

GDC

March 20-24, 2023
San Francisco, CA

GAMES THAT CELL: TEACHING SPREADSHEETS IN ART SCHOOL

Alexander King Adjunct Professor,
NYU Game Center

#GDC23

Game Developer's Conference, March 21st 2023

AGENDA

- Why spreadsheets?
- Why game designers love spreadsheets
- Why we should teach it
- How I did that
- How you can include spreadsheets in your own classes



D	E	F	G	H	I	J	K
			KEMBLE				
124	3931	6459					
114	3809	6257					
114	3650	5997	CHOPIN	PE	121	3503	5999
			K121CL-SG	PE	121	3445	5899
121	3488	5730	EMP121	PDM	121	3329	5699
121	3418	5615					
121	3383	5558					
			CONS	PE	124	3155	5399
			CLAT-SG	PE	116	3155	5399
			CONS	OPDAW	124	3097	5299
116	3209	5272	CT121	PEC	121	3097	5299
116	3112	5113	CT121	PE	121	2981	5099
113	3044	5001	CONC-SG	PE	114	2923	4999
			CBCT-SG	PE	114	2865	4899
114	2936	4824					
114	2848	4679	K121CL	PE	121	2749	4699
114	2778	4563	K121CL	OPDAW	121	2691	4599
			CB12-SG	PE	112	2633	4499
114	2694	4426					
109	2654	4360	CLAT	PE	116	2575	4399
			OXFCT	PEC	114	2517	4299
121	2568	4219	CLAT	OPOAKH	116	2459	4199
			OXFCT	PE	114	2401	4099
			CONC	PE	114	2343	3999
			CONC	OPDAW	114	2285	3899
113	2347	3857	CBCT	PE	114	2285	3899
113	2194	3605	CB12	PE	112	2111	3599
			CB12	OPDAW	112	2053	3499
109	1930	3172					
109	1804	2964					

WHY SPREADSHEETS?

D	E	F	G	H	I	J	K
			KEMBLE				
124	3931	6459					
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121	2568	4219	CLAT	OPOAKH	116	2459	4199
			OXFCT	PE	114	2401	4099
			CONC	PE	114	2343	3999
			CONC	OPDAW	114	2285	3899
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			CB12	OPDAW	112	2053	3499
109	1930	3172					
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GAME DESIGNERS LOVE SPREADSHEETS

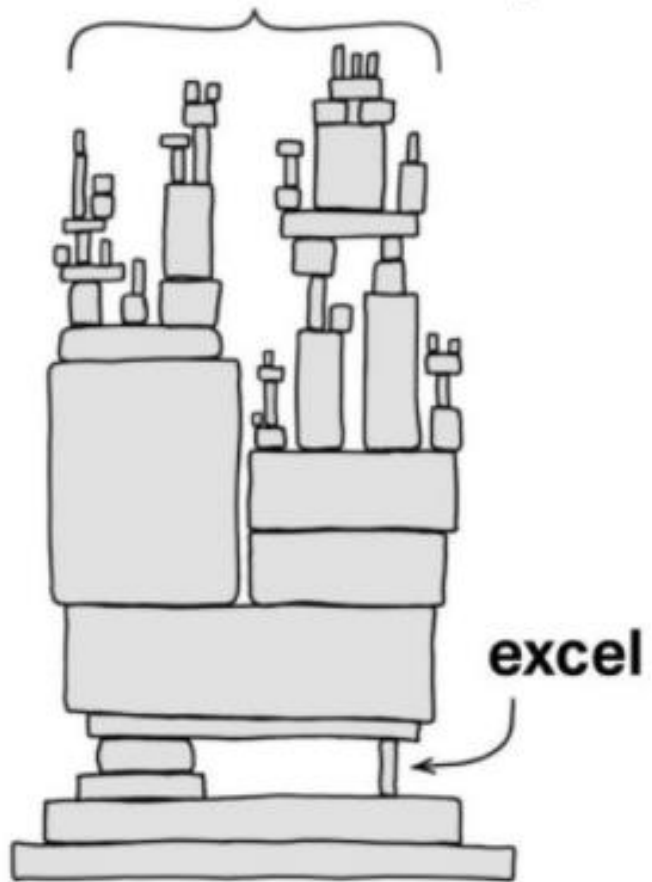


Jamie Smith
@smithst0ck



We all know it to be true

The Games Industry



3:57 AM · Aug 18, 2022 · Twitter Web App

557 Retweets 85 Quote Tweets 3,759 Likes



Cloé Veilleux @Doh042 · Aug 22

...

Replying to @smithstOck and @CorinneBusche

I'm one of the people responsible for this, I'm afraid. (Google Sheet can also act as a substitute easily).

I just love the speed at which I can do things in Excel. It beats so many of the in-house tools we have for batch changes!



Cory Trese @corytrese · Aug 18

...

Replying to @smithstOck and @Mike_Laidlaw

Every game @TreseBrothers has ever built has Excel as a foundational component.

We prototype in Excel. We author in Excel. Sometimes we build maps in Excel!

On build, we convert everything to SQLite3 and ship that with the game.

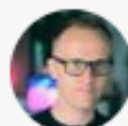


DjArcas @projectorgames · Aug 18

...

Replying to @smithstOck

I think virtually every AAA game I worked on used Excel for all the of the language data and translations, and most of them used it for things like vehicle handling data too.



Maciej Szczesnik @MaciejSzczesnik · Aug 20

Replying to @smithstOck

Google Spreadsheets, but yeah :-)



TheTrekspert says Codify Roe v Wade @TheTrekspert · Aug 18

...

Replying to @smithstOck and @Tumerboy

I love Excel so much.



polyp2000(x) @polyp2000 · Aug 18

...

Replying to @smithstOck

Yep - i've been handed crazy excel spreadsheets before and had to turn them into gameplay mechanics.



HectorPLZ  TGS 2022 @Hector_plz · Aug 18

..

Replying to @smithstOck

Google Sheets / Excel supremacy. It's literally useful for every department

DATA STORYTELLING

Bring data to life. Spreadsheets are boring!

Published on Dec 6, 2014 3:00 AM

Data. Less Huff and Puff. More Brevity.

Visualize

GET RID OF BORING SPREADSHEETS AND BRING IN THE FUN

By Michael Brenner - August 17, 2016 2197 0

How to Make Your Spreadsheets Less Lame

Spreadsheets are lame. There's no two ways about it. We designers hate spreadsheets because they're a shining example of boring data presented in a boring manner.

Unfortunately for designers, spreadsheets are a necessary evil and could even be called a great and essential tool in the business world. Today we're going to see how to improve both the aesthetics and readability of your spreadsheets with a few super basic design principles that literally anyone can follow. Let's get started!

ON: 24 SEP 2010
BY: JOSHUA JOHNSON
CATEGORY: GRAPHICS
LENGTH: 6 MIN READ

The Ultimate Designer Toolkit: 2 Million+ Assets

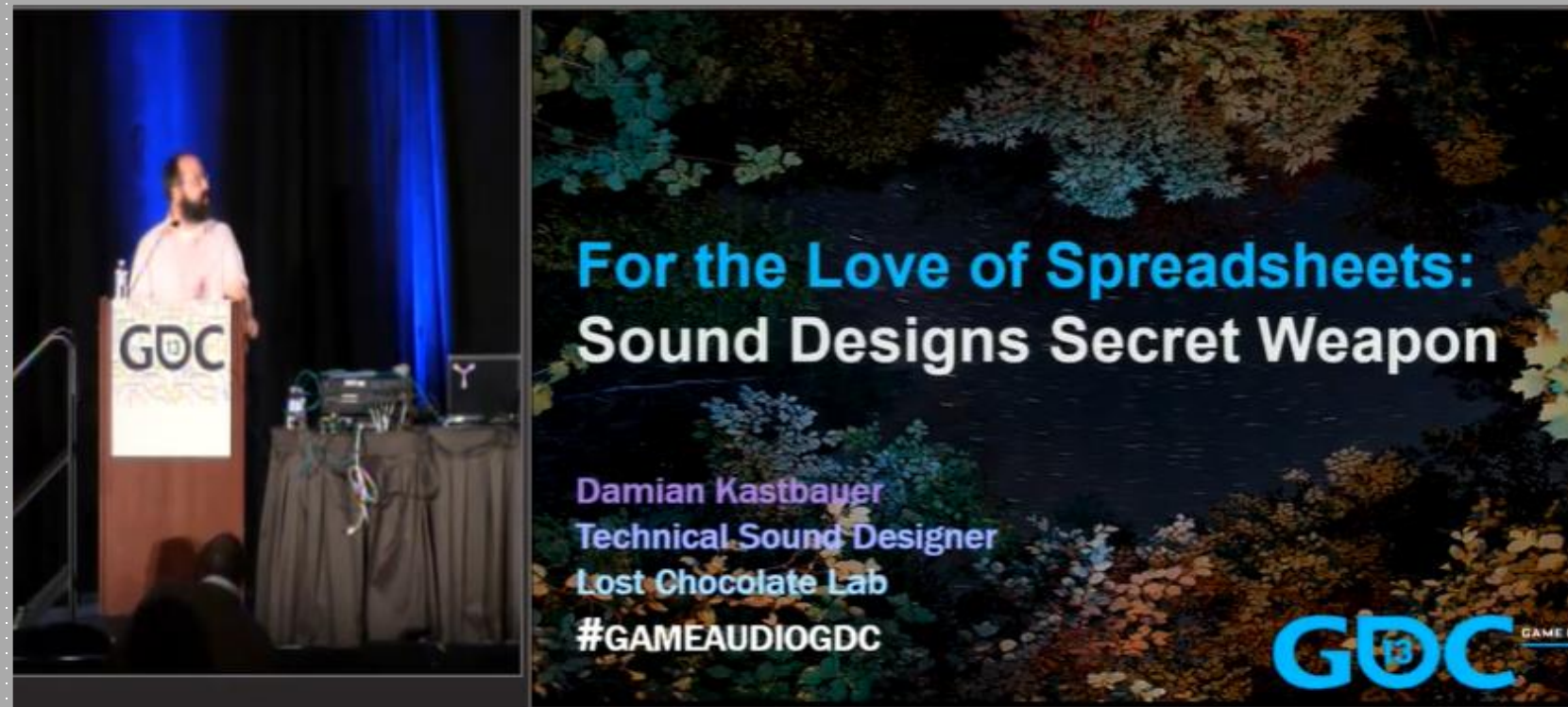
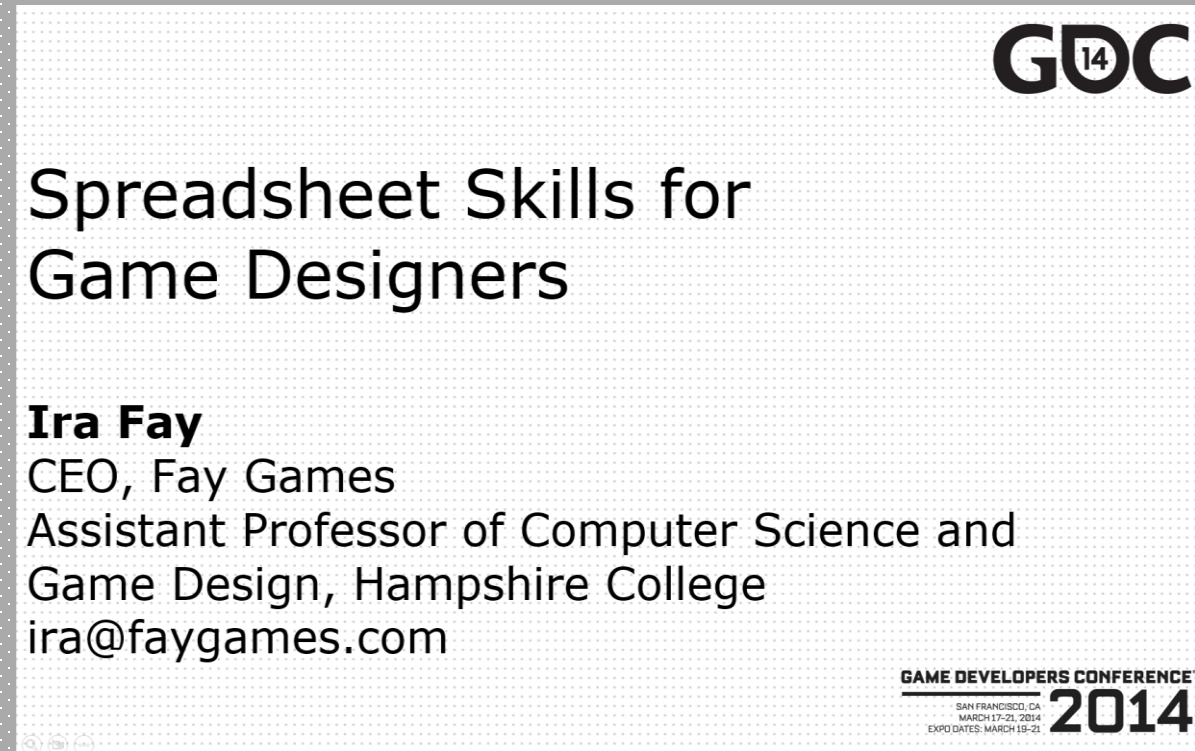
CLIVE THOMPSON

IDEAS APR 6, 2022 8:00 AM

Spreadsheets Are Hot—and Cranking Out Complex Code

The venerable (and yes, **super dull**) piece of officeware is getting reinvented as a tool for non-coders to automate and simplify their lives.





Beyond Spreadsheets:

How to generate operational impact
with analytics

Michael Lenz

Head of Analytics, InnoGames

GDC 'Eu

GAME DEVELOPERS CONFERENCE EUROPE
CONGRESS-CENTRUM OST KOELNMESSE · COLOGNE · GERMANY
AUGUST 11-13, 2014 · EXPO: AUGUST 11-12, 2014

GDC 14

Beyond Spreadsheets: Building a Metagame Simulator for Balance and Prototyping

David Morris (Head of Analytics, Spryfox)

Location: Room 210, South Hall

Date: Wednesday, March 20

Time: 11:30 am - 12:00 pm

Pass Type: All Access, GDC Conference + Summits, GDC Conference - [Get your pass now!](#)

Topic:  Design

Format: Session

Vault Recording: Video

Audience Level: All

Add

GDC

Game design tools

For when spreadsheets and flowcharts
aren't enough

Katharine Neil

Independent developer



Cloé Veilleux @Doh042 · Aug 22

Replying to @smithstOck and @CorinneBusche

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CVV @CVV64502204 · Aug 18

Replying to @smithstOck

Why?



DjAr

Repl

I thin

langu

vehic



polyp2000(x) @polyp2000 · Aug 18

Replying to @smithstOck

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1



HectorPLZ SOON **TGS 2022** @Hector_plz · Aug 18

Replying to @smithstOck

Google Sheets / Excel supremacy. It's literally useful for every department



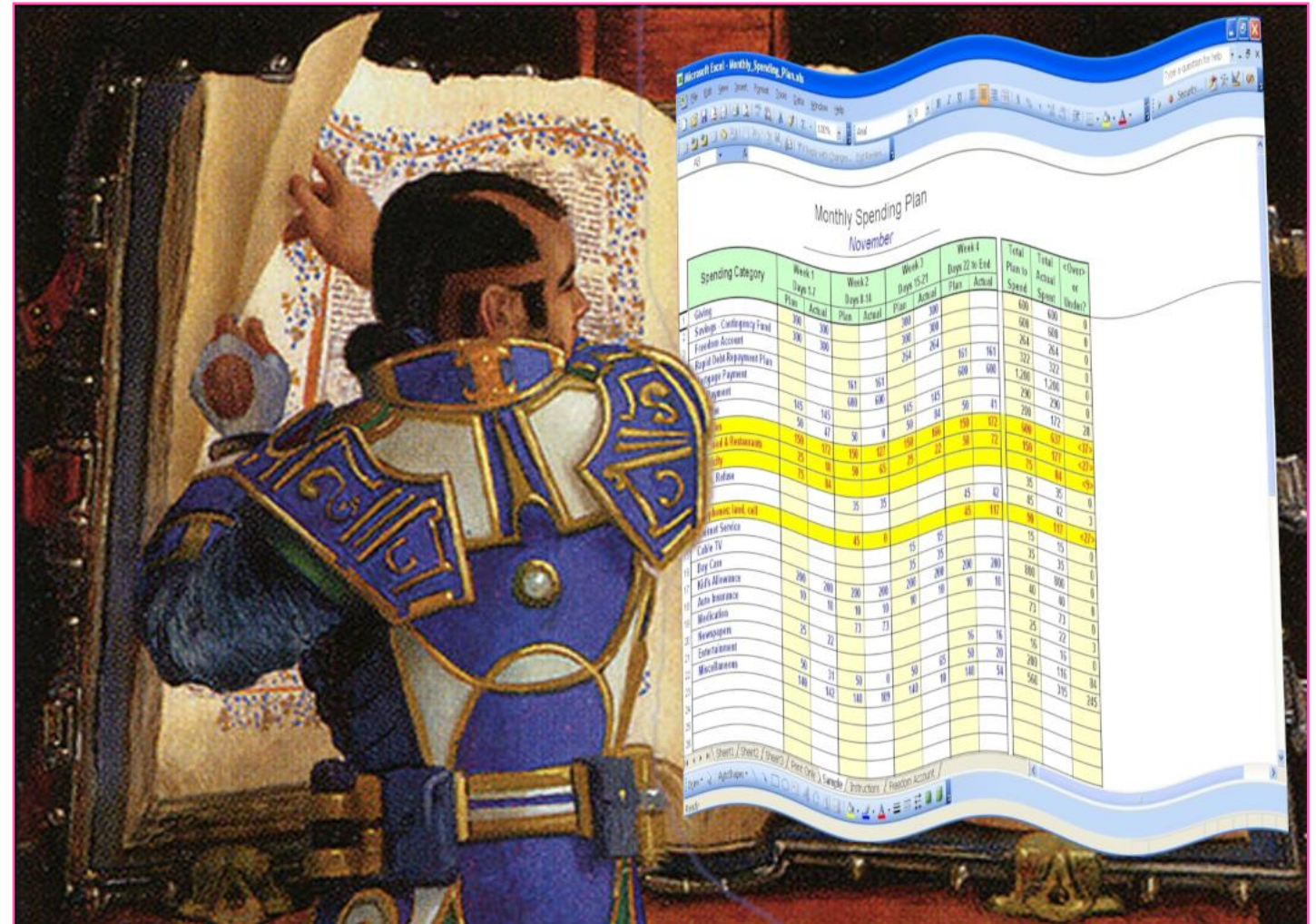
NOMENCLATURE CLARIFICATION !

- The thing we're talking about is “spreadsheet software” or “spreadsheets”
- *Excel* is a specific instance of *spreadsheet software*
- I'm avoiding saying “Excel” unless I mean that specifically
- Google Sheets, Open Office, LibreOffice, Numbers, Lotus 1-2-3, and so on, are each and all “spreadsheets” and “spreadsheet software”



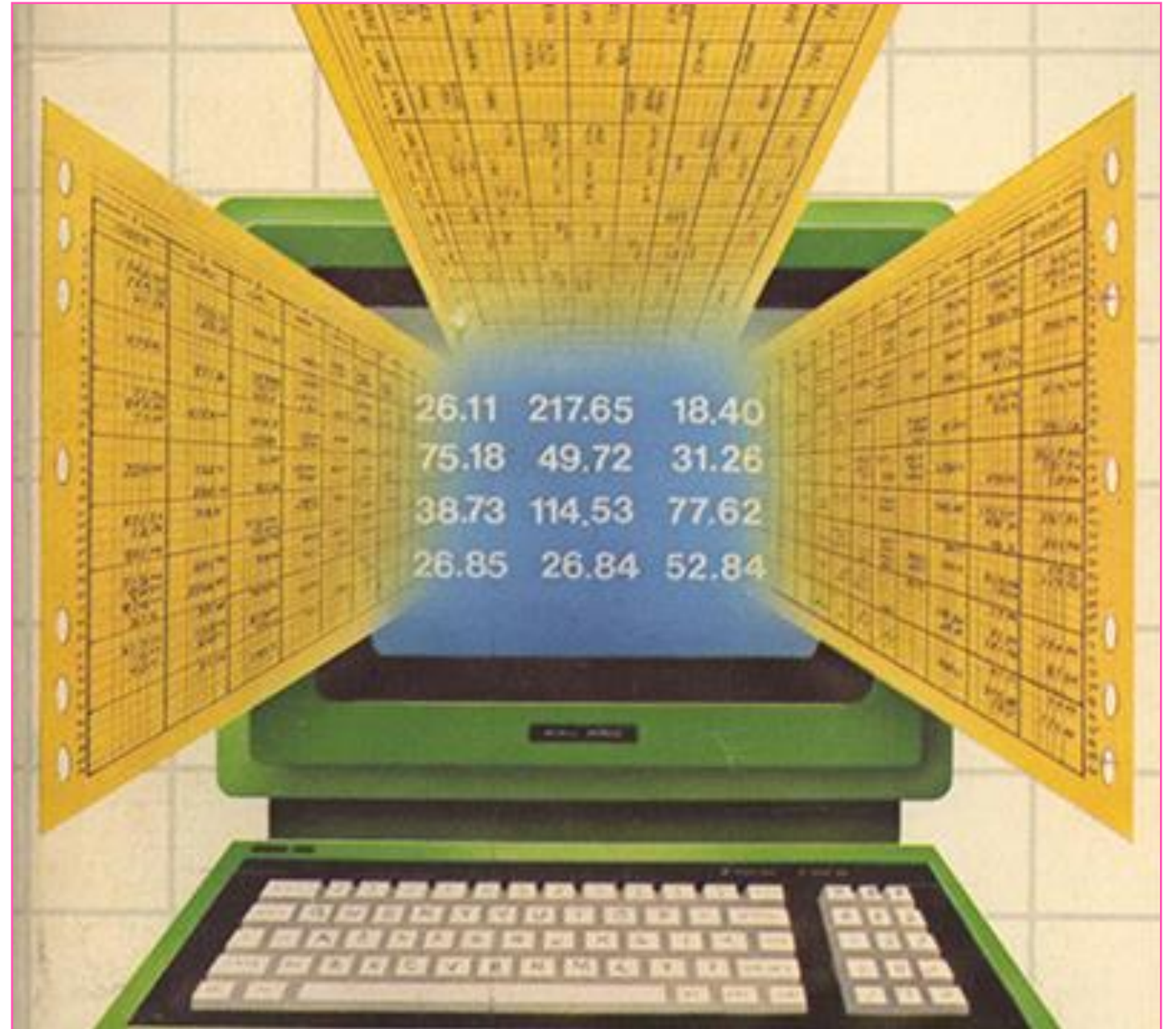
REASONS WE ALL LOVE SPREADSHEETS

- It's magical graph paper that can do math



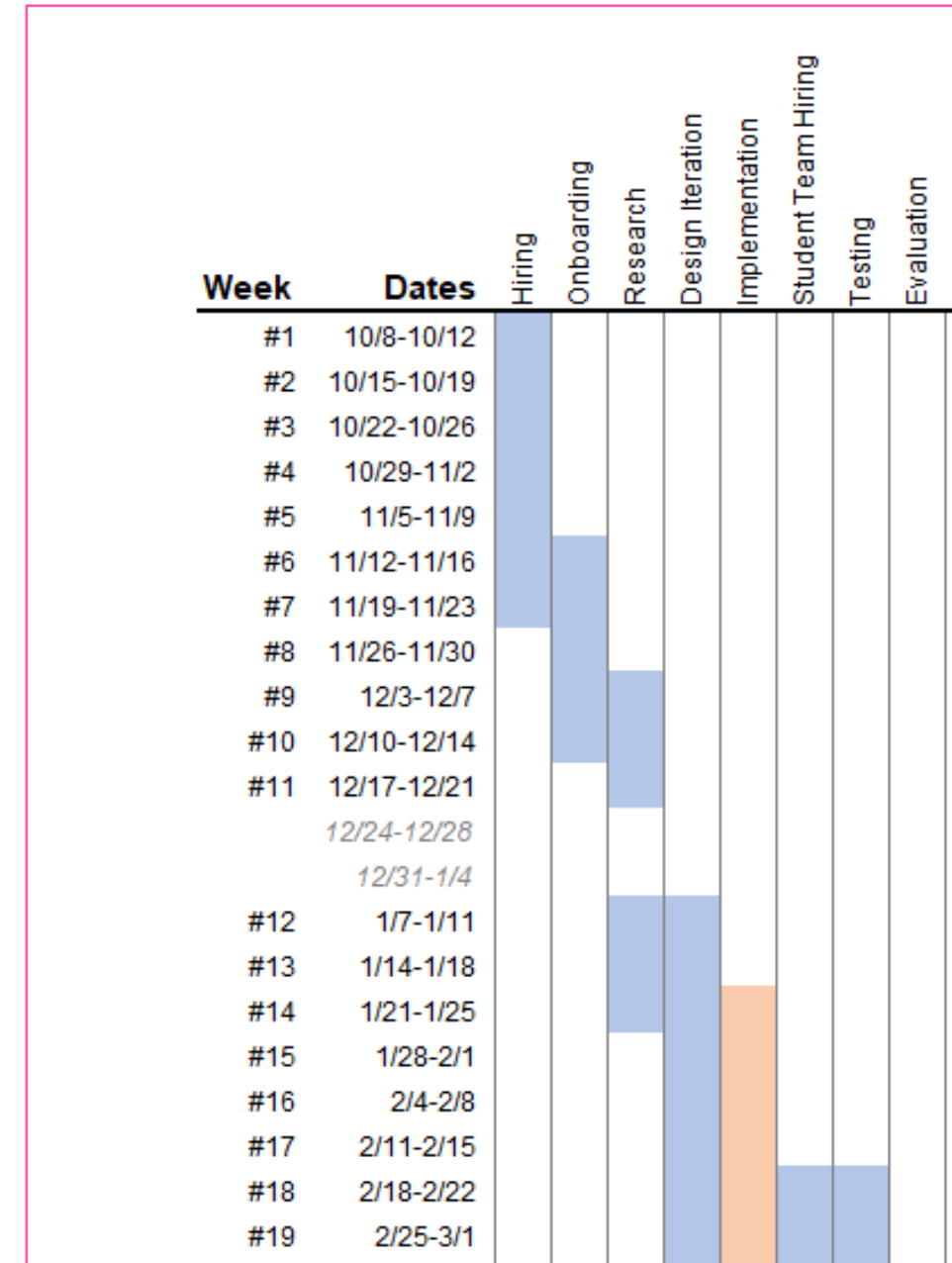
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- Programming without coding



