouts, and manage their businesses online.

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Apple Pay

Or pay with card

Email

Card Information

Number



MM / YY

CVC

Country or region

United States ▾

ZIP

Today

Gross volume ▾

C\$3,528,198.72

1:00 PM

August 18 ▾

C\$2,931,1

1:00 PM

12:00 AM

Reports summary

Last 4 weeks ▾

July 18 - August

Gross volume +4.6%

C\$4,542,345.45

C\$4,062,124.

Jul 18

Aug

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- Often provides templates to make it easy to get started quickly

Thanks for listening!

