

CMPSCI 105: Lecture #9 Spreadsheets

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Spreadsheets

- Prior to 1978 spreadsheets were just that – a piece of paper spread out on your desk, ruled off into rows and columns.
- You manually filled information into the cells with a pencil,
- Performed calculations manually, or with a calculator,
- Erased and recalculated when numbers changed.

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Writing out the Model

	Q1	Q2	Q3	Q4	TOTAL
FRED	15,000	17,000	16,000	18,000	
SAM	6,000	8,000	7,000	8,000	
MARY	22,000	23,000	21,000	22,000	
TOTAL					

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Calculate Sums Manually

	Q1	Q2	Q3	Q4	TOTAL
FRED	15,000	17,000	16,000	18,000	66,000
SAM	6,000	8,000	7,000	8,000	29,000
MARY	22,000	23,000	21,000	22,000	88,000
TOTAL	43,000	48,000	44,000	48,000	183,000

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Oops!

	Q1	Q2	Q3	Q4	TOTAL
FRED	15,000	17,000	16,000	18,000	66,000
SAM	6,000	8,000 ^{7,000}	7,000	8,000	29,000
MARY	22,000	23,000	21,000	22,000	88,000
TOTAL	43,000	48,000	44,000	48,000	183,000

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Minor Change Spawns Updates

	Q1	Q2	Q3	Q4	TOTAL
FRED	15,000	17,000	16,000	18,000	66,000
SAM	6,000	8,000 ^{7,000}	7,000	8,000	29,000
MARY	22,000	23,000	21,000	22,000	88,000
TOTAL	43,000	48,000	44,000	48,000	183,000

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History of Electronic Spreadsheets

- 1970s: First Microprocessors,
- 1977: Apple][demonstrated at First West Coast Computer Faire,
- 1978: Dan Bricklin, Bob Frankston release VisiCalc for Apple][,
- 1981: IBM PC released,
- 1982: Lotus 1-2-3 released for PC (\$495),

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History (continued)

- 1984: Apple Mac released, Steve Jobs fired, Borland Quattro spreadsheet (\$247.50),
- 1985: Microsoft Excel spreadsheet (Mac),
- 1987: Microsoft Excel spreadsheet (Windows),
- 1988: Steve Jobs announces NeXT, including Lotus Improv spreadsheet,
- 1995: IBM buys Lotus,
- 1996: Apple buys NeXT, makes Jobs CEO,

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History (continued)

- 1996-2012: Not a lot happens in the spreadsheet world except that existing products get better and better, with more features, but the fundamental underlying metaphors do not change.
- 2013: IBM kills off Lotus.

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Five Fundamental Concepts

- The workspace is ruled off into cells, each with a unique address (A1, Q17, AF22, etc.),
- You can put any thing into any cell (number, text, formula, or leave blank),
- A change to any cell causes all dependent cells to update their values (automatic recalculation),
- You enter a formula, which computes a value, shown on screen with a format,
- When a formula is copied, some parts change and some don't: we choose which is which.

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Four Additional Ideas

- There is an extensive library of pre-defined **functions** available,
- Modern spreadsheets today use **multipage notebooks** instead of just one sheet,
- You can now **graph or chart** your numeric data,
- You can write **macros** to automate complicated or repetitive tasks.

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