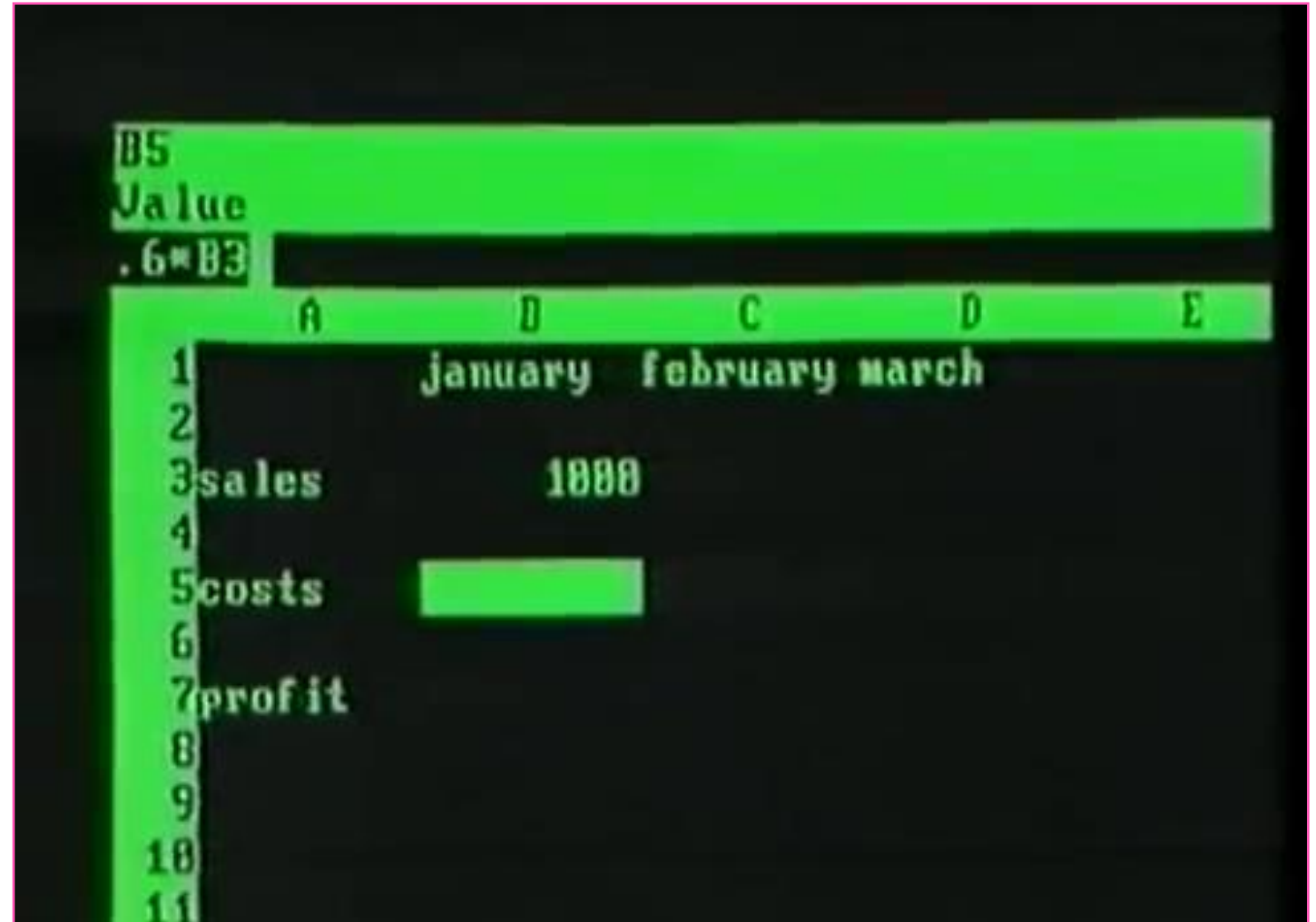
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- Incredibly versatile



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REASONS WE ALL LOVE SPREADSHEETS

- It's magical graph paper that can do math
- Programming without coding
- Incredibly versatile
- Surprisingly stable
- One of the best tools for easily working with “data” (and games have a lot of data)



Superstudio, *The Continuous Monument* (1969)



Excel



BIZ & IT TECH SCIENCE POLICY CARS GAMING & CULTURE STORE

NUMBER CRUNCHING FOR FUN AND PROFIT —

Eve Online fans literally cheer Microsoft Excel features at annual Fanfest

New Javascript API will "simplify the access to data for all," developer says.

KYLE ORLAND - 5/6/2022, 12:30 PM



WHY WE SHOULD TEACH IT

Spreadsheets are ubiquitous in games
(and frequently listed as a job requirement)

Senior Game Designer

MANTICORE GAMES

San Mateo, CA • Remote

You must create an Indeed account before continuing to the company website to apply

[Apply on company site](#)



- Adapt to technical and production constraints & participate in finding solutions to optimize features
- Write and maintain specification **design and game balancing spreadsheets** documents
- Be an advocate for player experience and create compelling user stories

Systems Game Designer, Pokémon GO

Niantic ★★★★★ 3 reviews

Seattle, WA • Hybrid remote

[Apply now](#)



- Experience with game balance and pacing in a free-to-play economic model.
- **Expertise with spreadsheets and in manipulating, summarizing, and maintaining large data sets.**
- Proficiency in Unity game development.
- Excellent verbal and written communication.
- Passion for video games; an avid gamer with a solid understanding of mobile games.

Game Designer

Major League Baseball (Internal Job Board)

New York, NY

You must create an Indeed account before continuing to the company website to apply

[Apply on company site](#)



Essential Functions

- Help teams synthesize their ideas into successful products
- Create design documents, including specs, **economy spreadsheets**, and wireframes
- Design game systems that produce deeper engagement with the MLB brand

Game Designer - Rewards Systems

ArenaNet ★★★★★ 14 reviews

Bellevue, WA

Full-time

You must create an Indeed account before continuing to the company website to apply

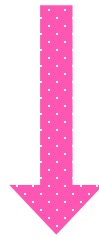
[Apply on company site](#)



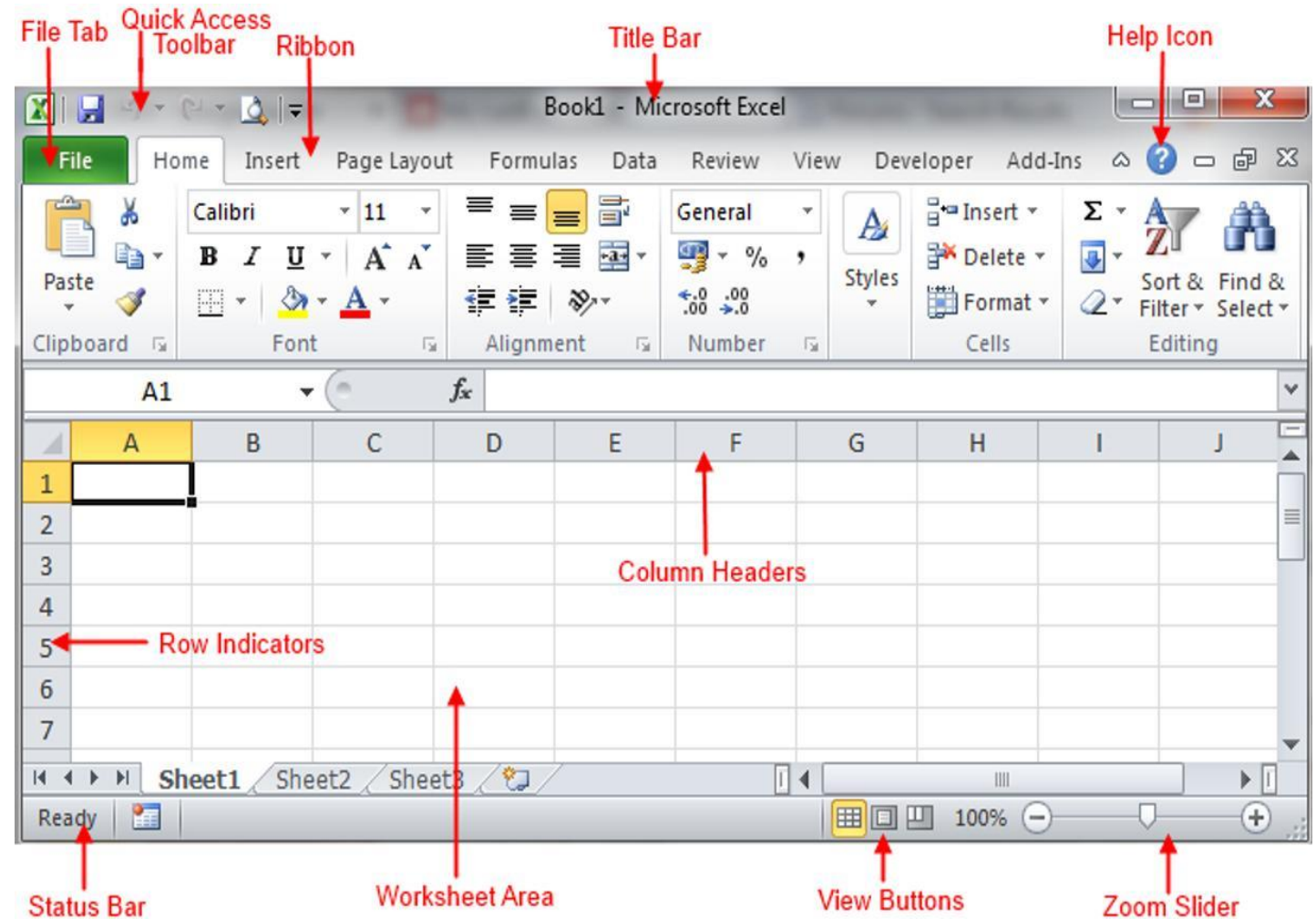
- Experience with Guild Wars 2 as a player
- **Experience with managing and updating spreadsheets or databases**
- Familiarity with best practices for accessibility in games
- Experience working on a live game

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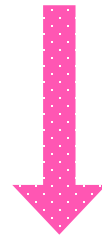


Games students (who aren't already familiar
with spreadsheets) are unlikely to develop
skills with these tools on their own



WHY WE SHOULD TEACH IT

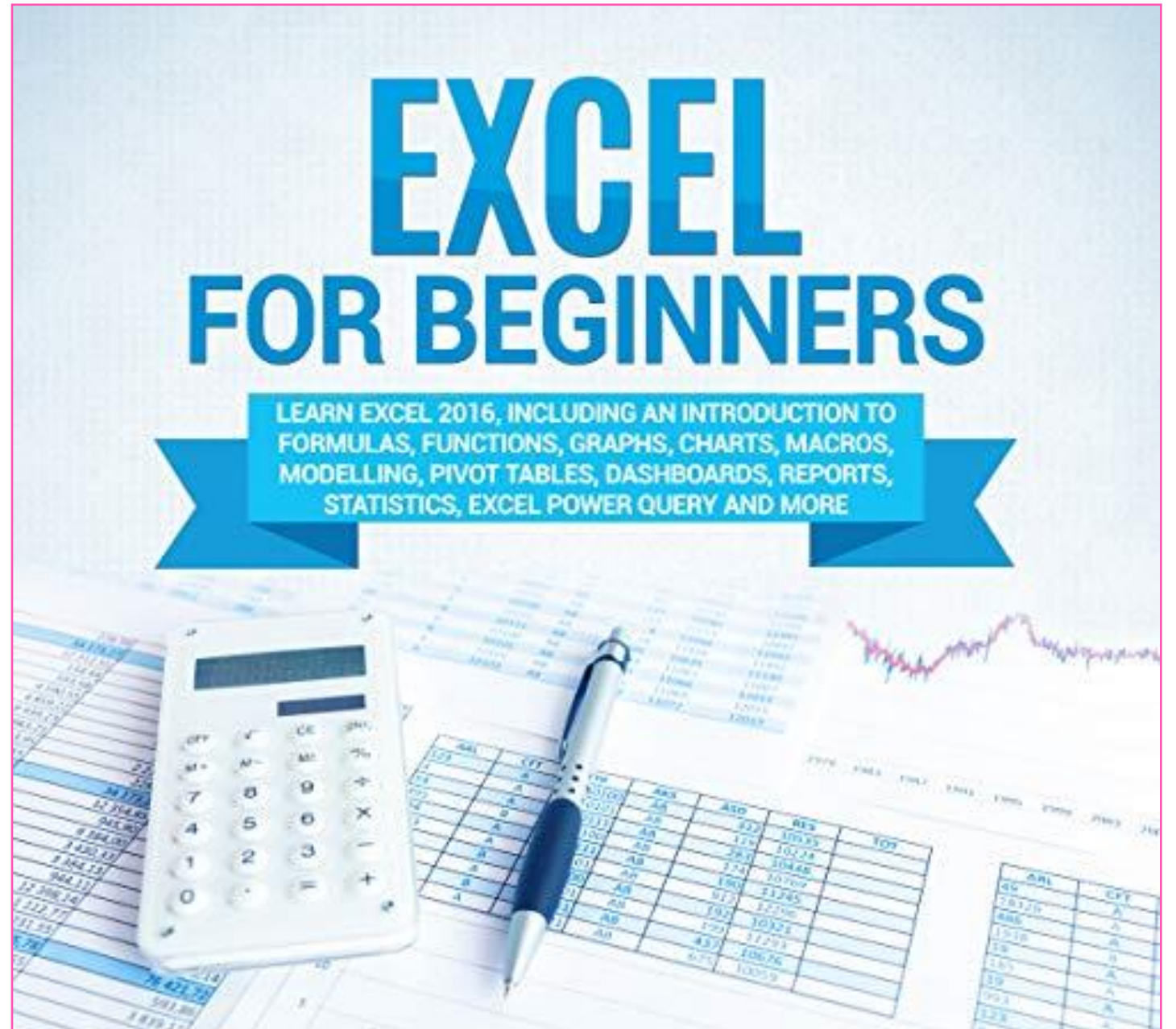
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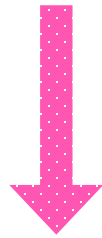


Intro materials focus on accounting use-
cases, not how designers use them

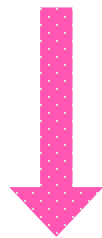


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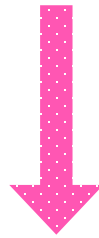
Dax Gazaway, *Game Systems Design* (2021)

Ian Schreiber & Brenda Romero, *Game Balance* (2021)



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SOLUTION:



Mostafa Haque 
@MostafaMHawke



Every Game Design Major should include a class on spreadsheets. Just spreadsheets.

2:19 PM · Jan 8, 2020 · Twitter Web App

13 Retweets 1 Quote Tweet 90 Likes



A CLASS ON SPREADSHEETS?

It Makes Sense

- Already using small spreadsheets exercises in other classes
- Consistently popular
- Requests for more coverage, beyond basics
- So proposed a class just about spreadsheets

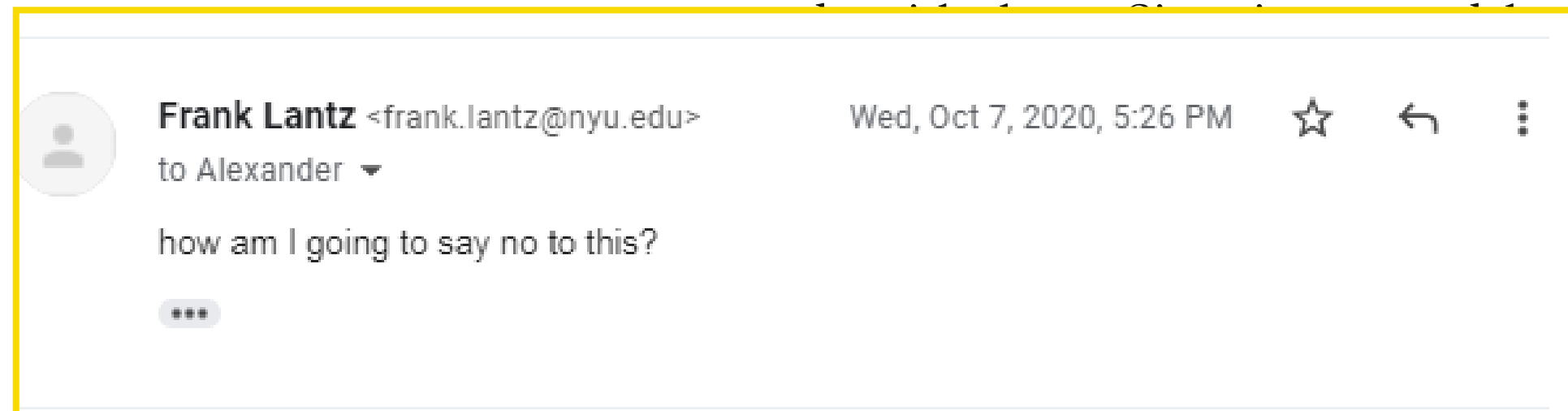
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Covering...

- Fundamentals you'd expect
- Games-centric material
- Making games using spreadsheet software itself. Both as in-depth exploration of game design under unfamiliar constraints, but also as an interrogation of the nature of tools to shape the



history of spreadsheet software and its impact



AS A RESULT OF THIS COURSE, STUDENTS WILL...

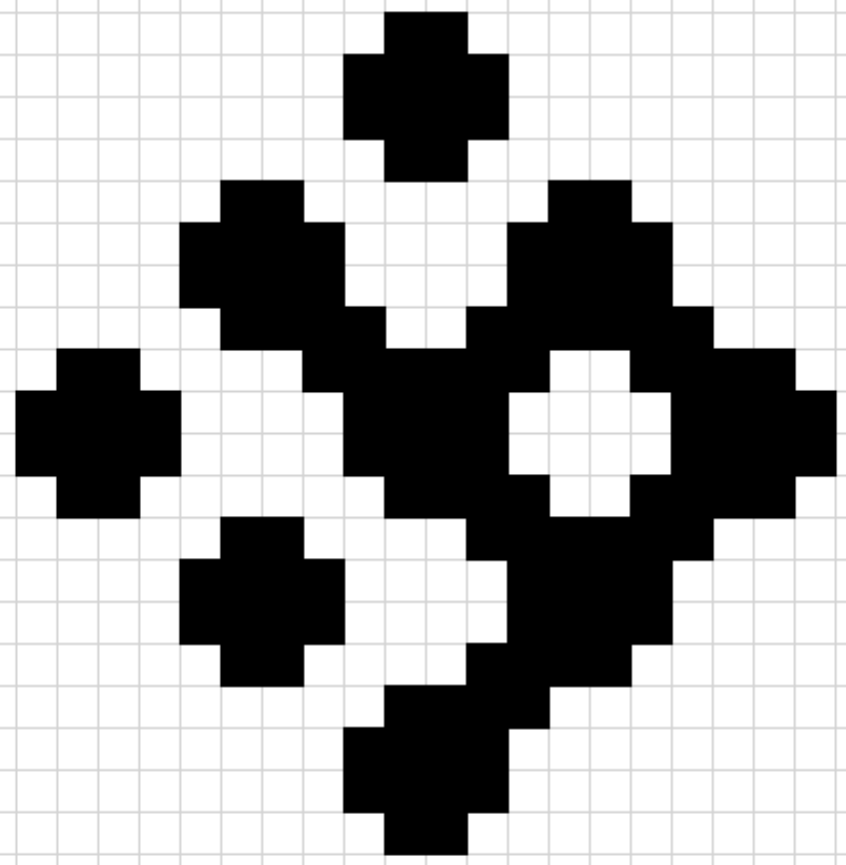
- Learn how to use spreadsheet software for creative expression.
- Become familiar with a variety of spreadsheet tools, including Excel, Google Sheets & LibreOffice
- Develop skills in traditional uses for spreadsheets, and learn how to subvert and play with the software to find new uses as well.
- See how to use spreadsheet software in other areas of their artistic practice.
- Understand the variety of applications that spreadsheets are used for in the context of creative professionals.



Christo & Jean Claude, *Wrapped Coast* (1969)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM

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SPREADSHEETS *for* GAME DESIGNERS

fall 2021
fridays, 11am-1:45pm

CLASS DETAILS

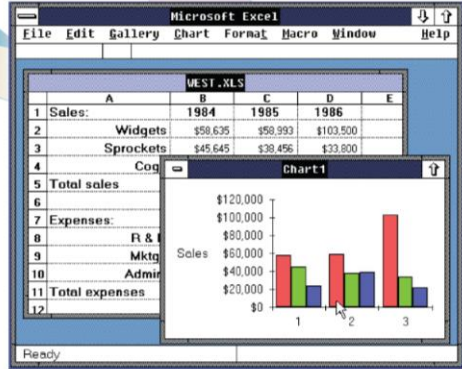
Practical Course Details

- NYU Game Center, Tisch School of the Arts
- Art school design program, mixed range of student backgrounds & skillsets
- MFA graduate students, + BFA undergrads
- 2 Credit (1/2 a standard course) Elective
- Semester-long, 14 weeks
- One 2¾ hour class session per week
- Fall semester, annually

SPREADSHEETS FOR GAME DESIGNERS

PROF. ALEXANDER KING

All too easy to overlook, humble spreadsheet software can be a surprisingly versatile and valuable tool for any game designer's toolkit. This hands-on practicum for game designers explored spreadsheet software as a creative tool, exploring novel applications as well as professional examples from games and digital art. The course culminated in making games and creative works using spreadsheets as the development environment.



