325 million unique stories

Flow

One tax code

by Ben Klemens
Flow will:
Give you a view of the IRS's transcript of your taxes.
Suggest means of improving your finances based on the lines of your tax return.
Explain changes the IRS made from the return you filed, if any.
Help you find out what your taxes could be like if there were changes in your life, like marrying, buying a house, or having a child.

The design should:
Be based on tax law.
Be flexible: a wage-earner with no tax complications and the President of the United States should both get a clean representation of their tax returns.
Keep it simple: the core visualization in Flow is a flowchart like those taught in elementary school curricula.
Keep it simple: stick to a no-frills design appropriate to serious and sometimes distressing financial matters.
Keep it simple: browsing the web on a phone with a cheap data plan can be like using a modem from 1995, so Flow uses graphics sparingly.
Keep it simple: hiding, revealing, and other dynamic features put up barriers to users who rely on assistive devices—or who are just using the “wrong” browser or device.
Wages: 34,128
Interest: 8
Unemployment Income: 2,400
AGI: 36,536
Standard Deduction: 6,300
Exemption Amount: 4,000
Taxable Income: 26,236
Tax Withheld: 4,108
Tax: 3,474
Refund: 634

I am single.
I have a spouse; we file jointly.
I have a spouse; we file separately.
Dependent children
Dependents over 17
I am over 65.
My spouse is over 65.
I have student loans.
I have a mortgage.
I am itemizing.
I have rental or royalty income.
I want to hide the inessential zero cells.
I want to make this tax explorer better.
You entered $34,128 in wages, salaries, and tips from form W-2.

We calculated adjusted gross income (AGI) by adding wages, interest, and unemployment income.

Tax Withheld: 4,108

Refund: 634
As your taxes become more complex, more elements are shown

Here is a real-world example from a family living in DC who made their 1040 public. They have more sources of income and itemize deductions, but unused boxes and zero-value boxes (including standard deduction and exemptions) do not appear in the tree.

Barak H Obama and Michelle L Obama
Married filing jointly
Both under 65. Neither blind.
Children:
Malia A Obama
Natasha M Obama (under 17)
Refund: approved
Wages: 34,128
Interest: 8
Unemployment Income: 2,400
AGI: 36,536
Standard Deduction: 6,300
Exemption Amount: 4,000
Taxable Income: 26,236
Tax: 3,474
Tax Withheld: 4,108
Refund: 634

I am single.

I have a spouse; we file jointly.
I have a spouse; we file separately.
Dependent children
Dependents over 17
I am over 65.
My spouse is over 65.
I have student loans.
I have a mortgage.
I am itemizing.
I have rental or royalty income.
I want to hide the inessential zero cells.
I want to make this tax explorer better.

Chandra Patel
Single
Under 65. Not blind.
No children or other dependents
Refund: sent April 26

You claimed a $5,000 exemption, but we calculated a $4,000 exemption for you. See the changes we made screen for details.

Congratulations on getting a tax refund! Reward yourself by investing in your future, at refund.myRA.gov.
Wages: 34,128
Interest: 8
Unemployment Income: 2,400
AGI: 36,536
Standard Deduction: 6,300
Exemption Amount: 4,000
Taxable Income: 26,236
Tax: 3,474
Tax Withheld: 4,108
Refund: 634

I am single.

I have a spouse; we file jointly.
I have a spouse; we file separately.

Dependent children
Dependents over 17

I am over 65.
My spouse is over 65.
I have student loans.
I have a mortgage.
I am itemizing.
I have rental or royalty income.

I want to hide the inessential zero cells.
I want to make this tax explorer better.

You claimed a $5,000 exemption, but we calculated a $4,000 exemption for you. See the changes we made screen for details.

Congratulations on getting a tax refund! Reward yourself by investing in your future, at refund.myRA.gov.
You claimed a $5,000 exemption, but we calculated a $4,000 exemption for you.
Wages: 34,128
Interest: 8
Unemployment Income: 2,400
AGI: 36,536
Standard Deduction: 6,300
Exemption Amount: 5,000
Taxable Income: 25,236
Tax: 3,324
Tax Withheld: 4,108
Refund: 784

Chandra Patel
Single
Under 65. Not blind.
No children or other dependents
Refund: sent April 26

You claimed a $5,000 exemption, but we calculated a $4,000 exemption for you.

※ Return to the IRS transcript
※ Show only the changes made
※ File an amended return

The return you filed, before our corrections. Click here to see just the changes.
Programmed what ifs?