The screenshot shows a Microsoft Excel spreadsheet titled 'WEST.XLS'. The spreadsheet has columns for years (1984, 1985, 1986) and rows for Sales, Widgets, Sprockets, Total sales, Expenses, and Total expenses. A bar chart titled 'Chart1' is overlaid on the spreadsheet, showing sales data for three categories (1, 2, 3) across three years.

NYU
GAME CENTER
SHOWCASE
2022

"To The Center of the Earth"
"Word Warble"
"Pattern Balance"
"Cutting Wool"
"Totally Accurate Audit Simulator"
"Spreadsheet Landlord"
"In The House Of My Father"
"Palette Gameplay Prototype"
"ABS:THEFLIRTGAME"
"Monopoly at Google Sheets"
"Budget Myth"
"Dividends & Decay"

Claire Wang
Josh Finkel
Luke Lin
Miles Rosenthal
Robert Chen
Santiago Fernández
Sawyer Smith
Yanxi Wang
Beau Mcghee
Francys Dong
Frank Zhang
Jordan Grayson

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- One $2\frac{3}{4}$ hour class session per week
- Fall semester, annually

No Room In Your Curriculum? No Problem

- I know not every games program has the capacity available for experimental electives, about *spreadsheets* of all things
- This is more a demonstration there's more than enough material here!
- Easy to roll exercises or assignments into an existing game dev class, or game design class, or (even cooler) game studies class
- Even a little bit will go a long way.



THE
NEW
SCHOOL

PARSONS



NYU GAME CENTER



ALEXANDER KING



AutoSaveOff

EMM_Dashboard_071713_NEW_withdummydata.xlsm

Search

FileHomeInsertPage LayoutFormulasDataReviewViewAutomateDeveloperHelpPower Pivot

fxInsert Function

ΣAutoSum

★Recently Used

Financial

Logical

Text

🕒Date & Time

🔍Lookup & Reference

📊Math & Trig

⋮More Functions

Name Manager

Define Name

Use in Formula

Create from Selection

Defined Names

Trace Precedents

Trace Dependents

Remove Arrows

Show Formulas

Error Checking

Evaluate Formula

Formula Auditing

👁Watch Window

🔍Calc Options

Function Library

Y20

✖✔fx

A B C D E F G H I J K L M N O P Q R

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33

EMM Dashboard - Campaign Summary

Currently Viewing: Total Company

Modify

Export Source Data

Key Metrics Summary

Trailing 26 Weeks

Wk 7/7

Wk 6/30

WoW %

Jul MTD

Pr. MTD

MoM %

Q3 QTD

Pr. QTD

QoQ %

Campaigns

Delivered

Open Rate

Click Thru Rate

Opt-Out Rate

Conversion Rate

\$ Gross Sales

Spend Per Email

AOS

\$ Net Sales

\$ Gross Profit

Gross Margin

Gmb4A

42

99

-57%

11

17

-33%

17

82

-7%

6,724 K

9,185 K

-27%

4,796 K

16,516 K

-71%

7,889 K

3,603 K

+10%

5.75%

1.57%

+267%

14.52%

3.35%

+334%

2.94%

19.06%

-4%

0.46%

1.25%

-63%

1.29%

0.35%

+275%

0.50%

4.60%

-8%

0.10%

0.23%

-59%

0.06%

0.06%

+8%

0.01%

0.09%

-6%

0.06%

0.12%

-45%

0.08%

0.01%

+454%

0.06%

0.48%

-4%

\$180 K

\$566 K

-68%

\$473 K

\$519 K

-9%

\$266 K

\$157 K

+7%

\$0.03

\$0.06

-57%

\$0.10

\$0.03

+213%

\$0.03

\$0.04

-2%

\$56.72

\$74.05

-23%

\$148.98

\$131.66

+13%

\$83.95

\$17.44

+38%

\$348 K

\$1,086 K

-68%

\$306 K

\$513 K

-40%

\$351 K

\$267 K

+3%

\$51 K

\$135 K

-62%

\$59 K

\$49 K

+21%

\$54 K

\$86 K

-3%

14.54%

12.40%

+17%

19.38%

9.60%

+102%

15.27%

32.26%

-5%

14.76%

12.54%

+18%

19.54%

10.68%

+83%

15.91%

32.29%

-5%

Top Campaigns

Time Period: YTD

Modify

Campaign Type: All Campaign Groups

Modify

Ranking: Campaign Engagement Rank

Modify

Campaign Name

Date

Type

Sending Site

Delivered

Open Rate

Click Thru

Opt-Out Rate

Conversion

\$ Gross Sales

Spend Pr Email

AOS

\$ Gross Profit

2013-05-07 wag misc iams cat dog

5/8/2013

Miscellaneous

Wag.com

2 K

69.58%

10.03%

0.00%

4.33%

\$45 K

\$28.94

\$174.97

-\$

2013-04-19 Diapers ebm nondiapersbuyer

4/20/2013

Event Based Marketing

Diapers.com

19 K

36.68%

10.46%

0.13%

5.65%

\$15 K

\$18.02

\$54.43

2013-04-07 Diapers ebm nondiapersbuyer

4/7/2013

Event Based Marketing

Diapers.com

5 K

44.06%

2.07%

0.19%

12.54%

\$40 K

\$14.20

\$44.52

2013 Diapers ebm nondiapersbuyer

2/2/2013

Event Based Marketing

Diapers.com

9 K

50.68%

9.96%

0.25%

6.95%

\$12 K

\$5.45

\$98.67

2013-07-02 wag misc natura sub

7/2/2013

Miscellaneous

Wag.com

5 K

3.99%

14.00%

0.03%

3.95%

\$5 K

\$1.39

\$36.36

2013-05-10 FH Plus Launch 24

5/10/2013

Other

Yoyo.com

1 K

6.28%

0.14%

0.01%

0.00%

\$0 K

\$0.00

\$0.00

Campaign_DetailData

Campaign_Summary

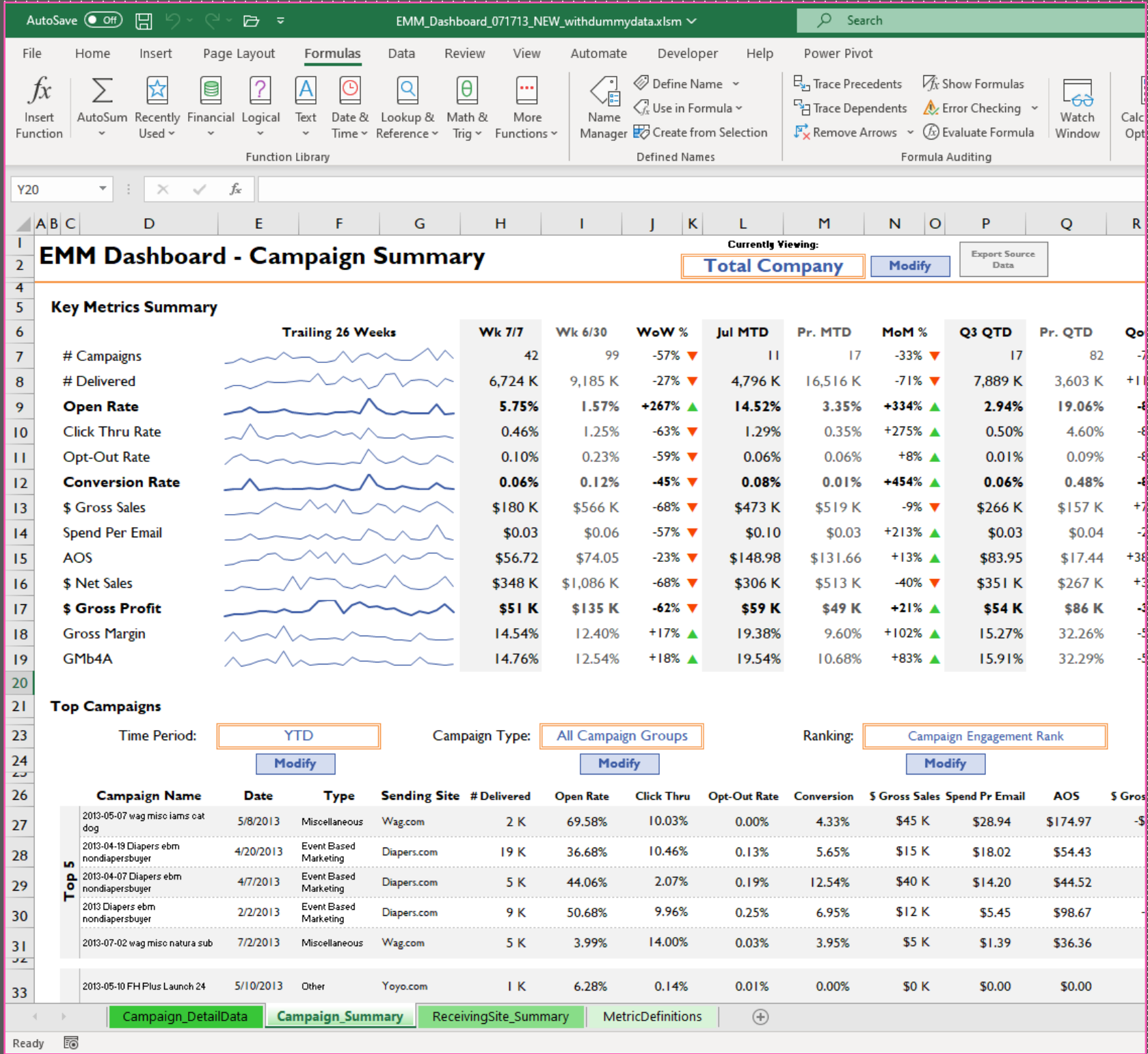
ReceivingSite_Summary

MetricDefinitions

+

Ready





CLASS DETAILS

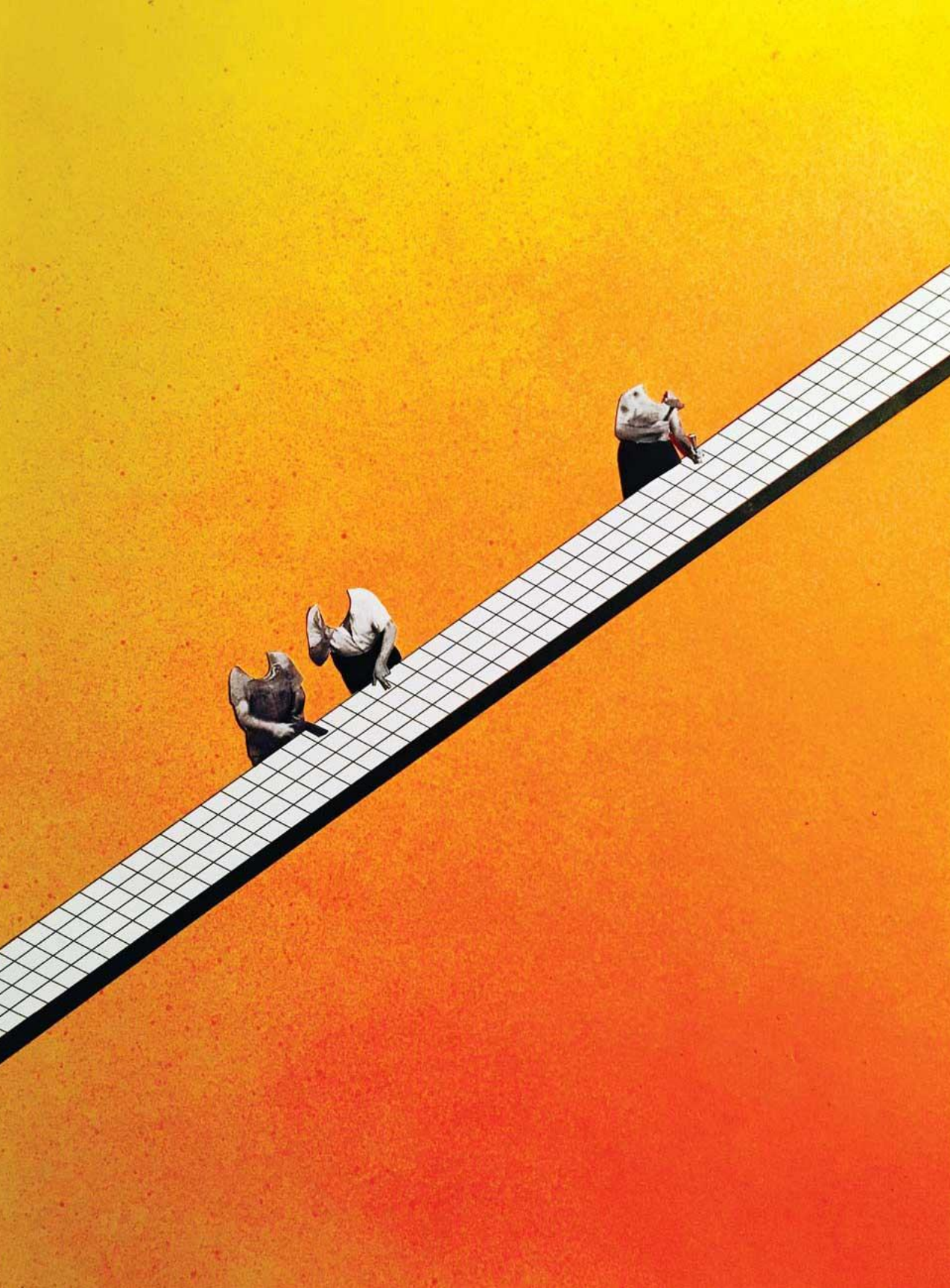
Practical Course Details

- NYU Game Center: Tisch School of the Arts
- Art school design program, mixed range of students
- MFA graduate students, + BFA undergrads
- 2 Credit ($\frac{1}{2}$ a standard course) Elective
- Semester-long, 14 weeks
- One $2\frac{3}{4}$ session per week
- Fall semester, annually since 2021

No Room In Your Curriculum? No Problem

- I know not every games program has the capacity available for experimental electives, about *spreadsheets* of all things
- This is more a demonstration there's more than enough material here!
- Easy to roll exercises or assignments into an existing game dev class, or game design class, or (even cooler) game studies class
- Even a little bit will go a long way.
- You don't need to be a spreadsheet aficionado, and in fact, it's probably easier to teach this if you aren't.





WHAT THE CLASS COVERS

Guillermo López, *Modern Life*

File Edit View Insert Format Data Tools Extensions Help [Last edit was on December 10, 2022](#)

A1	f_x
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 f_X

Spreadsheets for Game Designers

Course Schedule

Week	Date	Topic	Detail	Reading Assigned	Assigned	Due
1	Fri, Sep 02	Intro	Course introduction, why spreadsheets?, mapping	"Wizardry: Going Slow, Mapping" & "Fate: Nothing to Show but the Maps" by Chester Bolingbroke	Map	
2	Fri, Sep 09	Text & Color	Introduction to formulas and formatting	"Excelling: an interview with Danielle Aubert" & "16 Months Worth of Drawings in Microsoft Excel"	Theory into Praxis	
3	Fri, Sep 16	Formulas	Managing text, translation/localization, formulas for text	"A Spreadsheet Way of Knowledge" by Steven Levy	"Puzzle" Workbook	Map
4	Fri, Sep 23	Database	Formula Basics. Handling & Inputting Data. Sorting, freeze panes.	"Good Numbers (Part 1) & (Part 2)" by Alexander King	Graph & Data Workbook	"Puzzle" Workbook
5	Fri, Sep 30	Prototyping	InDesign data merge for card prototypes	"Michael Milken's Spreadsheets: Computation and Charisma in Finance in the Go-Go '80s" by William Deringer	Analysis Project	Graph & Data Workbook
6	Fri, Oct 07	Modeling	Advanced Formulas, VLOOKUP, INDEX, MATCH, OFFSET & more	"Introduction to Game Systems Design, Chapter 15: Analyzing Game Data" by Dax Gazaway		
7	Fri, Oct 14	Analysis	Analysis, & Pivot Tables	"The History of Mathematical Tables, From Sumer to Spreadsheets. Chapter 12: The Rise and Rise of the Spreadsheet" By Martin Campbell-Kelly		
8	Fri, Oct 21	Art	Creative expression , subverting utilitarian purposes	"The Shadow and the Gap: A rare look at Charles Gaines' Shadows series" by Gina Osterloh	Interactive Art	Analysis Project
9	Fri, Oct 28	Criticism	Critical context for tools, limitations of spreadsheets	"Saving the World from Spreadsheets" by Emery Berger & "Spreadsheets are Special" by Janet Swift		
10	Fri, Nov 04	Integration	Exporting and Importing Data. Web Queries. To/From Unity	"The Stuff of Bits, an Essay on the Materialities of Information. Chapter 4: Spreadsheets and Spreadsheet Events in Organizational Life" by Paul Dourish		Interactive Art
11	Fri, Nov 11	Interactivity	Intro to VBA, User-Defined Functions	"Using Simple Spreadsheet Techniques to Help Balance Your Game" by Jamey Stevenson	Final Game	
12	Fri, Nov 18	Games	VBA Form Controls, Dialog Boxes & Userforms	"Beyond the Character Sheet: 'Character Keepers' as Digital Play Aids" by Adrian Hermann & Gerrit Reininghaus. & "Party in a Shared Google Doc" by Marie Foulston		Theory into Praxis
13	Fri, Nov 25		Thanksgiving, No Class			
14	Fri, Dec 02	Sharing	Spreadsheets for others, versioning & source control	"The Art of the Spreadsheet" by David Greusel		
15	Fri, Dec 09	Final Critique	Exhibition and critique of spreadsheet games			Final Game



COURSE CONTENT

What You'd Expect

- Basic usage & fundamentals
- Formulas
- Visual Formatting
- Pivot Tables
- Charts & Graphs
- VBA

Typical Uses in Games

- Project Management
- Database
- Modeling, Design tuning
- Importing data from a sheet into a game engine
- Exporting data from a game build to a spreadsheet

What You Wouldn't Expect

- Digital Art
- Procedural Text
- History of Spreadsheets
- Art History of Grids as a Form
- Non-Practical Uses
- Making spreadsheet games



LIKE ANY OTHER DEV CLASS

Typical Class, Just About Spreadsheets

- Structured like any other dev class would be
- But the ‘game engine’ being used is **Spreadsheets**
- Studio approach, learning by doing, critique of work

LIKE ANY OTHER DEV CLASS

Typical Class, Just About Spreadsheets

- Structured like any other dev class would be
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Major Assignments

- Making a Map
- Interactive Art
- Puzzle Workbooks
- Data Analysis
- Theory into Praxis
- Spreadsheet Game

COURSE CONTENT

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COURSE CONTENT

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- VBA

COURSE CONTENT

What You'd Expect

- Basic usage & fundamentals (how to copy and paste as values)
- Formulas (SUMIFS, VLOOKUP, SUMPRODUCT)
- Visual Formatting (Freeze panes, conditional formatting)
- Pivot Tables (For quick exploratory aggregation)
- Charts & Graphs (Always X/Y Scatterplots, never Pie Charts)
- VBA (Macro recording)

COURSE CONTENT

What You'd Expect

- **Basic usage & fundamentals** (how to copy and paste as values)
- **Formulas** (SUMIFS, VLOOKUP, SUMPRODUCT)
- **Visual Formatting** (Freeze panes, conditional formatting)
- **Pivot Tables** (For quick exploratory aggregation)
- **Charts & Graphs** (Always X/Y Scatterplots, never Pie Charts)
- **VBA** (Macro recording)

EXERCISE: YOUR OWN DOCUMENTATION

[illegible]

<i>REPLACE(text, position, length, new_text)</i>	
Description	
Replace substring of text with other text. NOTE: position is not 0 index, i.e. to replace to the first character, position = 1 and length = 1	
Arguments	
<i>text</i> (string): The source text <i>startPosition</i> (int): Starting index of the string to replace <i>length</i> (int): Length of string to replace <i>replacementText</i> (string): New text to replace the old text with	
Example	
Here is some text	=REPLACE(C22,6,2,"was")

YEAR			Formula	Result
		Try here	Type "=YEAR("7/20/1969")"	1969
INTRO	"YEAR" functions return the year of given date.			
SYNTAX	"=YEAR(date)"			
input	date, Example: "1969,7,20" , A2 (reference cell), 40909(serial number)			
output	the year of the input date			
Notice!	do not type YEAR(10/10/2000), this function cannot covert number to the date			
	10/10/2000 = 0.005			
NOW			Formula	Result
		Try here	Type "=NOW()"	3/5/2023 17:02:10
INTRO	return the current date and time			
SYNTAX	"=NOW()"			
input				
output	the current date and time			
Notice!	can hurt performance of spreadsheet			
	always return the date and time the last time spreadsheet was recalculated			
	might be hidden by changing the cell formatting			



ASSIGNMENT: "PUZZLE" WORKBOOKS



ASSIGNMENT: "PUZZLE" WORKBOOKS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Math for Game Designers, Assignment 9													
2	Question 3													
3														
4	I've been experimenting with adding a card based system to handle some of the story events. The "Story Deck" contains a variety of cards. The player draws 5 every turn. 25 of them are just lore. 15 of them give the player a bonus, and 5 have a negative effect. And lastly, 3 special cards trigger the end game when they're drawn. Here's the problem: There needs to be more than one end triggering card, because I playtested it with just one and it didn't get drawn enough. But I'm not sure what should happen if the player draws more than one in a turn. Is that something that will even come up?													
5														
6														
7														
8														
9														
10														
11														
12														
13														
14	What's the probability the player will draw exactly one special card on a turn?													
15	What's the probability the player will draw more than one special card on a turn?													
16														
17														
18														
19														

ASSIGNMENT: "PUZZLE" WORKBOOKS

	A	B	C	D	E	F	G	H	I
1									
2									
3									
4									
5									
6									
7									
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29									
30									

Spreadsheets for Game Designers

Assignment 2: Puzzle Workbook

Prompt

Complete the workbook!

Download from here, and rename your copy with your name:

Follow the instructions within and complete the challenges!

<https://docs.google.com/spreadsheets/d/11Z7IiSpPLWLa7DWT-li2tBqA0ebdfMKi/export?format=xlsx>

Submitting Your Work

Upload a copy of your work here:

<https://drive.google.com/drive/u/3/folders/1YDM40IS5JhvBo-MQfxwKW8tChROQnV5c>

Resources & References

If you have any trouble, check out the general spreadsheet resources tab:

[Resources](#)

Add
more rows at bottom.

+ ☰ Schedule ▾ Software ▾ Readings ▾ Resources ▾ 1) Map ▾ 2) Workbook 1 ▾ 3) Workbook 2 ▾ 4) Analysis Presentation ▾



ASSIGNMENT: "PUZZLE" WORKBOOKS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	SPREADSHEETS FOR GAME DESIGNERS														
2	<i>Puzzle Workbook</i>														
3	<i>Adapted from "Excel Silver" & "Excel Gold" workbooks by Ira Fay</i>														
4															
5	This is a workbook of various challenges to test your spreadsheet abilities. There are 20 tabs of challenges, though some have multiple tasks.														
6	Complete all tasks as best as you can. If you're not sure how to do something, you can look online														
7	But otherwise all work should be your own! Just being told the answer ruins a puzzle, after all.														
8															
9	The challenges start now!														
10	Use "Save As" (or rename the file directly when it's closed) to replace "_yournamehere" in the file name with your name, there														
11															
12	In Cell B13, write your name and color it blue.														
13															
14															
15	Look at the worksheet tabs below, and notice that the challenges are out of order.														
16	Put them in order (lowest to highest)														
17	Notice one is misspelled. Correct the spelling.														
18	Delete Sheet1, since it's empty														
19															
20	When all that is done, proceed to Challenge 1!														
21															
22															
23															
24															
25															
26															



Intro

Challenge 1

Challenge 3

Challenge 9

Challenge 4

Challenge 2

Challenge 8

...



ASSIGNMENT: "PUZZLE" WORKBOOKS

CHALLENGE 4

Look at the data in "4_Pokemon"

This lists the stats and types of the first 251 Pokemon.

Create a new tab, name it "C4 Answers"

Create a bar chart showing the number of pokemon per type

Note that many Pokemon have multiple types

eg, A Fire/Ice Pokemon should be counted in both the Fire and Ice columns.

Create a stacked bar chart showing the sum of all 6 stats for each type (ie, 17 bars each with 6 colors)

Create a chart showing the Average HP per Type

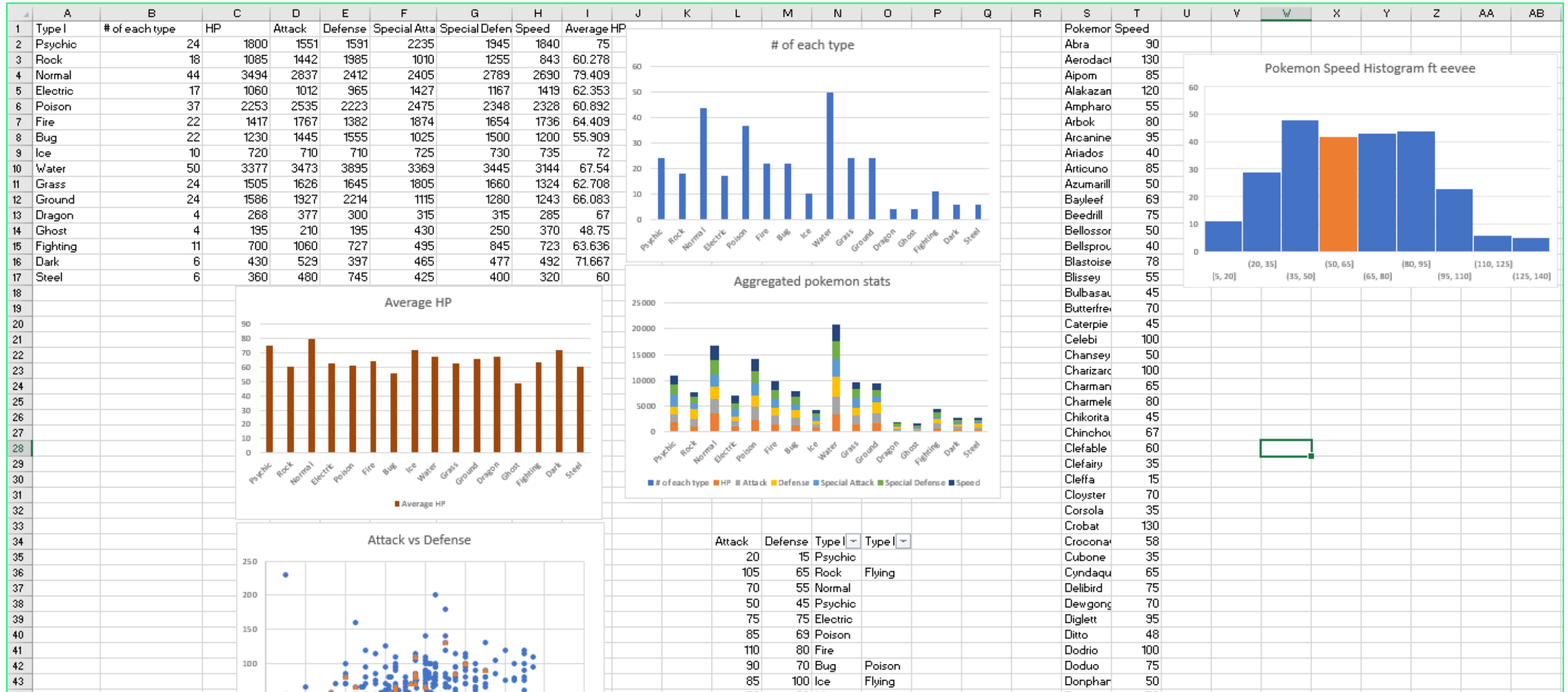
Create a Scatterplot of Attack vs Defense for all Pokemon. But use a separate symbol and/or color for Psychic types.

Make a histogram of the Speed stat for all Pokemon. Highlight the bar for Eevee in a different color.

	A	B	C	D	E	F	G	H	I
1	Pokemon	HP	Attack	Defense	Special Attack	Special Defen	Speed	Type I	Type II
2	Abra	25	20	15	105	55	90	Psychic	
3	Aerodactyl	80	105	65	60	75	130	Rock	Flying
4	Aipom	55	70	55	40	55	85	Normal	
5	Alakazam	55	50	45	135	85	120	Psychic	
6	Ampharos	90	75	75	115	90	55	Electric	
7	Arbok	60	85	69	65	79	80	Poison	
8	Arcanine	90	110	80	100	80	95	Fire	
9	Ariados	70	90	70	60	60	40	Bug	Poison
10	Articuno	90	85	100	95	125	85	Ice	Flying
11	Azumarill	100	50	80	50	80	50	Water	
12	Bayleef	60	62	80	63	80	69	Grass	
13	Beedrill	65	80	40	40	80	75	Bug	Poison
14	Bellossom	75	80	85	90	100	50	Grass	
15	Bellsprout	50	75	35	70	30	40	Grass	Poison
16	Blastoise	79	83	100	85	105	78	Water	
17	Blissey	255	10	10	75	135	55	Normal	
18	Bulbasaur	45	49	49	65	65	45	Grass	Poison
19	Butterfree	60	45	50	80	80	70	Bug	Flying
20	Caterpie	45	30	35	20	20	45	Bug	
21	Celebi	100	100	100	100	100	100	Psychic	Grass
22	Chansey	250	5	5	35	105	50	Normal	
23	Charizard	78	84	78	109	85	100	Fire	Flying
24	Charmander	39	52	43	60	50	65	Fire	
25	Charmeleon	58	64	58	80	65	80	Fire	
26	Chikorita	45	49	65	49	65	45	Grass	
27	Chinchou	75	38	38	56	56	67	Water	Electric
28	Clefable	95	70	73	85	90	60	Normal	
29	Clefairy	70	45	48	60	65	35	Normal	
30	Cleffa	50	25	28	45	55	15	Normal	
31	Cloyster	50	90	180	85	45	70	Water	Ice
32	Corsola	55	55	85	65	85	35	Water	Rock
33	Crobat	85	90	80	70	80	130	Poison	Flying
34	Croconaw	65	80	80	59	63	58	Water	



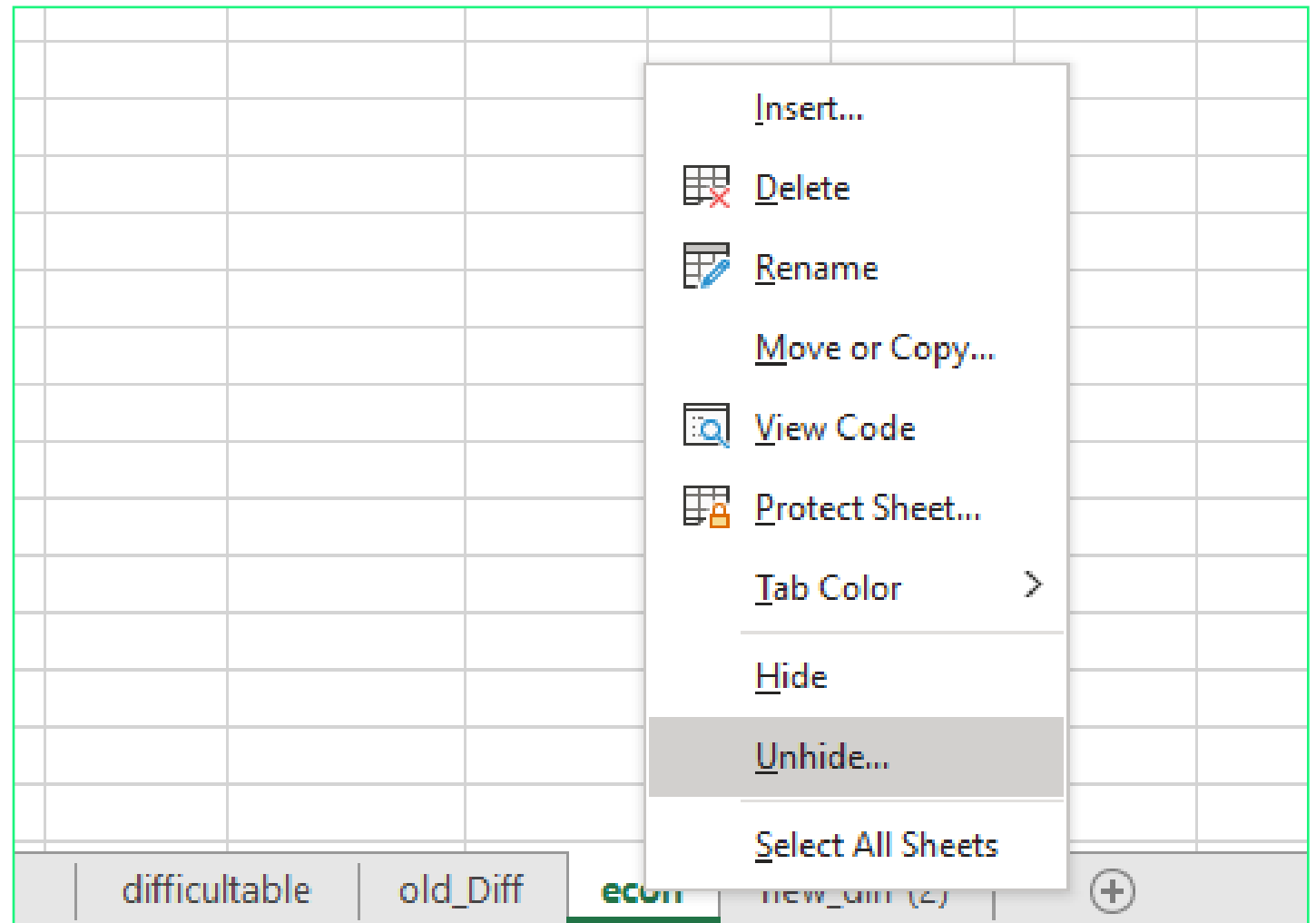
ASSIGNMENT: "PUZZLE" WORKBOOKS



ASSIGNMENT: "PUZZLE" WORKBOOKS

Secret to Success

- The puzzle workbooks have hidden tabs posing additional challenges, or sometimes just jokes
- Hiding additional material in challenges creates a meaningful moment for those who discover it
- Similarly, this slide did not actually appear in the talk. Are there any other added slides?
- Not everyone will come across a secret, but for those who do, it creates a unique feeling of connection to the material, and as a reward for their curiosity.
- Curiosity is the personal quality I like and respect the most, and try to foster at every opportunity



STRATEGIES TO TEACH SPREADSHEETS

- Don't forget the basics
- Have students teach each other



COURSE CONTENT

What You'd Expect

- Basic usage & fundamentals
- Formulas
- **Visual Formatting**
- Pivot Tables
- Charts & Graphs
- VBA



FOR ALL
EXCEL USERS

EXCEL AS ESPORTS FMWC OPEN

NOV 13 - DEC 11



AG Capital



Microsoft

Car Units	Icon
Truck	
Ridesharing Car	
Regular Car	
Cyclist	

Bulding Units	Icon
Residential Hous	
Factory	
Hospital	
School	
Ride	
Park/Tree	
Lake/Pool	

keeping records in an Excel file, no his result for each roll. However, J didn't manage to keep up the total score for the game. Needs your to calculate the total score for each game.

TASK: Calculate the score for each game in Column X and paste your results into the master file. Each

Scoring Rules in Bowling:

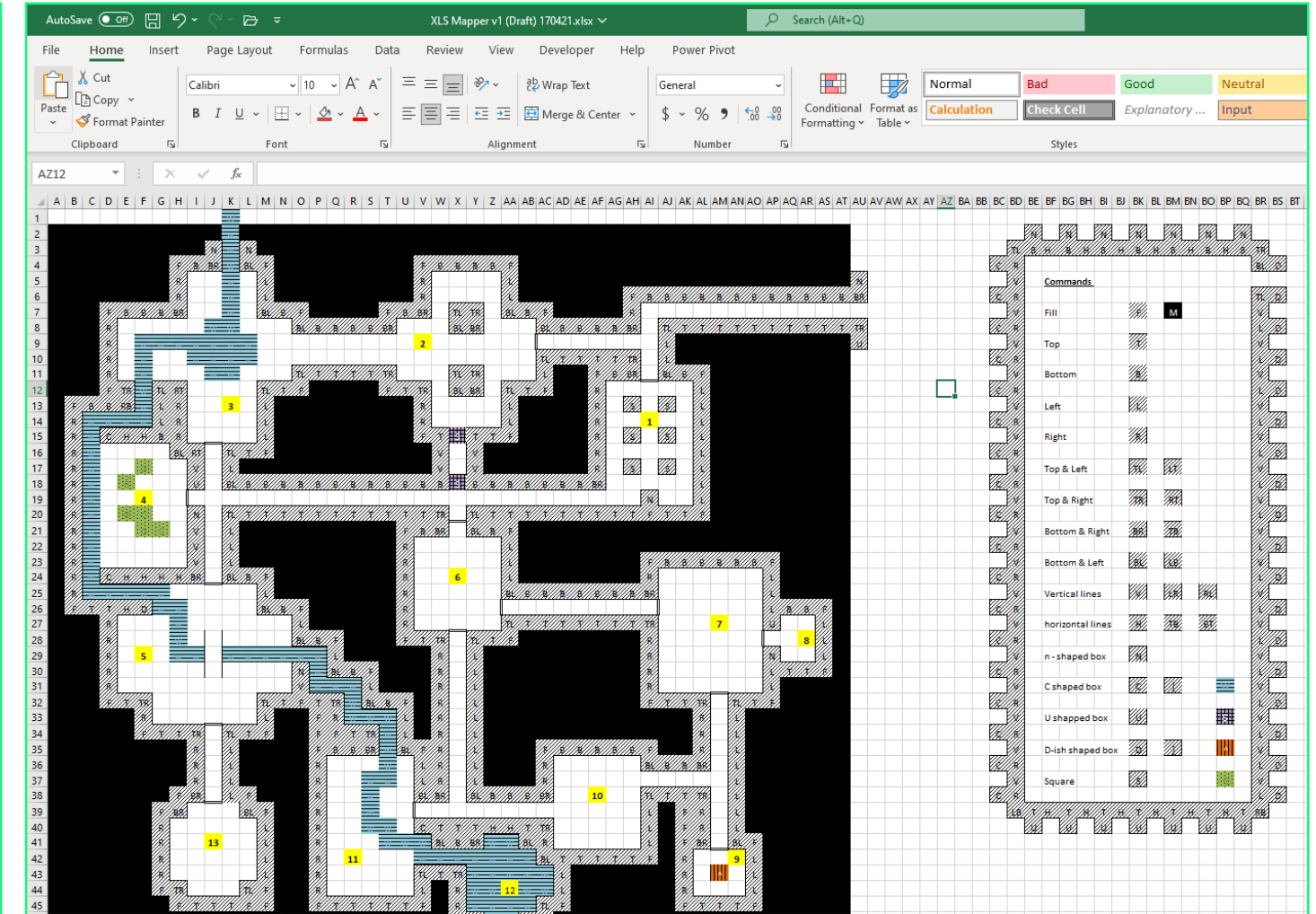
<https://www.rookieroad.com/bowling-rules/>

Hint:

Games #1 - 15: No strikes and no spares are possible
Games #16 - 30: No strikes are possible
Games #31 - 75: No strikes and no spares in Frame 10 are possible
Games #76-100: Everything is possible

Case Author: Case Ide

ASSIGNMENT: MAKE A MAP



Goblin's Henchman, *Simple Excel Mapper* (2018)

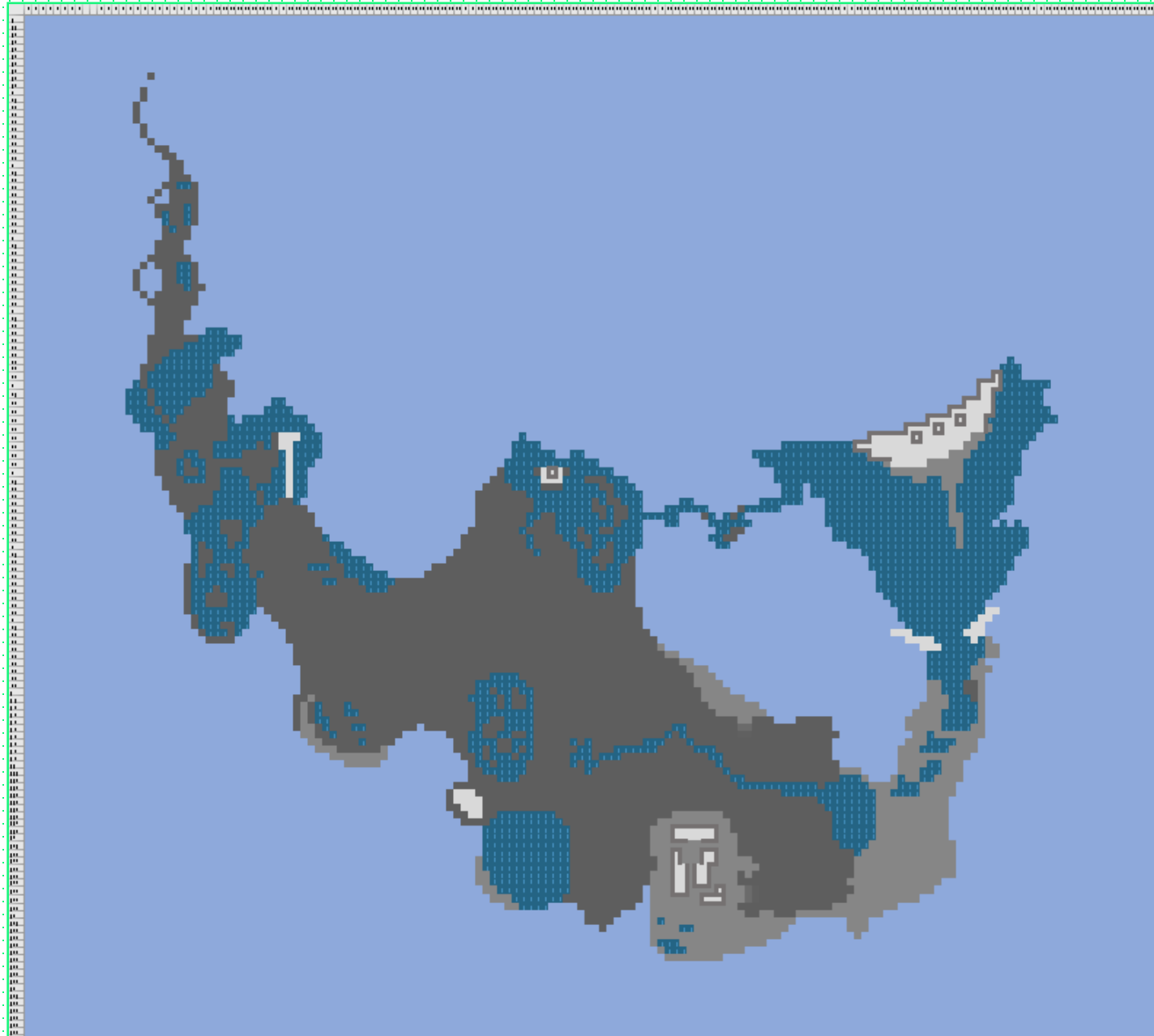


ASSIGNMENT: MAKE A MAP

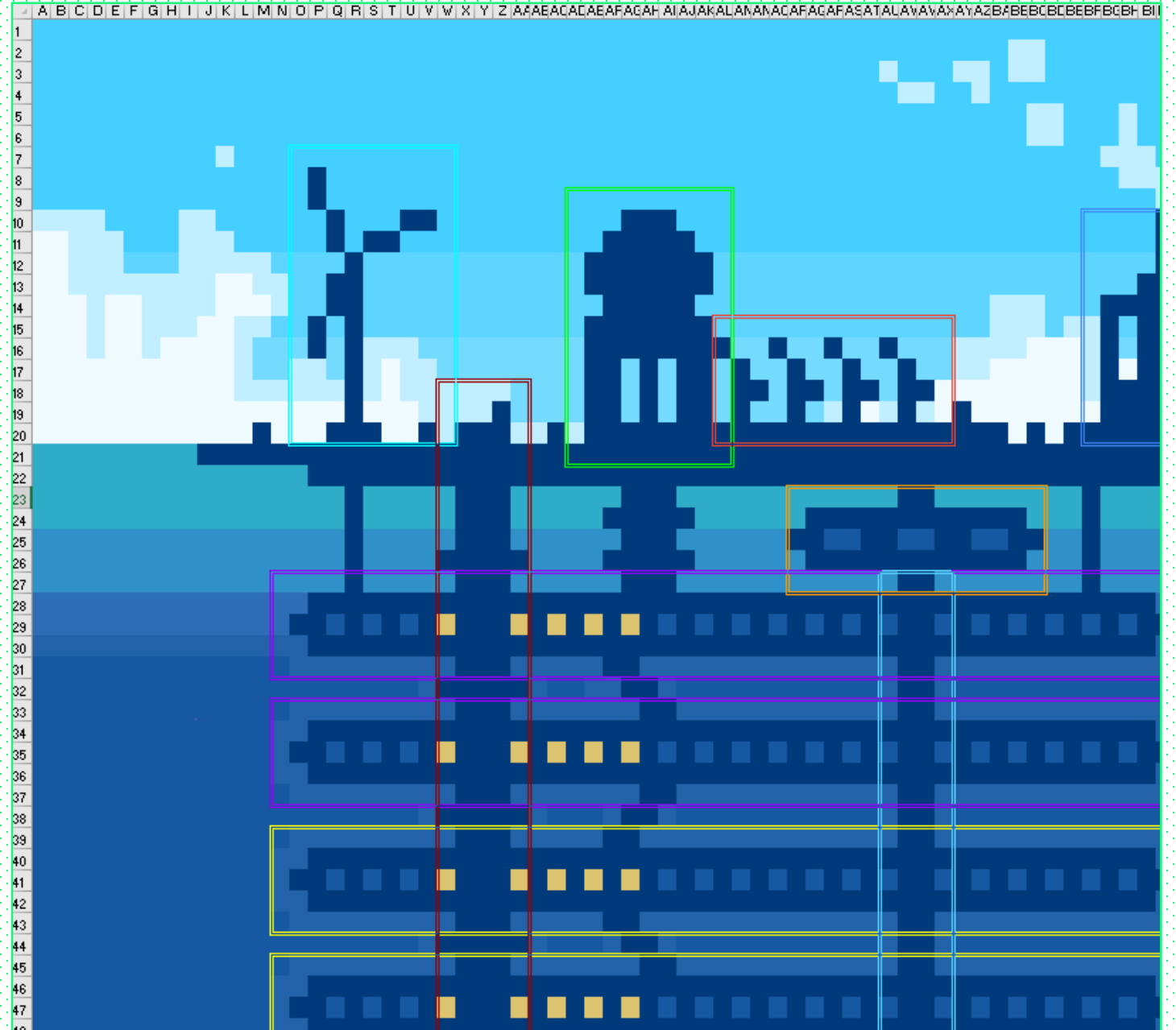
	A	B	C	D	E	F	G	H	I	J	K
1											
2	Spreadsheets for Game Designers										
3	Assignment 1: Map Spreadsheet										
4											
6											
7	Prompt										
8	Make a map of some kind, using spreadsheet software										
9											
10											
11	Description										
12	Using either Excel or Google Sheets, make a map of a real or imagined space. "Map" is broadly defined, but must be an abstract representation of something with a spatial dimension (so not a 'conceptual map' or diagram).										
13	The resulting work <i>must</i> be static, and not interactive, dynamic or animated.										
14											
15											
16	Submitting Your Work										
17	Upload a copy of your work here:										
18	https://drive.google.com/drive/u/3/folders/1el7xV_RjhYepj8CIBbJdLeJ_hNKbbV78										
19											
20											
21	Resources & References										
22	VGMaps.com: The Video Game Atlas				https://www.vgmaps.com						
23	Jerry's Map (2009) film by Greg Whitmore				https://vimeo.com/6745866						
24	Jerry Gretzinger Website				https://www.jerrysmap.com/museums-publications						
25	"Simple Excel Mapper" (2018) by Goblin's Henchman				https://www.drivethrurpg.com/product/282764/Simple-Excel-Mapper						
26	"Simple Excel Mapper" (2018) by Goblin's Henchman				https://www.youtube.com/watch?v=X0P2uDtjLQc						
27											
28											