The Actions box includes a few pre-built scenarios. Clicking one brings up a dialogue box asking for more details.

What if you bought a house? Enter estimated values to see how your taxes would change.

Wages: 34,128
Interest: 8
Unemployment Income: 2,400
AGI: 36,536
Standard Deduction: 6,300
Exemption Amount: 4,000
Taxable Income: 26,236
Tax: 3,474
Tax Withheld: 4,108
Refund: 634

Chandra Patel
Single
Under 65. Not blind.
No children or other dependents
Refund: sent April 26

I'm thinking about...
※ ...buying a house
※ ...having a baby
※ ...sending my child to college
※ ...some other life change
Or click any avocado box to change its value.
※ Show boxes that are currently zero
※ Return to my actual IRS transcript
※ File an amended return

Buying a house
Mortgage amount 375000
Down payment 37500

Exemption Amount: 4,000
Tax Withheld: 4,108
Tax: 3,474
Refund: 634
Free experimentation what if?

If the pre-built assumptions aren't what you want, click any cell to try a new value.

What if you bought a house? Click any box to change amounts.

Wages: 34,128
Interest: 8
Unemployment Income: 2,400

AGI: 36,536
Mortgage Interest: 9,818
Property Taxes: 2,100
State Taxes: 1,100

Exemption Amount: 4,000
Itemized Deductions: 13,018

Taxable Income: 19,518
Tax: 2,466
Tax Withheld: 4,108
Refund: 1,642

We estimated your mortgage interest based on your suggestions. Click any box to change a number.

We estimated your property tax based on national averages.

Because you are itemizing, you may subtract last year's state taxes from income you report on your federal return. We estimated this value based on your state and income.

Because you are itemizing, contributions to charity are subtracted from income. Based on your situation, every $100 you contribute lowers your taxes by $15.

Chandra Patel
Single
Under 65. Not blind.
No children or other dependents
Refund: sent April 26

I'm thinking about...
※ ...buying a house
※ ...having a baby
※ ...sending my child to college
※ ...some other life change

Or click any avocado box to change its value.
※ Show boxes that are currently zero
※ Return to my actual IRS transcript
※ File an amended return
The tree neatly slices into layers. If you are using a screen reader, the imposed layers will allow you to go through the graph in an organized manner, beginning with the three items in layer 1, followed by the three items in layer 2, and so on. By augmenting the information in each box's mouse-over detail to include the list of the selected box's parents and children, the flowchart reads much as flowcharts do in textbooks for the blind.
Wages: 34,128
Interest: 8
Unemployment Income: 2,400
AGI: 36,536
Standard Deduction: 6,300
Exemption Amount: 4,000
Taxable Income: 26,236
Tax: 3,474
Tax Withheld: 4,108
Refund: 634

I am single.
I have a spouse; we file jointly.
I have a spouse; we file separately.
Dependent children
Dependents over 17
I am over 65.
My spouse is over 65.
I have student loans.
I have a mortgage.
I am itemizing.
I have rental or royalty income.
I want to hide the inessential zero cells.
I want to make this tax explorer better.

Long-press ★s to see alerts

Your tax flow
Chandra Patel
Single
Under 65. Not blind.
No children or other dependents
Refund: sent April 26

※ See my tax transcript
※ See what IRS changed
※ Ask what if...?
※ Export my data
※ File an amended return

For small screens, Flow starts with the biographical/refund information, and a list of actions. From there you can pick which tree you want to see: the transcript, diffs, original return, or what-if options.

From the tree view, scroll around, or tap a box to get more information about the box. All mobile operating systems have a dedicated back button or gesture to return to the biographical and menu screen.
Community and extensions

Early versions of Flow have been discussed on Hacker News and Reddit, and a small community has already grown around them. For example, David Cook has written a script to scrape data from Free File Fillable Forms and import it to the tax graph.

David Reed, writing for the American Society of Public Administrators newsletter, writes of an early version: "... translating the complex set of administrative and legal requirements represented in IRS forms into a dependency tree.... not only enables computing the tax amount for an individual, but also facilitates more complex analyses such as how a particular change in requirements would affect the aggregate tax on a diverse group of taxpayers. This is a potentially powerful approach to analyzing administrative systems ...."

An example with student loans and child tax credit from an earlier version of Flow

Earlier versions included all the intermediate calculations—if you are reading this in a browser or a PDF viewer, keep zooming in!