ASSIGNMENT: MAKE A MAP

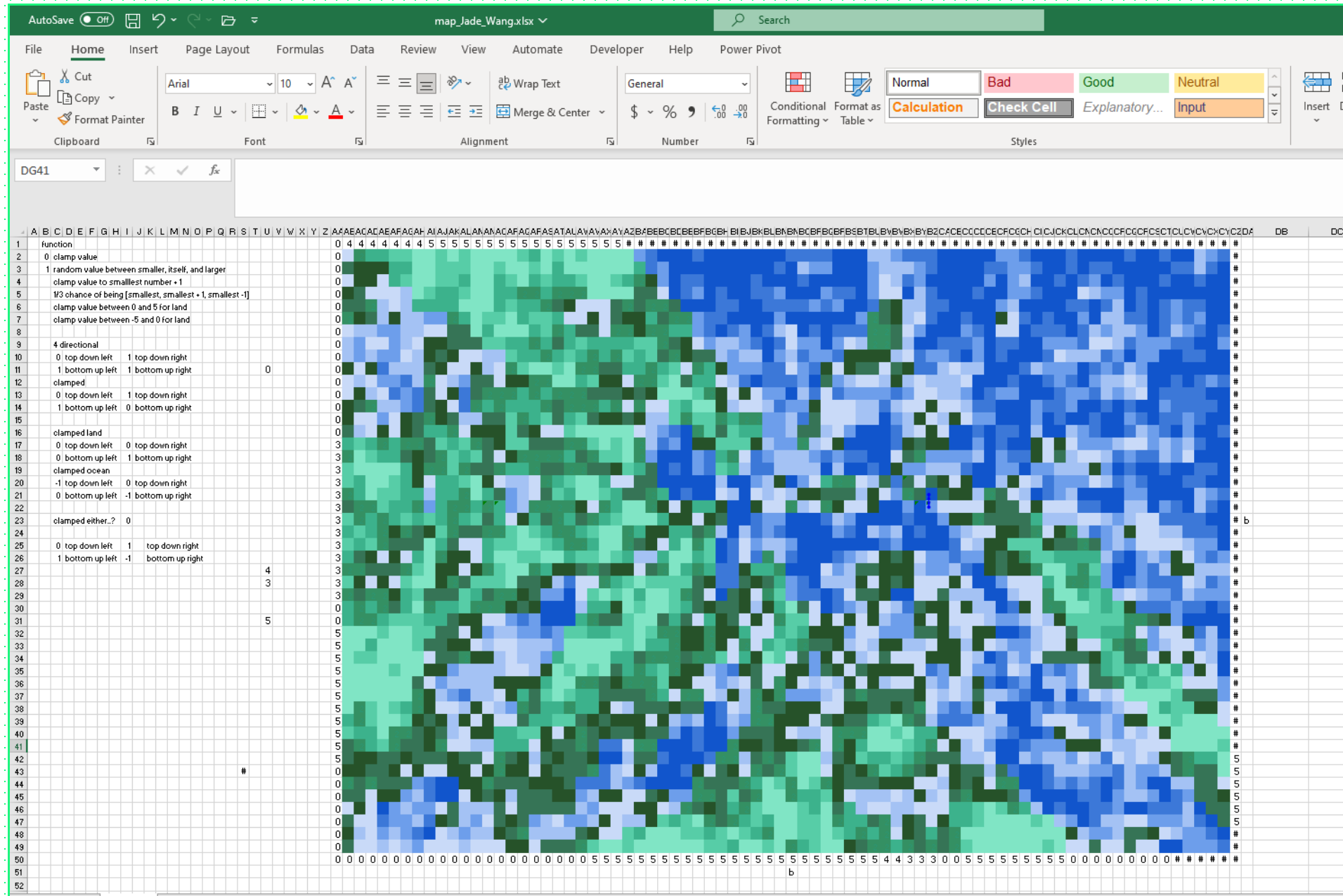


(by Miles Esguerra)



(by Jiahao Guo)

ASSIGNMENT: MAKE A MAP



(by Jade Wang)



STRATEGIES TO TEACH SPREADSHEETS

- Don't forget the basics
- Have students teach each other
- Creative Coding, just with spreadsheets
- “Impractical” skills, like making pixel art, are great ways to learn



COURSE CONTENT

What You'd Expect

- Basic usage & fundamentals
- Formulas
- Visual Formatting
- Pivot Tables
- Charts & Graphs
- VBA

Typical Uses in Games

- Project Management
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What You Wouldn't Expect

- Digital Art
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- Art History of Grids as a Form
- Non-Practical Uses
- Making spreadsheet games





3. Adding lots more birds

Pitched to Stonemaier with 60 bird cards. It grew to 170!

The spreadsheet is a detailed design document for a board game. It includes columns for card types (e.g., Bird, Tree, Animal), card names, and various attributes like cost, power, and effects. The data is organized into rows, with each row representing a different card or game element. The spreadsheet is color-coded with various background colors for different sections.

was through playtesting and tweaking and balancing from there. So once that was worked out, we decided to pitch more

NYU Game Center Lecture Series presents Elizabeth Hargrave · 17 hours ago

436

Share

Just Chatting

COURSE CONTENT

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ASSIGNMENT: DATA ANALYSIS

Spreadsheets for Game Designers

Assignment 4: Analysis Presentation

Prompt

Now that we know our way around Excel, let's use it for one of its most common uses: better understanding information that is too complex or voluminous to be made sense of unaided. This process of *extending the borders of the known* is called "analysis".

In this project, you'll be working with some actual gameplay data, summarizing it into a more easily understandable format, and trying to find out anything interesting from it. Because you'll be working with real information, it hasn't been fabricated to make this process easy or simple, but any findings you do make will be both real and true.

Analyzing data can be difficult! But you'll be working with one or two of your peers for this project. This will be collaborative through every stage, and everyone is expected to participate and contribute to every aspect of the project.

Description

Imagine you've just been hired at Game Studio Inc, and on your first day you get handed a big set of data like any of the below. "You're the new game designer right?" you're asked by someone whom context clues indicate might be your manager. You nod. "Great, so can you make sense of this? No one has looked at it before. Just summarize what we have, and let me know if you

ASSIGNMENT: DATA ANALYSIS

How to turn a sea of data into data you can see

There are more people in more places doing more things with Apples than with any other personal computer in the world. Which is saying a lot. But we'd like to take the time to explain just one of the things that can make an Apple® Personal Computer.

It's called business graphics. An important business tool that demonstrates, quite graphically, how one picture is worth a few thousand numbers.

More ways to see
what you're doing

That's the beauty of Apple Business Graphics. The software package that gives your Apple II or Apple III personal computer the power to convert rows and rows of numbers

or pounds of printout — into one simple, colorful, comprehensible illustration.

And that gives you the power, for example, to thoroughly understand relationships and comparisons in a complex market analysis. Without having to spend hours sifting through

Business Graphics can make presentations more presentable.

Because whatever you've produced can be rapidly, easily and colorfully reproduced, on virtually any printer or plotter on the market.

Moreover, sophisticated Apple features like exploded views,

Getting started in pictures.

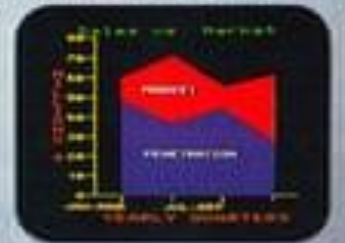
Start by seeing any of the over 1300 authorized Apple dealers. They'll show you Apple Business Graphics software can generate more types of pictures, in more colors, using more data



Horizontal bar graph is another format used to compare the probabilities of six different products -- from personal to pet care.



To get the overall market share picture, Lord and other percentages related data below management considers this case to digest the chart.



With up to 24 colors per graph, employees can easily see just how their annual sales performance relates to the rest of the market.

dull data – armed with little more than a ruler, a compass and a few not-so-magic markers.

With Apple Business Graphics, all you do is enter the data or transfer it directly from your VisiCalc[®] model or a number of other computer files. Your Apple will take it from there.

Helping you to get the big picture in a variety of ways. Line or area graphs, bar graphs, pie charts or scattergrams.

- Whichever configuration best suits your application.

When you're through charting market shares you can do the same with forecasts, budgets, stock trends, business plans or customer demographics.

● **Show your stuff.** In addition to helping

unlimited overlays and floating titles allow your displays to be remarkably flexible.

By combining Apple Business Graphics with various slide-show packages, charts and graphs on your monitor can easily be converted into impressive slides and transparencies.

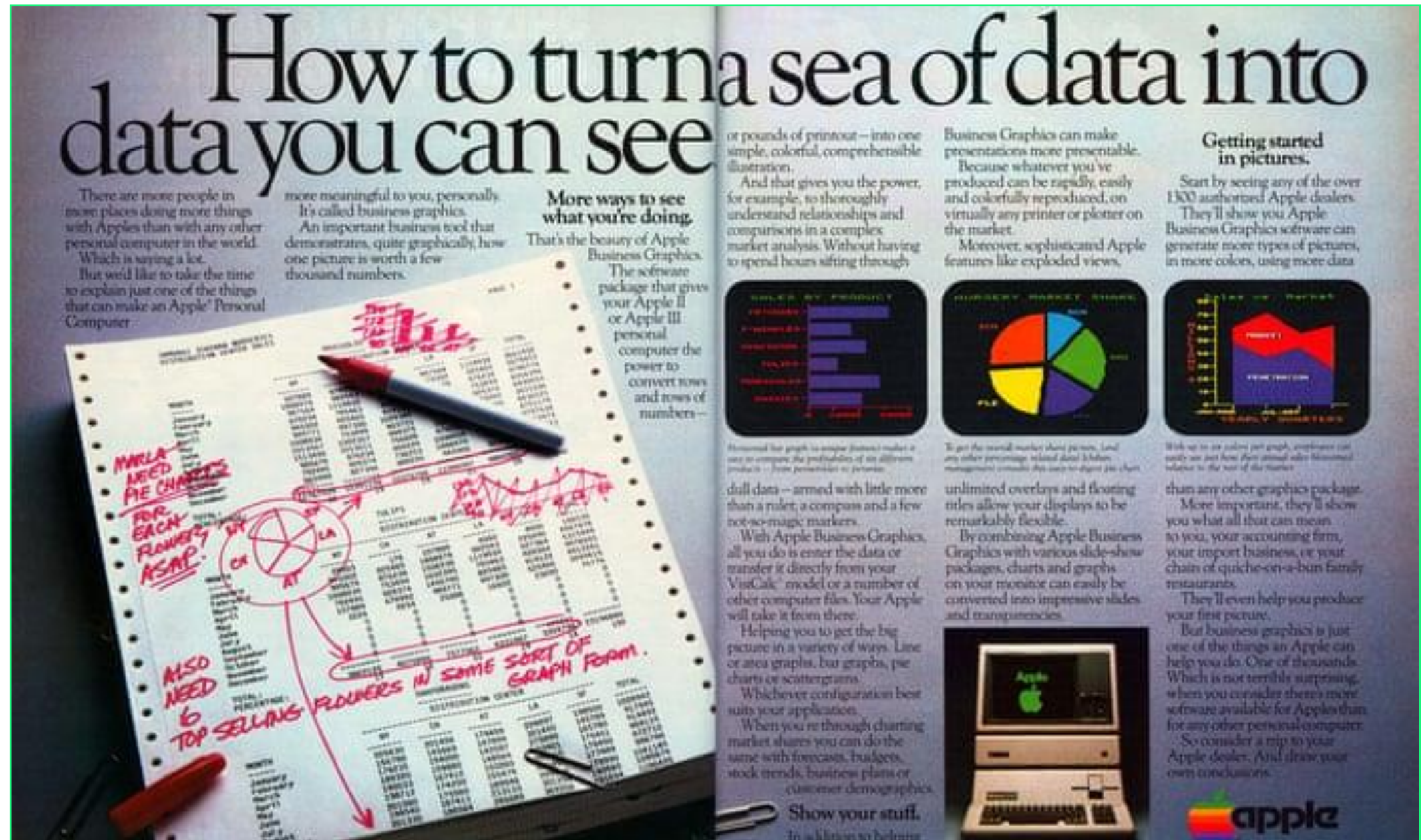
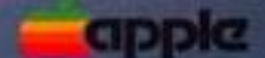
than any other graphics package.

More important, they'll show you what all that can mean to you, your accounting firm, your import business, or your chain of quiche-en-a-bun family restaurants.

They'll even help you produce your first picture.

But business graphics is just one of the things an Apple can help you do. One of thousands. Which is not terribly surprising, when you consider there's more software available for Apples than for any other personal computer.

So consider a trip to your Apple dealer. And draw your own conclusions.



EXERCISE: WHO'S THE BEST PLAYER?

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1		Points per Game																							
2		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total Points	Avg per Game	Standard Deviation	
3	Akiko		25	24	23	20	19	28	22	21	22	22	25	0	25	23	29	24		28	25	405	22.5	6.2	
4	Alejandra									24		20	23	18	23	25	22		19	20	21	215	21.5	2.3	
5	Bella	4	10	8	9	7	31	6	6		6	7		8	10	3	9	38	11	4	11	188	10.4	9.1	
6	Hayoon	26	26		22	23	22	18	22		19	19	13	15	10	13	10	10	7	6	5	286	15.9	6.9	
7	Jasmine	2	4	5	4		2	2	2	4	2	1	5	2		1	1	5	4	5	1	52	2.9	1.6	
8	Jing	25		23	26	24	21	24	22	19	24	19	23	25	23	25		22	25	27		397	23.4	2.2	
9	Laela	33	35	13	25	4		29	8	14	28	16	27	3	12	21	24	29	25	20	35	401	21.1	10.0	
10	Marissa	26	26	32	31	31	30	29	31	32	36											304	30.4	3.0	
11	Mila	4	1	4	5	5	7	5	3	5	8		6		4	5	4	7	6	1	5	85	4.7	1.8	
12	Olivia	5	7	12		11	11	16	21	16	23	20	29	29	20	21	27	35	37		33	373	20.7	9.5	
13	Stephanie	16	16	15	14	14	15		14	15	14	15	14	16	15		15	15	14	13	15	265	14.7	0.8	
14	Teagan	16	17	15	18	15	18	17		17		15	18	13	16	15	16	21	16	14	17	294	16.3	1.8	

ASSIGNMENT: DATA ANALYSIS

Learning Objectives

- Working with data in spreadsheets

ASSIGNMENT: DATA ANALYSIS

Learning Objectives

- Working with data in spreadsheets
- Using real gameplay data
- And how to present it to peers

Age of Empires II DE Match Data - aoestats.io

Data for Age of Empires II DE matches across patches and ladders.



[Data Card](#) [Code \(3\)](#) [Discussion \(3\)](#)

About Dataset

Context

This data is Age of Empires II DE match data, one of the OG RTS video games. Data is anonymized match level data pulled from [aoe2.net](#) with some post-processing to determine match winners and to ensure data integrity. This is the backend data that powers [aoestats.io](#).

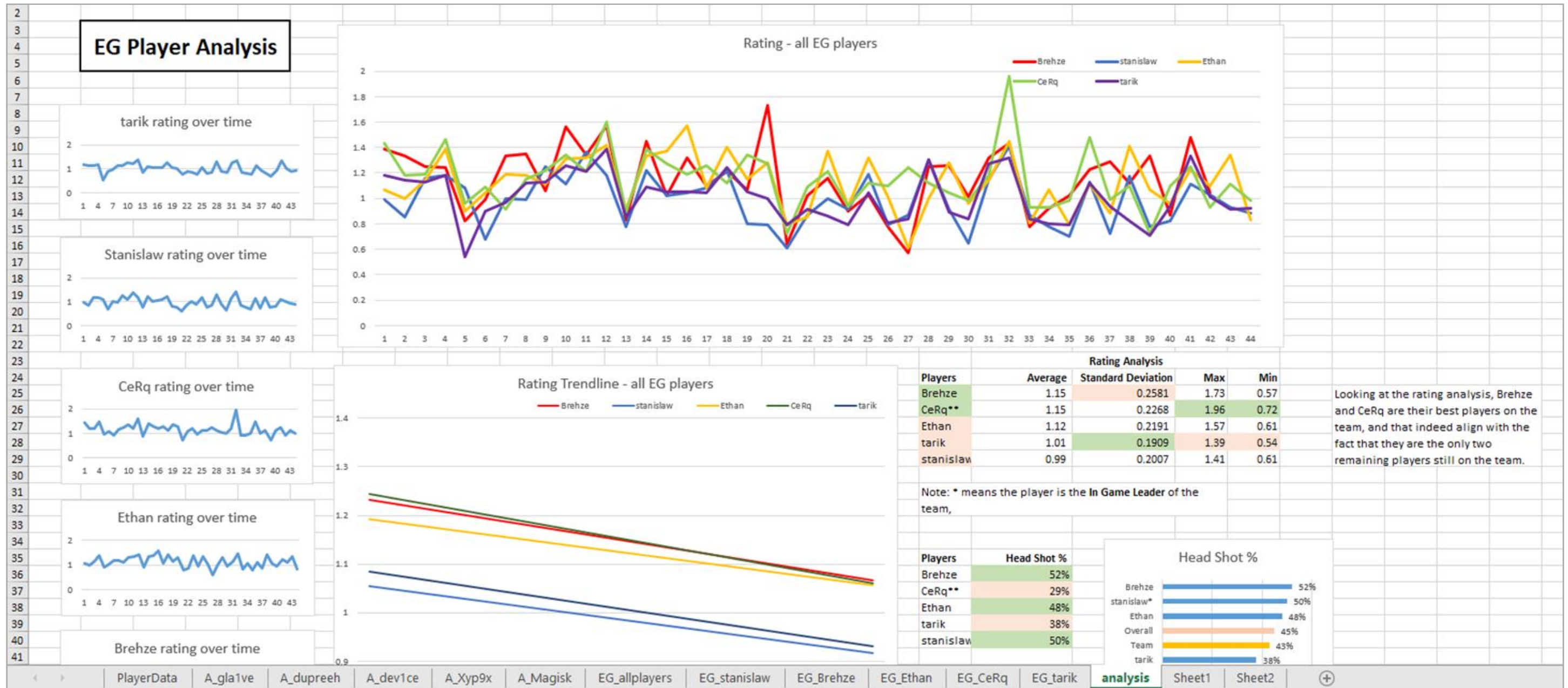
Usability ⓘ
9.71

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Expected update frequency



ASSIGNMENT: DATA ANALYSIS



(by Ian Tang)



STRATEGIES TO TEACH SPREADSHEETS

- Don't forget the basics
- Have students teach each other
- Creative Coding, just with spreadsheets
- “Impractical” skills, like making pixel art, are great ways to learn
- Use real-life examples from working designers
- Open-ended, exploratory approach, even for topics like data analysis



COURSE CONTENT

What You'd Expect

- Basic usage & fundamentals
- Formulas
- Visual Formatting
- Pivot Tables
- Charts & Graphs
- VBA

Typical Uses in Games

- Project Management
- Database
- Modeling, Design tuning
- Importing data from a sheet into a game engine
- Exporting data from a game build to a spreadsheet

What You Wouldn't Expect

- Digital Art
- Procedural Text
- History of Spreadsheets
- Art History of Grids as a Form
- Non-Practical Uses
- Making spreadsheet games



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- Non-Practical Uses
- Making spreadsheet games



Course Schedule

Week	Date	Topic	Detail	Reading Assigned	Assigned	Due
1	Fri, Sep 02	Intro	Course introduction, why spreadsheets?, mapping	"Wizardry: Going Slow, Mapping" & "Fate: Nothing to Show but the Maps" by Chester Bolingbroke	Map	
2	Fri, Sep 09	Text & Color	Introduction to formulas and formatting	"Excelling: an interview with Danielle Aubert" & "16 Months Worth of Drawings in Microsoft Excel"	Theory into Praxis	
3	Fri, Sep 16	Formulas	Managing text, translation/localization, formulas for text	"A Spreadsheet Way of Knowledge" by Steven Levy	"Puzzle" Workbook	Map
4	Fri, Sep 23	Database	Formula Basics. Handling & Inputting Data. Sorting, freeze panes.	"Good Numbers (Part 1) & (Part 2)" by Alexander King	Graph & Data Workbook	"Puzzle" Workbook
5	Fri, Sep 30	Prototyping	InDesign data merge for card prototypes	"Michael Milken's Spreadsheets: Computation and Charisma in Finance in the Go-Go '80s" by William Deringer	Analysis Project	Graph & Data Workbook
6	Fri, Oct 07	Modeling	Advanced Formulas, VLOOKUP, INDEX, MATCH, OFFSET & more	"Introduction to Game Systems Design, Chapter 15: Analyzing Game Data" by Dax Gazaway		
7	Fri, Oct 14	Analysis	Analysis, & Pivot Tables	"The History of Mathematical Tables, From Sumer to Spreadsheets. Chapter 12: The Rise and Rise of the Spreadsheet" By Martin Campbell-Kelly		
8	Fri, Oct 21	Art	Creative expression , subverting utilitarian purposes	"The Shadow and the Gap: A rare look at Charles Gaines' Shadows series" by Gina Osterloh	Interactive Art	Analysis Project
9	Fri, Oct 28	Criticism	Critical context for tools, limitations of spreadsheets	"Saving the World from Spreadsheets" by Emery Berger & "Spreadsheets are Special" by Janet Swift		
10	Fri, Nov 04	Integration	Exporting and Importing Data. Web Queries. To/From Unity	"The Stuff of Bits, an Essay on the Materialities of Information. Chapter 4: Spreadsheets and Spreadsheet Events in Organizational Life" by Paul Dourish		Interactive Art
11	Fri, Nov 11	Interactivity	Intro to VBA, User-Defined Functions	"Using Simple Spreadsheet Techniques to Help Balance Your Game" by Jamey Stevenson	Final Game	
12	Fri, Nov 18	Games	VBA Form Controls, Dialog Boxes & Userforms	"Beyond the Character Sheet: 'Character Keepers' as Digital Play Aids" by Adrian Hermann & Gerrit Reininghaus. & "Party in a Shared Google Doc" by Marie Foulston		Theory into Praxis
13	Fri, Nov 25		Thanksgiving, No Class			
14	Fri, Dec 02	Sharing	Spreadsheets for others, versioning & source control	"The Art of the Spreadsheet" by David Greusel		
15	Fri, Dec 09	Final Critique	Exhibition and critique of spreadsheet games			Final Game



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A1	A	B	C	D	E	F	G	H
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Spreadsheets for Game Designers

Required Readings

At the start of each class we'll discuss the reading for that week. I'll expect you to be able to summarize major points from the reading as well as pertinent information about the author, and to share your own opinion about it.

Week #	Due Date	Reading	Type	Link
2	Fri, Sep 09	"Wizardry: Going Slow, Mapping" by Chester Bolingbroke	Web	http://crpgaddict.blogspot.com/2010/02/wizardry-going-slow-mapping.html
2	Fri, Sep 09	"Fate: Nothing to Show but the Maps" by Chester Bolingbroke	Web	http://crpgaddict.blogspot.com/2016/12/fate-nothing-to-show-but-maps.html
3	Fri, Sep 16	"Excelling: an interview with Danielle Aubert" by Jeremy Douglass	Web	http://web.archive.org/web/20101221072412/http://writerresponsetheory.org:80/wordpress/2006/12/1
3	Fri, Sep 16	"16 Months Worth of Drawings in Microsoft Excel" by Danielle Aubert [examples from the book]	Web	https://danielleaubert.info/16-months-worth-of-drawings-in-microsoft-excel/
3	Fri, Sep 16	"16 Months Worth of Drawings in Microsoft Excel" by Danielle Aubert [more examples]	Web	https://www.various-projects.com/project/danielle-aubert-16-months-worth-of-drawing-exercises-in-n
4	Fri, Sep 23	"A Spreadsheet Way of Knowledge" by Steven Levy	Web	https://www.wired.com/2014/10/a-spreadsheet-way-of-knowledge/
4	Fri, Sep 23	"A Spreadsheet Way of Knowledge" by Steven Levy	PDF	https://drive.google.com/file/d/1nfgoAAPv2vtApuq2jgaXIfYuje9AcatN/view?usp=sharing
5	Fri, Sep 30	"Good Numbers (Part 1)" by Alexander King	Web	https://www.literallyaking.com/blog/good-numbers-part1
5	Fri, Sep 30	"Good Numbers (Part 2)" by Alexander King	Web	https://www.literallyaking.com/blog/good-numbers-part2
6	Fri, Oct 07	"Michael Milken's Spreadsheets: Computation and Charisma in Finance in the Go-Go '80s" by William Deringer	PDF	https://drive.google.com/file/d/1CDG2UMXE_d6oOCgYgNzpaGpOFawRF84z/view?usp=sharing
7	Fri, Oct 14	"Introduction to Game Systems Design, Chapter 15: Analyzing Game Data" by Dax Gazaway	PDF	https://drive.google.com/file/d/1emb8V-X0c_hdzzgp84bwsQAjIYwrHcBB/view?usp=sharing
8	Fri, Oct 21	"The History of Mathematical Tables, From Sumer to Spreadsheets. Chapter 12: The Rise and Rise of the Spreadsheet" By Martin Campbell-Kelly	PDF	https://drive.google.com/file/d/1c-EbrV2itYrZeDXozjBg61rV4rDzKR4v/view?usp=sharing
9	Fri, Oct 28	"The Shadow and the Gap: A rare look at Charles Gaines' Shadows series" by Gina Osterloh	Web	https://www.hauserwirth.com/ursula/25824-shadow-gap-rare-look-charles-gaines-shadows-series/
10	Fri, Nov 04	"Saving the World from Spreadsheets" by Emery Berger	Video	https://www.youtube.com/watch?v=GyWKxFxyrQ
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11	Fri, Nov 11	"The Stuff of Bits, an Essay on the Materialities of Information. Chapter 4: Spreadsheets and Spreadsheet Events in Organizational Life" by Paul Dourish	PDF	https://drive.google.com/file/d/1dHa-gt0JOtlavXY97hxBh2Ri9EOSOJM/view?usp=sharing
12	Fri, Nov 18	"Using Simple Spreadsheet Techniques to Help Balance Your Game" by Jamey Stevenson	Video	https://www.youtube.com/watch?v=WqfZV2Wlb1g
12	Fri, Nov 18	"My Approach To Economy Balancing Using Spreadsheets" by Jamey Stevenson	Web	http://jameystevenson.com/blog/my-approach-to-economy-balancing-using-spreadsheets
14	Fri, Dec 02	"Beyond the Character Sheet: 'Character Keepers' as Digital Play Aids in the Contemporary Indie TRPG Community" by Adrian Hermann & Gerit Reininghaus	PDF	https://drive.google.com/file/d/1gj5NlfzZh9JLs_MLdAWhnCWQgLayhJdY/view?usp=sharing
14	Fri, Dec 02	"Party in a Shared Google Doc" by Marie Foulston	Web	https://onezero.medium.com/party-in-a-shared-google-doc-d576c565706e
15	Fri, Dec 09	"The Art of the Spreadsheet" by David Greusel	Web	https://comment.org/the-art-of-the-spreadsheet/

READINGS

- Vector for things I think are important but that don't directly inform an assignment
- Critical context makes for for informed users
- To have something to say, you have to know what's been said!

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A SPREADSHEET WAY OF KNOWLEDGE

How the computer is reshaping American business—for better and for worse

By Steven Levy

As Dan Bricklin remembers it, the idea first came to him in the spring of 1978 while he was sitting in a classroom at the Harvard Business School. It was the kind of idea—so obvious, so *right*—that made him immediately wonder why no one else had thought of it. And yet it was no accident that this breakthrough should have been his.

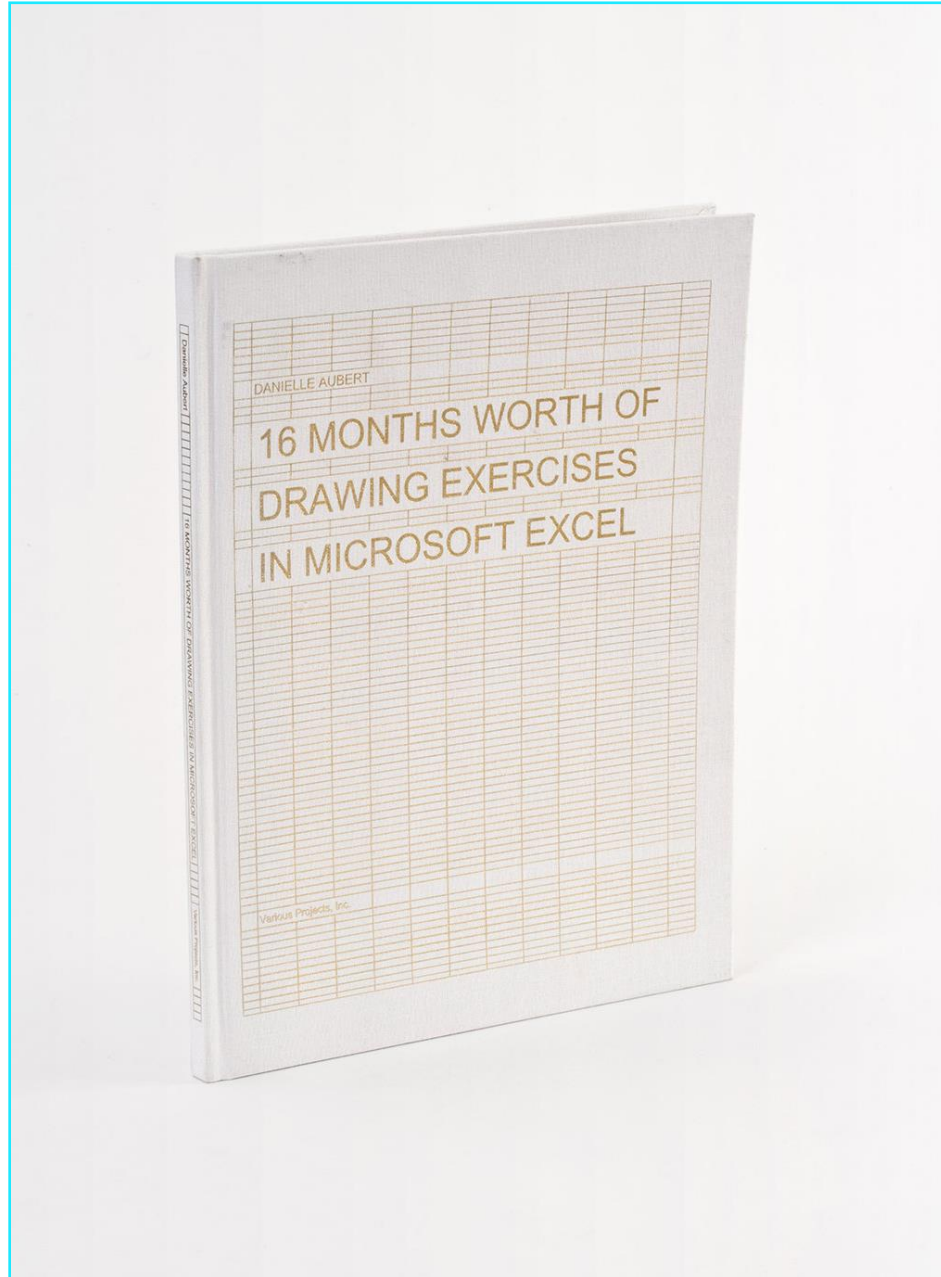
Bricklin had graduated from the Massachusetts Institute of Technology, where—and this is crucial to the idea he would have that afternoon in 1978—he had worked intimately with computers. Before deciding to go to graduate school he had worked for two major computer companies—first for Wang, then for the Digital Equipment Corporation, for whom he helped design a word-processing program. Like most Harvard MBA candidates, he wanted to be a businessman; but more often than not, his thoughts strayed to the technological.

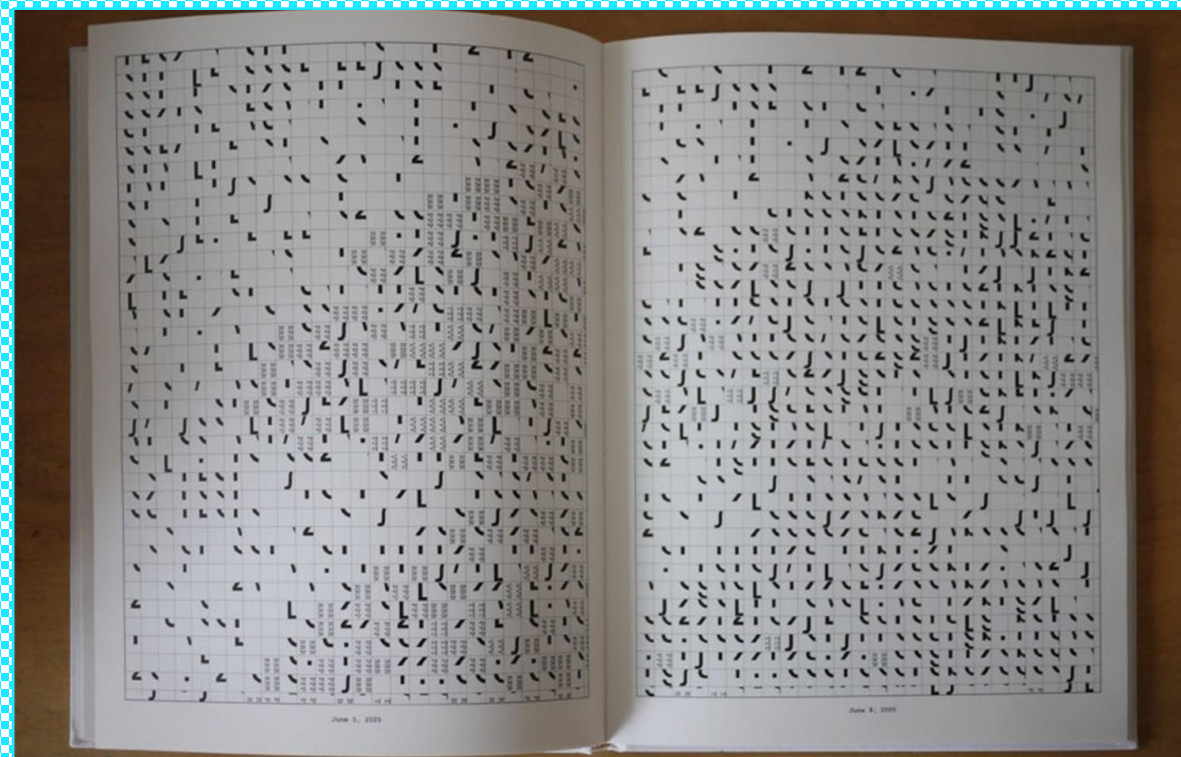
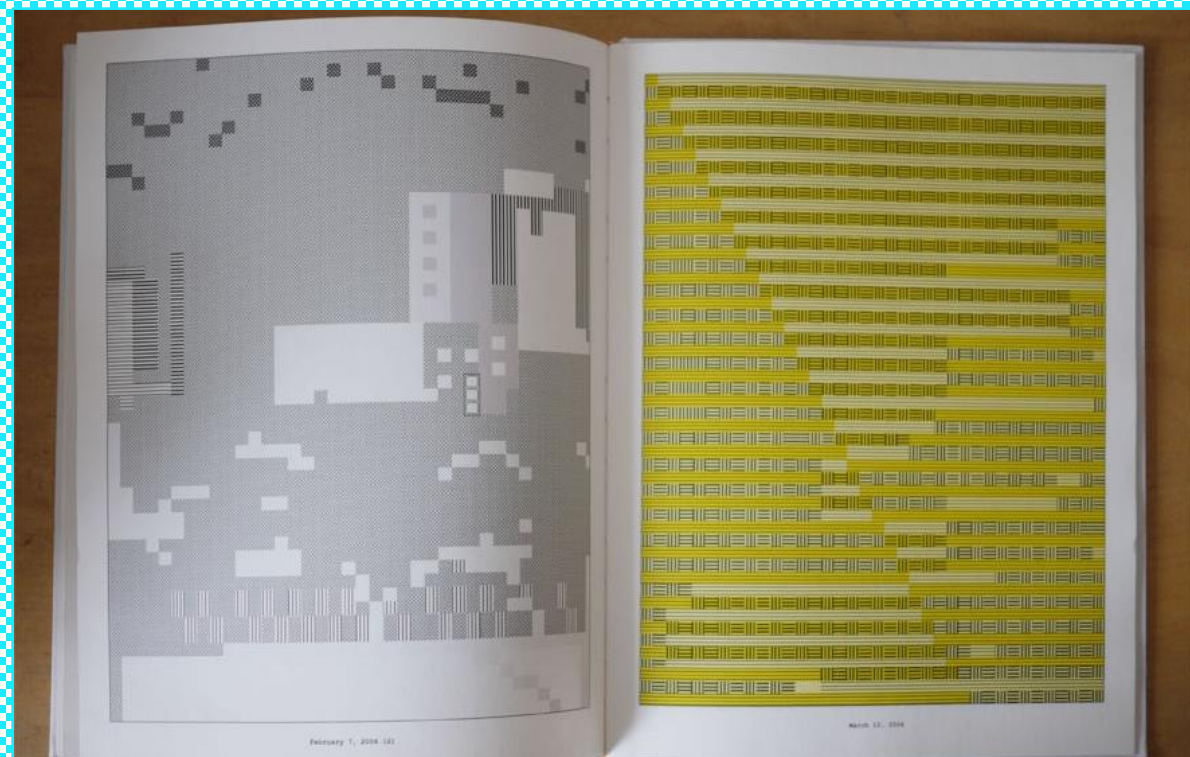
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Run your finger across, say, a row of figures representing mortgage payments for a certain property, and the number in each “cell” of the horizontal row would be the figure paid in the time period represented by that particular vertical column. Somewhere on the sheet the columns and rows would be tallied, and that information would be entered on even larger sheets.

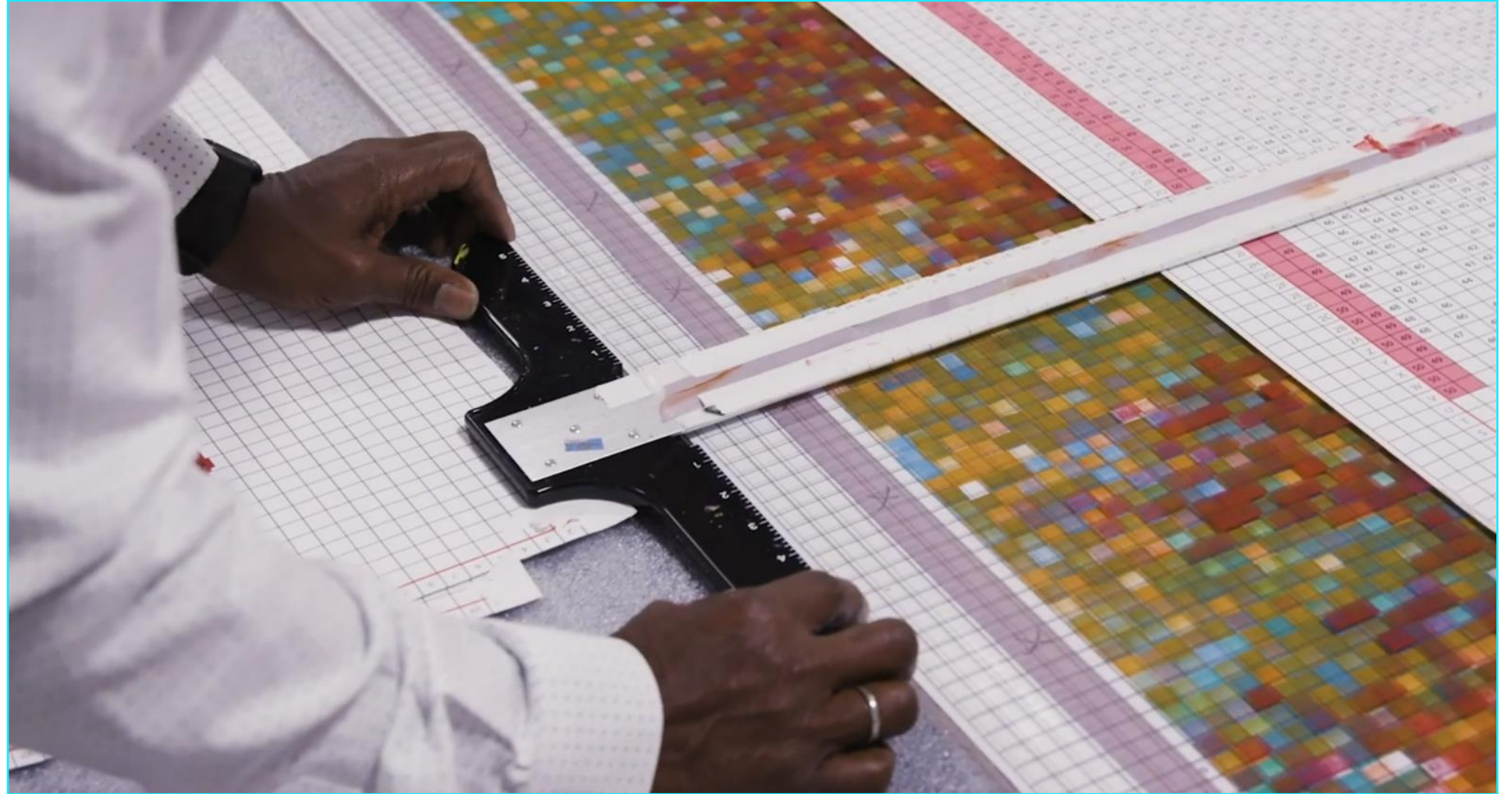
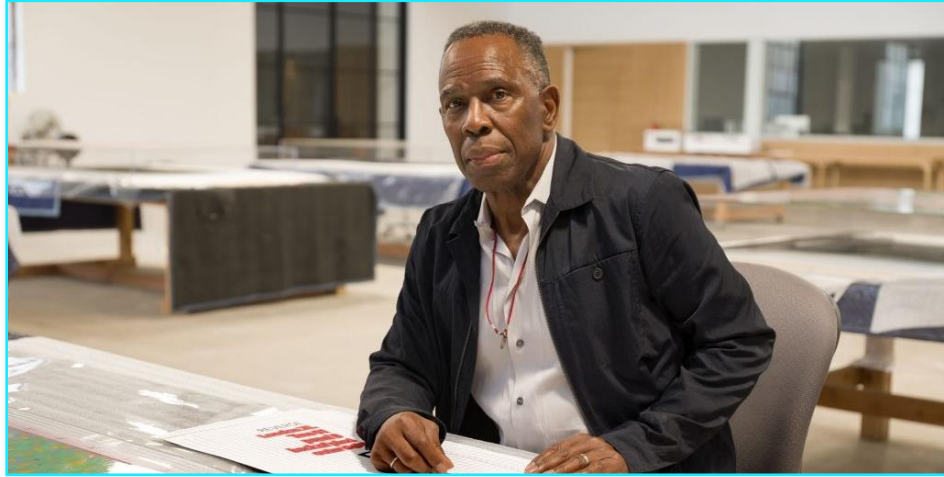
The problem with ledger sheets was that if one monthly expense went up or down, everything—*everything*—had to be recalculated. It was a tedious task, and few people who earned their MBAs at Harvard expected to work with spreadsheets very much. Making spreadsheets, however necessary, was a dull chore best left to accountants, junior analysts, or secretaries. As for sophisticated “modeling” tasks—which, among other things, enable executives to project costs for their companies—these tasks could be done only on big mainframe computers by the data-processing people who worked for the companies Harvard MBAs managed.

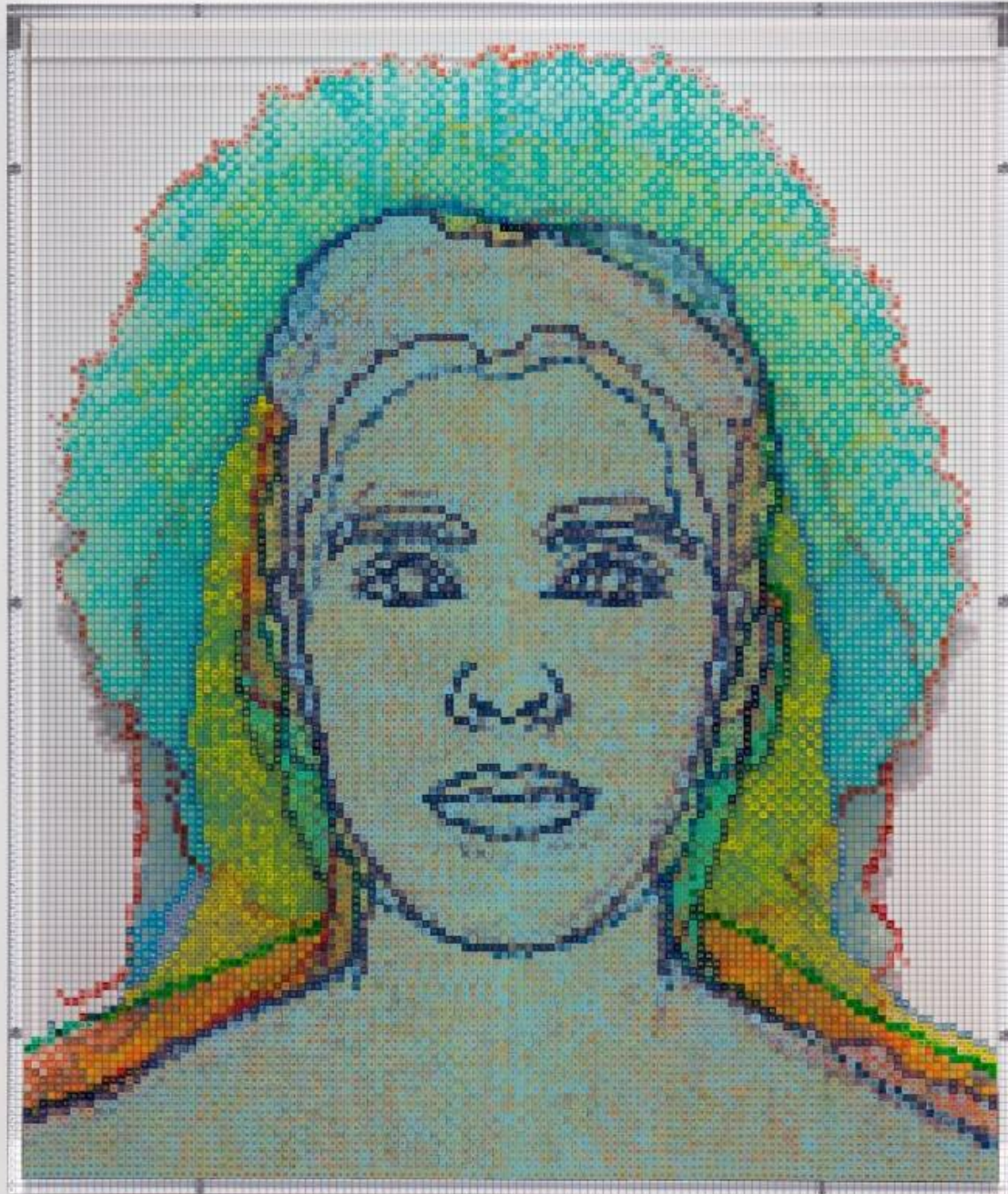
READINGS





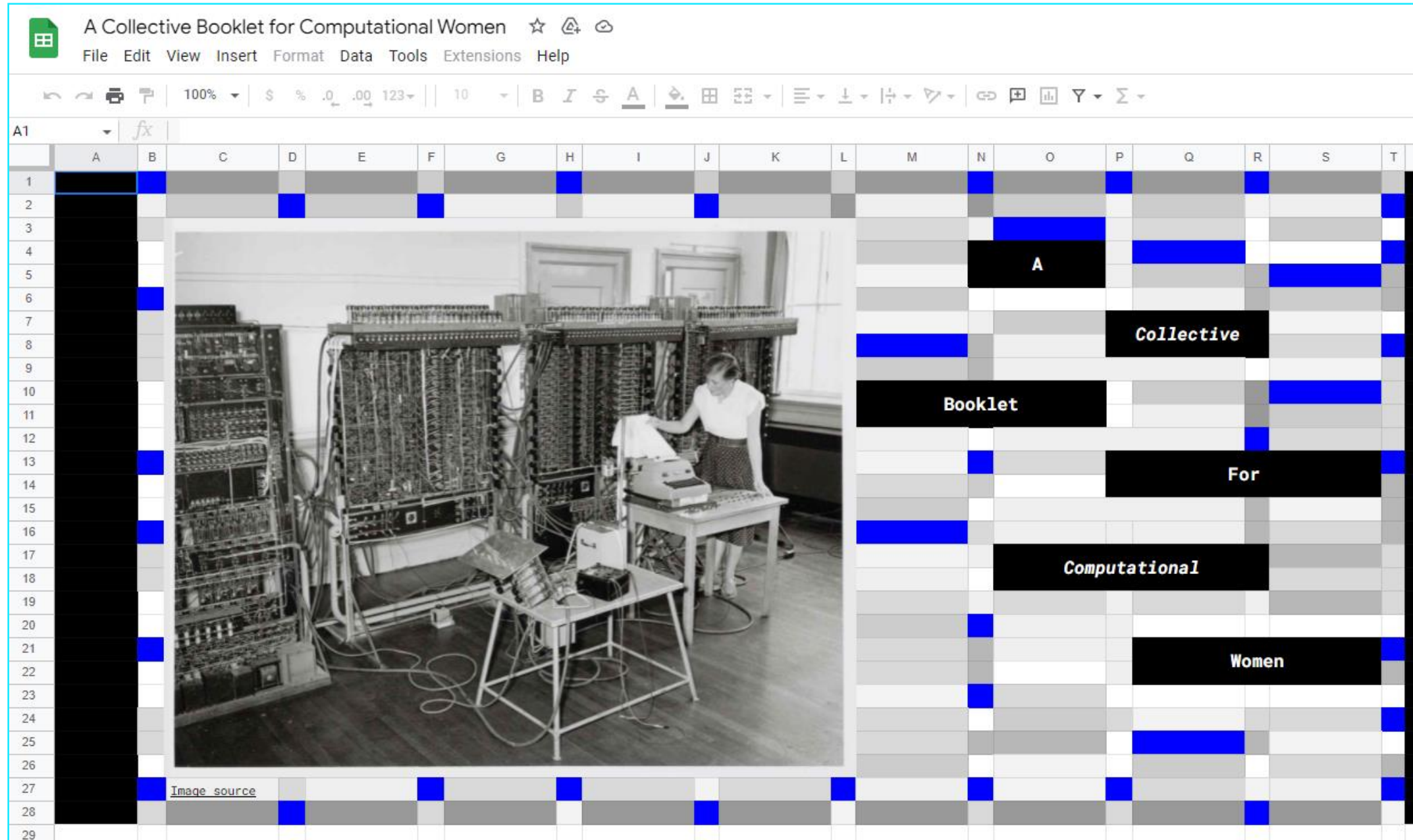
READINGS





Charles Gaines, *Numbers and Faces: Multi-Racial/ Ethnic Combinations Series 1* (2020)

READINGS



Soyun Park, *A Collective Booklet for Computational Women* (2020)

Opinion /

Twitter Facebook Email Print

BY CHRIS SHARRATT
07 JUN 2019

How a Google Spreadsheet Broke the Art World’s Culture of Silence

Nearly 2000 museum workers have shared their salaries online – the vast inequity is difficult to ignore

ISTS STUDIO, NEW YORK	Editorial Assistant	5,000	5,000 £ (part-time, 3 months)	2019	
ston MFA	Curator	83,600	83,500 P	2019	female
ston MFA	Curator	65,000	83,000 P	2018	female
oklyn Museum	Assistant Curator	44,000	44,000 P	2017	female
			P: final salary is based on many years of step increases in a federal job at a New York rate—Curatorial assistants with Federal appointments start as a GS-7, Step 1		
oper Hewitt, Smithsonian Design Museum	Curatorial Assistant	47,374	62,889	2019	
unity Historic Site in Southeastern PA (5 FT, 2 PT)	Museum Educator	32,000	44,000 P	2019	
inbrook Art Museum	Assistant Curator	35,000	35,000 P	2009	
river Art Museum	Curatorial Assistant	34,000	37,500 H	2019	female
ggenheim	Education Coordinator	28,000	32,000 P	2008	
ggenheim	Education Manager	54,000	58,500 P	2019	
ggenheim	Senior Curator	20,000	100,000	2018	
ndel and Hendrix in London	Front of House	20000 GBP	20000 GBP	Temporary contract	2018
viard Art Museums	Curatorial Fellow	50,000	51,250 C	2019	
stitute for Contemporary Art, VCU	Curatorial Production Manager	43,000	43,000 C	2019	
ndon Museum of Water & Steam	Marketing Manager	22000 GBP	22000 GBP	P	2019
tropolitan Museum of Art	Curatorial Assistant	52,000	54,500 P	2017	
tropolitan Museum of Art	Assistant Curator	62,000	62,000 P	2018	
MA	Curatorial Assistant	51,000	61,000 C	2018	
MA	Curatorial Assistant	43,000	45,000	2010	
useum of Science, Boston	Education Program Manager	62,000	63,000 P	2017	
site Gallery, OCAD University (Toronto)	Curator	53000	68000 P	2019	
adelphia Museum of Art	Assistant Curator	61,000	61,000 P	2019	
adelphia Museum of Art	Curatorial Fellow	45,000	46,125 C	2019	
adelphia Museum of Art	Academic Engagement Coordinator	45,000	46,000 C	2019	
ate collection	Curatorial Assistant	48,000	52,000 P	2016	
ience Museum of Minnesota	Museum Evaluator	33,000	38,000 H	2017	

There's one entry on 'Art/Museum Salary Transpare' currently turning heads in the art world – that stan

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THE SLATEST

Activists Create Public Online Spreadsheet of Police Violence Videos

By DANIEL POLITI

JUNE 06, 2020 • 6:08 PM



A demonstrator holds up his hands as he is sprayed with pepper spray by two police officers on May 31, 2020 in Minneapolis, Minnesota. KEREM YUICEI /Getty Images

Design Interns Club											
File Edit View Insert Format Data Tools Add-ons Help											
Comment only -											
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1	Design Interns Club										
2											
3	SUBMIT FORM here: tiny.cc/DesignInternsForm										
4	Share your Internship experience with others! All experiences welcomed										
5	All questions are OPTIONAL and ANONYMOUS.										
6	Name of the place of your current or recent internship	City of your current or recent internship	How much did you get paid for this internship? (monthly or in total)	Did you get benefits with the internship eg. healthcare, travel funds etc?	How many hours per week you've usually worked?	Approx. how much were you paying in total in monthly bills (rent, food, travel, etc)	Did you have clearly defined tasks that were educational and helped you learn by doing?	What would you point out that was good on your internship?	Do you have any bad experiences or something that you aren't/weren't ok with at your internship?	If you could ask for chat the future, what would B you suggest?	
8	NODE Berlin	Berlin	400€/Month	reduced public transport	40 hours (10:00-19:00, 1hr break)	around 500€/month	mostly	I learned a lot, got insight into studio processes and applied projects in the culture field which is crucial during studies. They have interesting clients. I had nice coworkers I could ask about anything and who supervised my work. We cooked lunch together most of the days which was nice. I had a contract and got a letter of recommendation. All in all I had a good intern experience.	There were moments I had bigger responsibilities than I thought I could manage, but of necessity more than trust, but I managed and I guess that's how you learn. In moments of high stress levels things got taken out of my hands, I understand why, but it's not a great learning experience. I mostly worked with set key visuals and templates.	If interns are a planned cool work is profitable, at least in german law says). If small other perks like intensive n make up for it. Credit name goes for freelancers and st	
9	Studio Manuel Raeder	Berlin	250 EUR / month	hahah no	~1- 32 (4 days a week, but often staying in studio later)	800 EUR	sometimes	– Studio Manuel Raeder works on lot of interesting projects which is nice to see from inside, as well as it was nice to see how the publishing house BOM DIA of Manuel is running. Studio works with/for many contemporary artists and galleries, so you can also learn a lot about the art, poetry, literature and architecture while working on the projects. Manuel and people around him are knowledgeable and intellectual people, you can learn a lot from. – Also I appreciate the multidisciplinary approach – 4 days working week – very human and understanding about being sick, or taking a day off for family or study reasons	The ratio between interesting tasks and very boring tasks was sometimes not too good. Very boring tasks are not only about retouch and cutting-out in photoshop (which are sometimes necessary) but also jobs like packing books, sending packages, wrapping objects to bubble wrap, going to hardware shops and carrying (heavy!) material, going to post office, moving (heavy) stuff from the storages etc. Sometimes it was really too much. Interns are not cheap workers who are there when you want to save money on moving services or handcraft people. Working place is not too comfortable, chairs are extremely bad, no screens, not enough space.	--don't expect interns to do are around --be patient with your intern	





LOVING SPREADSHEETS HATING SPREADSHEETS

Guillermo López, *Unexpected*

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Science

Tech

Global development

Obituaries

Health policy

Covid: how Excel may have caused loss of 16,000 test results in England

Public Health England data error blamed on limitations of Microsoft spreadsheet

Coronavirus - latest updates

See all our coronavirus coverage

Alex Hern

UK technology editor

@alexhern

Tue 6 Oct 2020 03.21 EDT

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Set up your test

COVID-19 Home Test

Step-by-step guide

gives you instructions to test

COVID-19

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Revealed: Amy Coney Barrett lived in home of

MICROSOFT REPORT SCIENCE

Scientists rename human genes to stop Microsoft Excel from misreading them as dates

Sometimes it's easier to rewrite genetics than update Excel

By James Vincent | Aug 6, 2020, 8:44am EDT | 99 comments

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THE CONVERSATION

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The Reinhart-Rogoff error – or how not to Excel at economics

April 22, 2013 4:40pm EDT

Data and computer code should be made publicly available at an early stage – or else ... esarastudillo

Last week we learned a famous 2010 academic paper, relied on by political big-hitters to bolster arguments for austerity cuts, contained significant errors; and that those errors came down to misuse of an Excel spreadsheet.

Sadly, these are not the first mistakes of this size and nature when handling data. So what on Earth went wrong, and can we fix it?

Harvard's Carmen Reinhart and Kenneth Rogoff are two of the most respected and influential academic economists active today.

Or at least, they were. On April 16, doctoral student Thomas Herndon and professors Michael Ash and Robert Pollin, at the Political Economy Research Institute at the University of Massachusetts Amherst, released the results of their analysis of two 2010 papers by Reinhard and Rogoff, papers that also

Authors

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David H. Bailey

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Disclosure statement

Jonathan Borwein (Jon) receives funding from ARC

Bailey does not receive any grant from Australian sources, nor does he have any other financial interest.

Partners

ART IS MAN'S
EXPRESSION OF HIS
JOY IN LABOUR

William Morris, *Art Under Plutocracy* (1883)

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The question Bricklin was pondering that day in 1978 concerned how he might use what he knew about computers to help him in his fi-

Run your finger across, say, a row of figures representing mortgage payments for a certain property, and the number in each “cell” of the horizontal row would be the figure paid in the time period represented by that particular vertical column. Somewhere on the sheet the columns and rows would be tallied, and that information would be entered on even larger sheets.

The problem with ledger sheets was that if one monthly expense went up or down, everything—*everything*—had to be recalculated. It was a tedious task, and few people who earned their MBAs at Harvard expected to work with spreadsheets very much. Making spreadsheets, however necessary, was a dull chore best left to accountants, junior analysts, or secretaries. As for sophisticated “modeling” tasks—which, among other things, enable executives to project costs for their companies—these tasks could be done only on big mainframe computers by the data-processing people who worked for the companies Harvard MBAs managed.

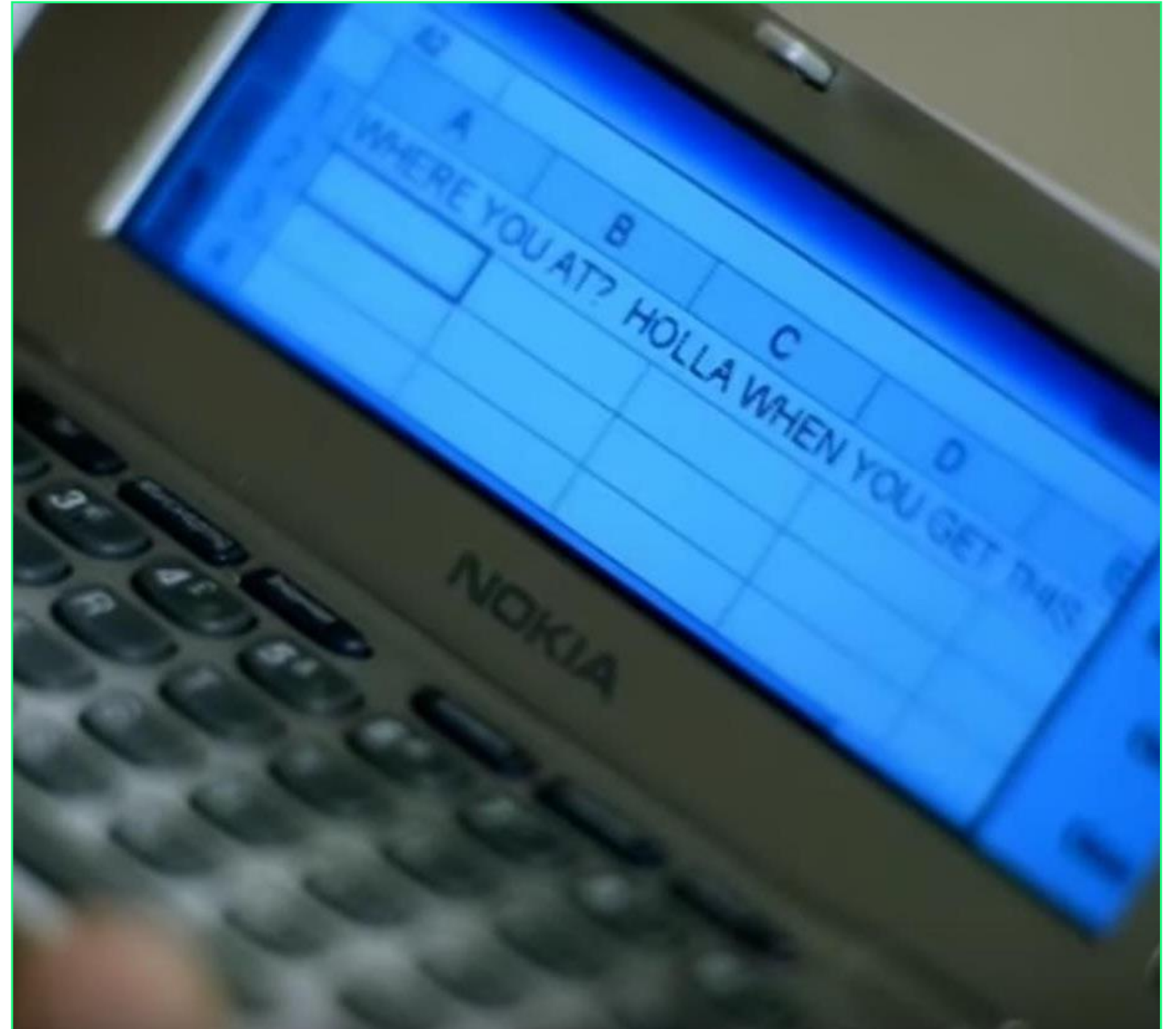
STRATEGIES TO TEACH SPREADSHEETS

- Don't forget the basics
- Have students teach each other
- Creative Coding, just with spreadsheets
- “Impractical” skills, like making pixel art, are great ways to learn
- Use real-life examples from working designers
- Open-ended, exploratory approach, even for topics like data analysis
- Use readings to examine cultural context, broaden horizons, and encourage subversion



ASSIGNMENT: THEORY INTO PRAXIS

- Students have to use spreadsheets in any way they choose in some other class or project, and then report on it
- Instant grab bag of different things-
- Project planning
- Game dev projects
- Personal uses
- All real-world example, generated by students
- Show & tell





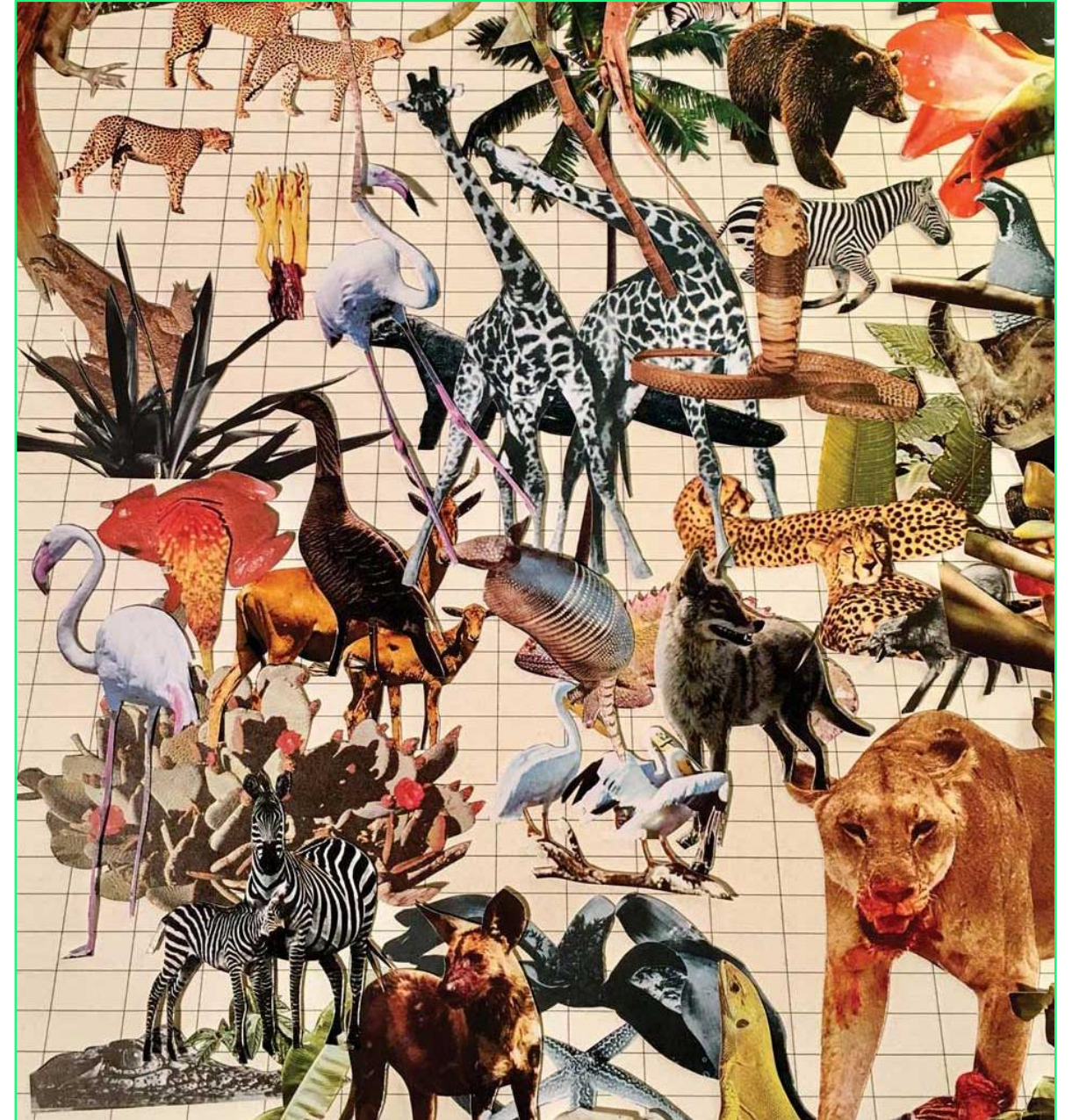
MAKING GAMES IN SPREADSHEETS

Superstudio, *Vita (Supersuperficie)* (1972)

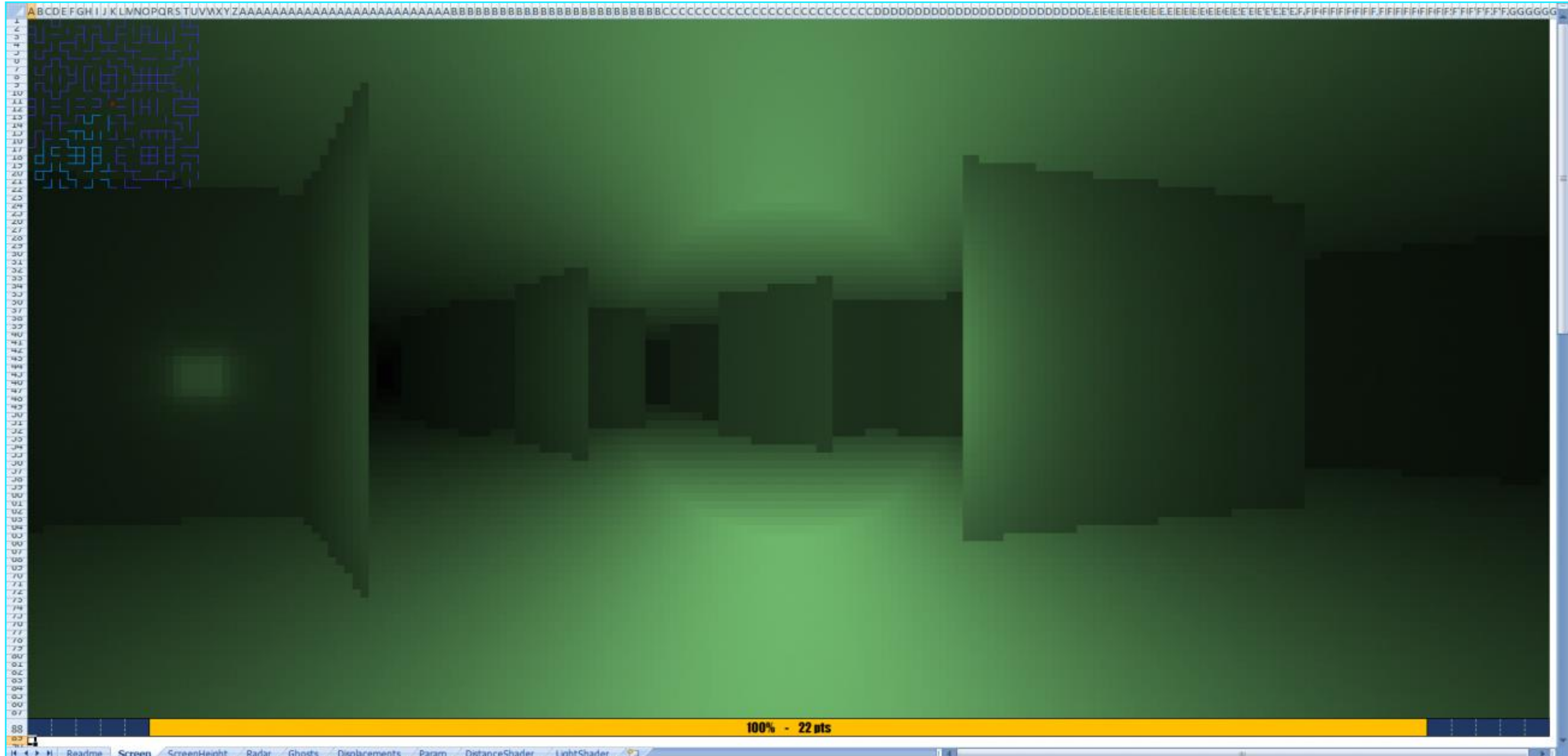
ASSIGNMENT: MAKE A GAME

Details & Learning Objectives

- Final project
- 4-5 weeks, working individually
- Embrace the limitations
- Demonstrate mastery
- Gives students space to experiment



ASSIGNMENT: MAKE A GAME



ASSIGNMENT: MAKE A GAME

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- Gives students space to experiment
- Freed from the pressure of making a “real” game in a “real” game engine?



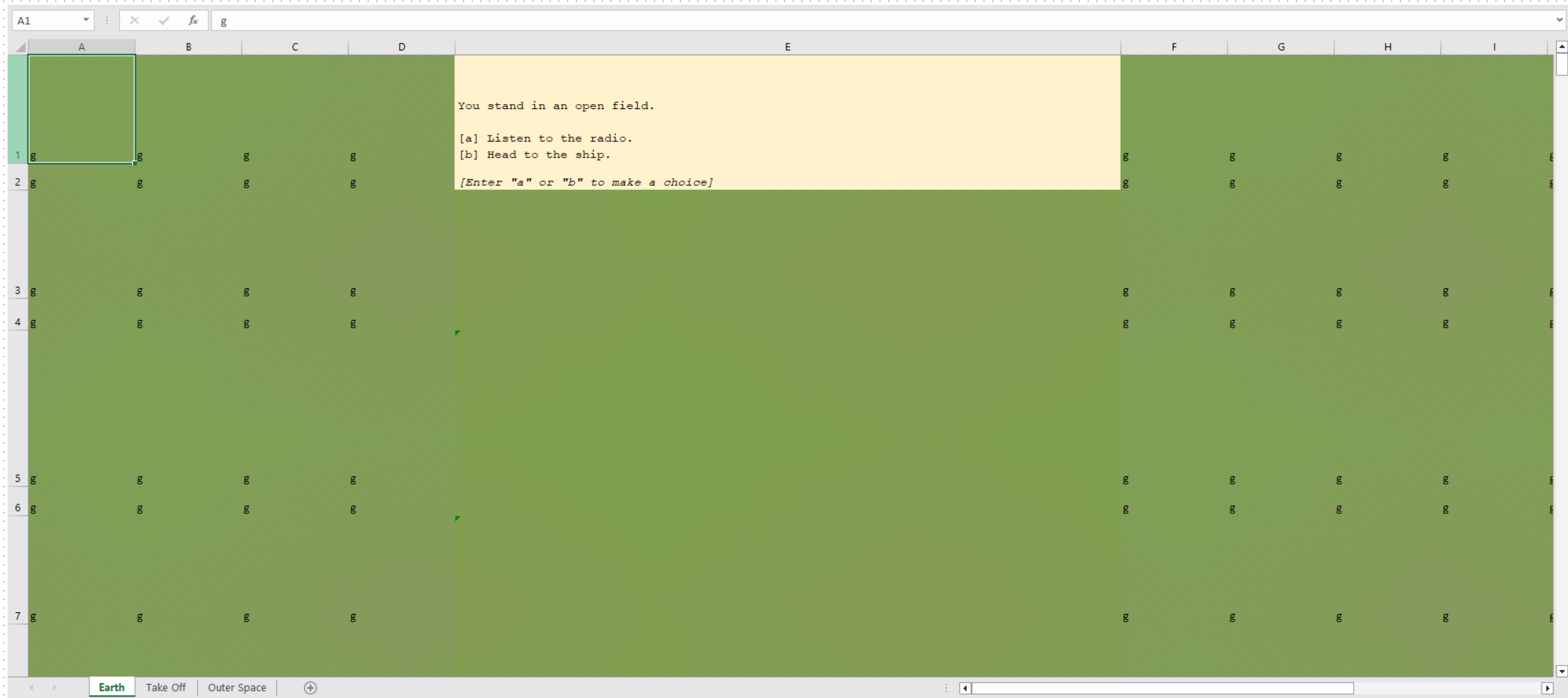
Guillermo López, *Afterlife*

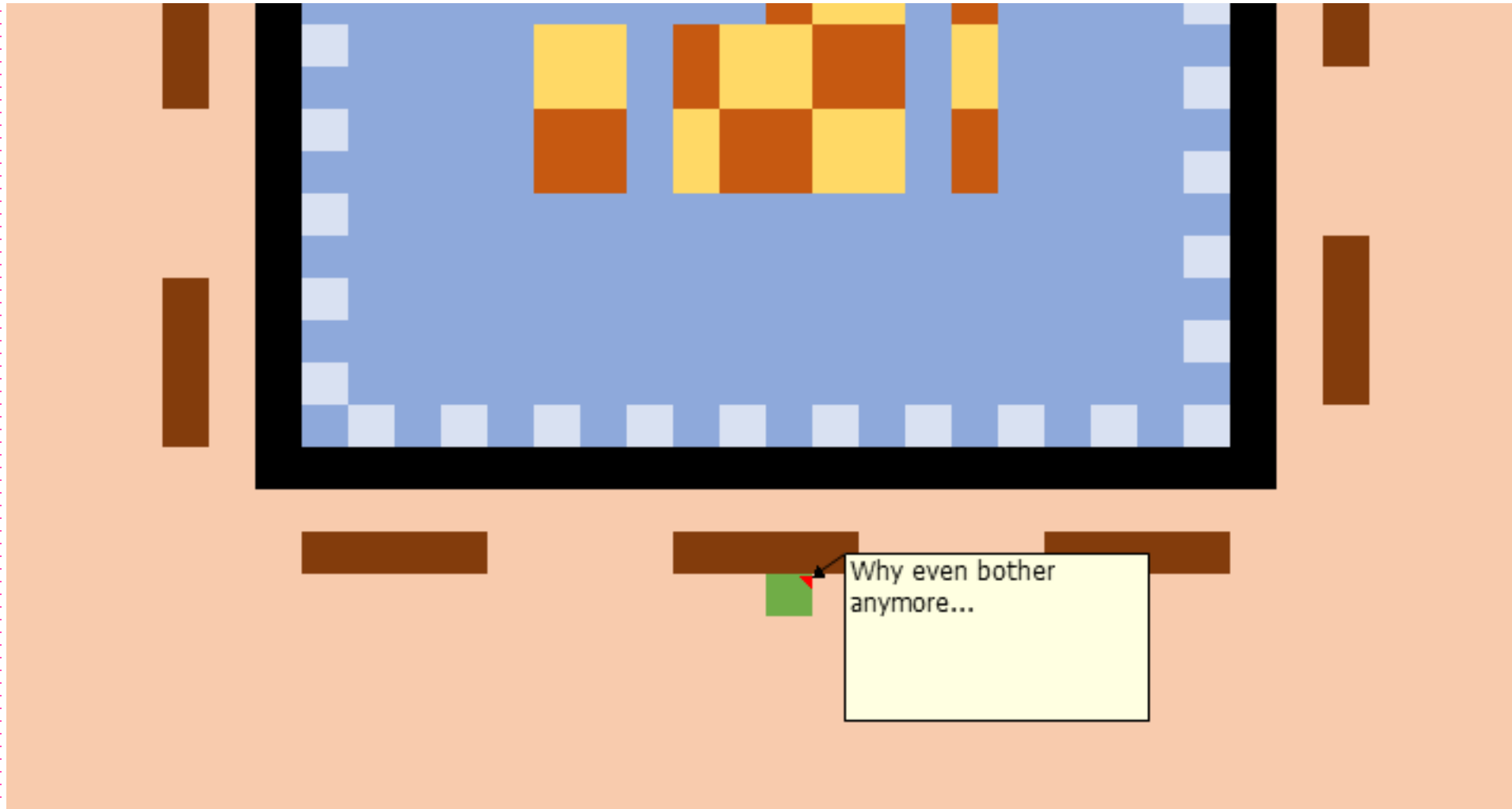
ASSIGNMENT: MAKE A GAME

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- Gives students space to experiment
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[illegible]





AutoSave Off

GridGarden.xlsm

Search

FileHomeInsertPage LayoutFormulasDataReviewViewAutomateDeveloperHelpPower Pivot

CutCopyFormat Painter

Clipboard

Calibri11

B I U

Font

Align Center

Alignment

General

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Number

Conditional Formatting

Format as Table

NormalBadGoodNeutral

CalculationCheck CellExplanatory ...Input

Styles

F4

X ✓ fx

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
1	Reset		LOG	You find a small patch of dirt.																																									
2			INSPECT	Welcome to Grid Garden. To get started, try right-clicking some cells and Digging. You'll also be selecting cells, typing/pasting text into cells, and deleting text from cells. For more detailed instructions, such as how to combine items, see the How to Play sheet.																																									
3	INVENTORY																																												
4	Name	Available	Placed																																										
5																																													
6																																													
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Garden

How to Play

Recipes

(by Matt Wang)





Share



100%

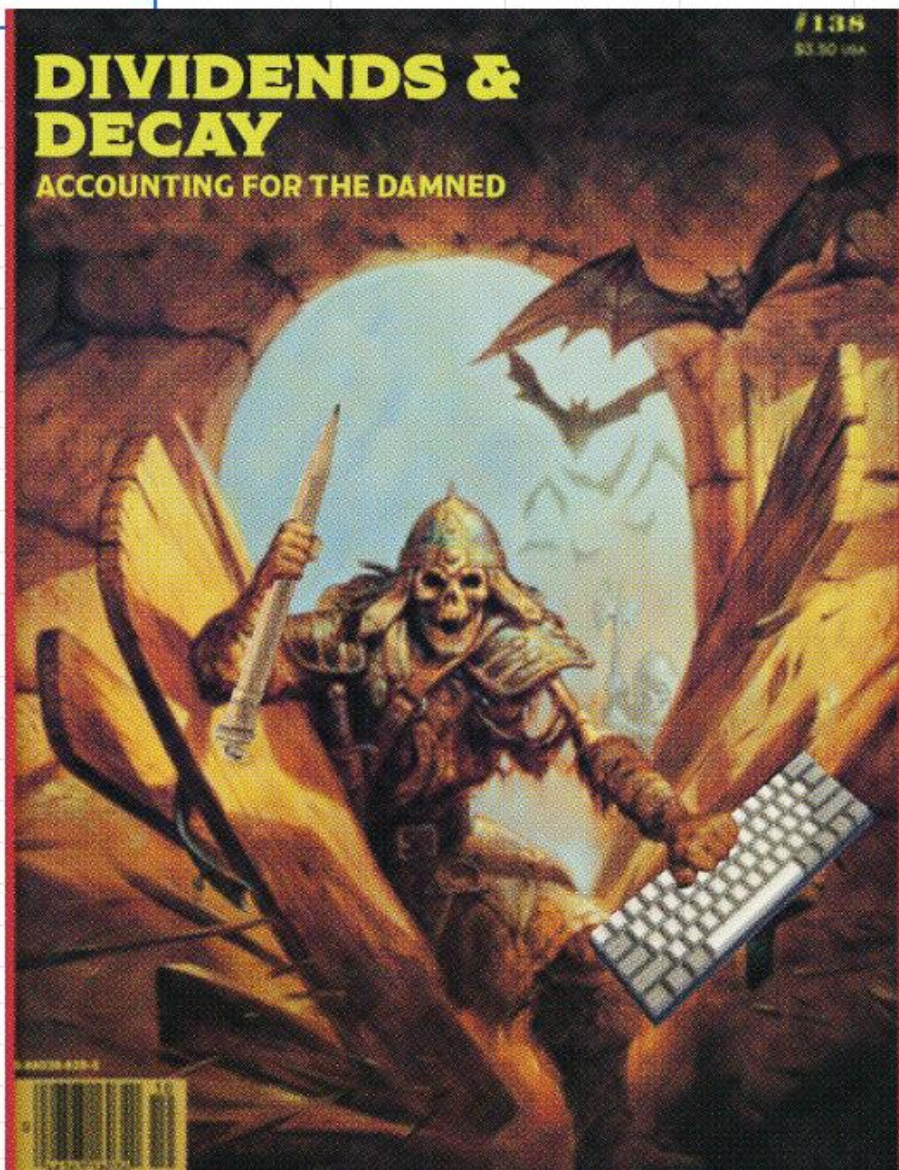


View only

A1



fx



Dividends & Decay

Accounting for the Damned

Start by making a copy of this sheet so you can edit it.

Our previous skeletal accountant, Jonathon Zeralph Skeletonious, was sanctified by the Paladins of the West.

This leaves our undead army in need of proper financial organization.

Fortunately, I hear you were a royal accountant in life so I have assigned this great task to you.

I need you to process our transactions for the month so I can take stock of our assets and be properly represented at the Necromancers N7 Summit.

-Read the incoming Transaction on the Transactions page

-Determine if it is an Acquisition, Sale, or Loss

-Acquisitions are when we buy things and will usually have an item and a number purchased

-Update the Item Exchange page with the item and number acquired, and the Monetary Exchange page with the negative amount of gold spent

-If an Acquisition is from looting or thieving we enter the monetary exchange as 0

-Sales are when we liquidate some of our assets for funding and should have an item and number sold

-Update the Item Exchange page with the negative number of items sold and the Monetary Exchange page with the amount of gold gained

-Losses are when our equipment is used up or destroyed and should have an item and number lost

-Update the Losses page with the item, number, and total monetary value lost

-Use the Price Sheet to determine all item values for Acquisitions, Sales, and Losses, but make sure to factor in any special circumstances in the transaction

-Make sure to update the categorized inventory sheets with changes to the number of assets we have

-Sign off on all transactions when completed with your initials

-Once all the transactions are completed, you will enter the new total value of our equipment

Good Luck, may the demon's bless your endeavors.

-Jor'eal, Disciple of the Dead, Necromancer



Instructions

Transactions

Item Exchange

Monetary Exchange

Losses

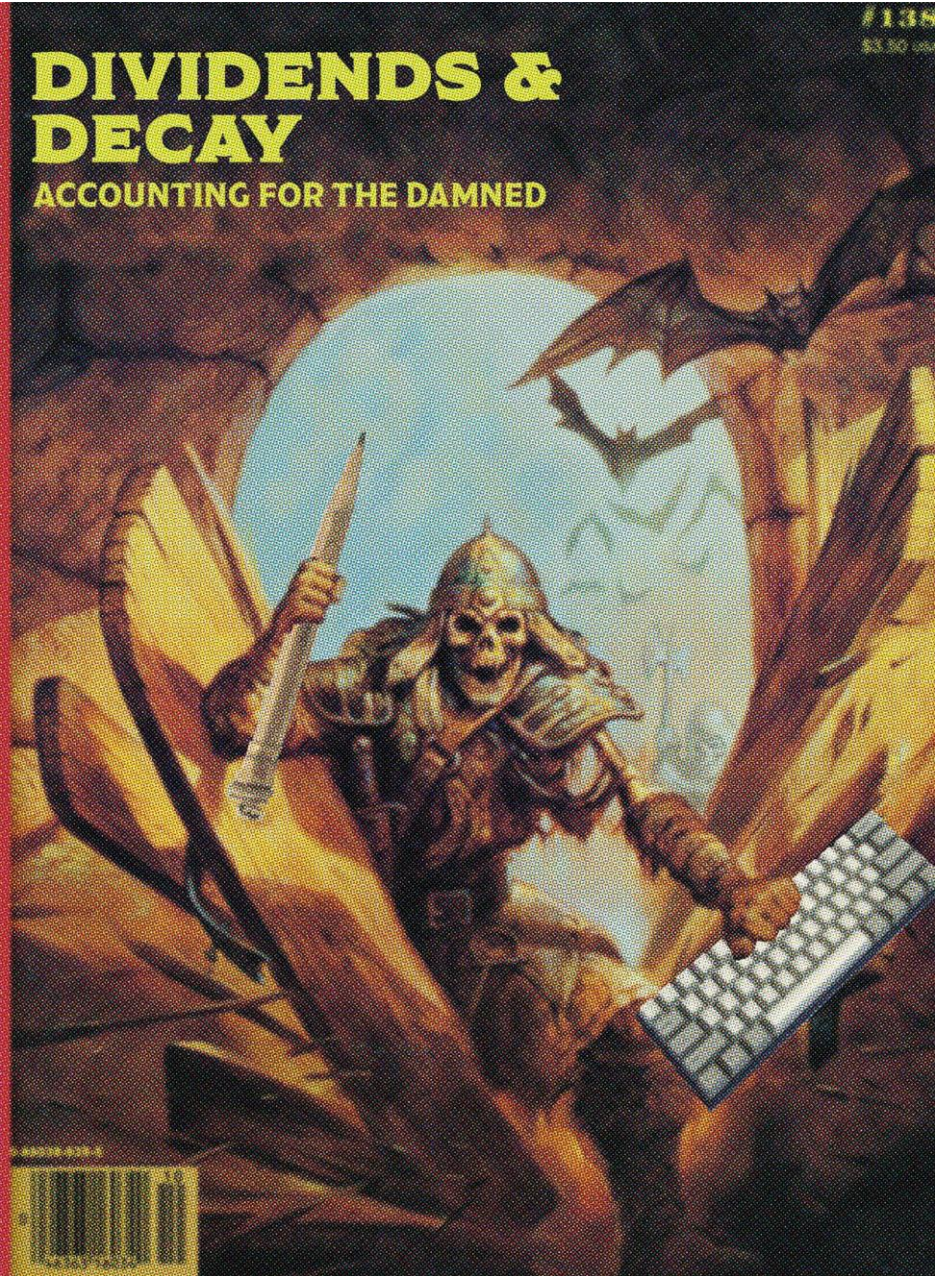
Ammunition

Armor

Potions

Siege Equipment





	A	B
1	Name	Value
2	Carrion	0.02
3	Skulls	0.05
4	Bolts	0.1
5	Arrows	0.2
6	Club	1
7	Flaming Arrows	1
8	Dagger	2
9	Staff	2
10	Padded	3
11	Spiked Club	3
12	Balista Bolts	3
13	Handaxe	4
14	Leather	5
15	Firebombs	5
16	Hide	6
17	Shortsword	8
18	Light Crossbow	10
19	Boulders	10

1	Siege Equipment	
2	Name	Number in Storage
3	Battering Rams	5
4	Catapult	4
5	Trebuchet	3
6	Siege Tower	2
7	Siege Ladders	12
8	Total	26

	A	B	C	D	E	F
1	Transaction ID	Item	Number	Gold Value Lost	Notes	Processor
2	6251	Healing Tincture of Rephia	-13	1560	Used	JZS
3	6898	Battering Ram	-5	70	Destroyed	JZS
4						
5						
6						
7						
8						
9						
10						
11						
12						

	A	B	C	D	E	F
1	Transaction ID	Item	Number	Gold Value Lost	Notes	Processor
2	6251	Healing Tincture of Rephia	-13	1560	Used	JZS
3	6898	Battering Ram	-5	70	Destroyed	JZS
4						
5						
6						
7						
8						





ASSIGNMENT: MAKE A GAME

What do you feel is the essence of making a "spreadsheet game", and why?

I felt this forced me to really consider the material in a fun way. Usually making digital games, the relation to an engine is seen as "how do we make the engine do whatever we want?" But in other media the material informs the process a lot, and artists really lean into that in a fun way (thinking of painting vs charcoal; analog orchestrations vs digital DAWs, etc). It was interesting and exciting to really branch out of that traditional videogame thinking and think really critically about my relation to the material as an artist, and how the dialog between me and my materials forms the work itself.

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- Make games!
- Thoughtfully embrace limitations
- Be “Engine”-agnostic (use Excel & Google Docs & OpenOffice, anything else)



GRADES ARE BAD GAME DESIGN

- By the way,
- Had students self-assess their own grades
- Gave feedback but no grades
- Students completed all the assignments purely for the pleasure of doing them
- Use examples from a professional practice, show things that can be done, give students a reason to learn



[+ ADD TO CART](#)

Edited by Susan D. Blum
With a foreword by Alfie Kohn

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Teaching and Learning in
Higher Education Series

Ungrading

Why Rating Students Undermines Learning (and What to Do Instead)

[Summary](#)

[Contents](#)

[Author](#)

[Reviews](#)

Summary

The moment is right for critical reflection on what has been assumed to be a core part of schooling. In *Ungrading*, fifteen educators write about their diverse experiences going gradeless. Some contributors are new to the practice and some have been engaging in it for decades. Some are in humanities and social sciences, some in STEM fields. Some are in higher education, but some are the K–12 pioneers who led the way. Based on rigorous and replicated research, this is the first book to show why and how faculty who wish to focus on learning, rather than sorting or judging, might proceed. It includes honest reflection on what makes ungrading challenging, and testimonials about what makes it transformative.

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If you could be an Excel formula, which would you be and why?

I would be a PRODUCT because I'm a product of all my unique experiences at parts :)

If you could be an Excel formula, which would you be and why?

RAND(). Unpredictable!

If you could be an Excel formula, which would you be and why?

Oh wow this is tough. I love a good VLOOKUP. But I'm not sure I'm worthy of that mighty designation. Maybe I'd say I'm a "[cell above] + 1" -- simple, elegant, but expressive in its own right. I hope to live up to that!!

If you could be an Excel formula, which would you be and why?

SORT because I want to sort out many problems in this world.

If you could be an Excel formula, which would you be and why?

I think I would be unicode() because I contain a multitude of random shapes letters and numbers

AGENDA

- Why spreadsheets?
- Why game designers love spreadsheets
- Why we should teach it
- How I did that
- How you can include spreadsheets in your own classes



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GAMES THAT CELL: TEACHING SPREADSHEETS IN ART SCHOOL

Alexander King Adjunct Professor,
NYU Game Center

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