

Taxes

Let's look at the IRS's table for income tax brackets that were used for 2020:

2020 Federal Income Tax Brackets and Rates		
Rate	Individuals (Single Filer)	Married Filing Jointly
10%	\$0 to \$9,875	\$0 to \$14,100
12%	\$9,876 to \$40,125	\$14,101 to \$53,700
22%	\$40,126 to \$85,525	\$53,701 to \$85,500
24%	\$85,526 to \$163,300	\$85,501 to \$163,300
32%	\$163,301 to \$207,350	\$163,301 to \$207,350
35%	\$207,351 to \$518,400	\$207,351 to \$518,400
37%	\$518,401 or more	\$518,401 or more

Income tax brackets are commonly misunderstood. Let's look at the instance in which Jake, a single filer, earned \$43,000 in income in 2020. A common misconception is that Jake would owe $0.22 * 43,000 = \$9,460$ in federal taxes. **If it worked like this, it would be actually be better for Jake to make \$40,000 than \$43,000!** This is not the case, however. Instead, tax brackets follow a "stepped" approach. The table below is a better way to examine this:

Tax rate	If taxable income is between:	The tax owed is:
10%	\$0 to \$9,875	10% of taxable income
12%	\$9,876 to \$40,125	\$987.50 plus 12% of the amount over \$9,875
22%	\$40,126 to \$85,525	\$4,617.50 plus 22% of the amount over \$40,125
24%	\$85,526 to \$163,300	\$14,605.50 plus 24% of the amount over \$85,525
32%	\$163,301 to \$207,350	\$33,271.50 plus 32% of the amount over \$163,300
35%	\$207,351 to \$518,400	\$47,367.50 plus 35% of the amount over \$207,350
37%	\$518,401 or more	\$156,235.00 plus 37% of the amount over \$518,400

To calculate what Jake would actually owe, you would take

$$(0.22 * (43,000 - 40,125)) + (0.12 * (40,125 - 9,875)) + (0.10 * 9,875) = \$5,250.00$$

This is an *effective tax rate* of 12.2% (calculated by $5,250.00 / 43,000$) - obviously, this scenario is much better for Jake.

Note that this is a very simplified approach as well. There are things like the standard deduction and such to consider as well when computing taxes.

For this project, you are going to be calculating federal taxes for an individual (assume all individuals are **single filers**). Given a person's name, social security number, and a salary (all entered using standard input), derive the person's federal tax owed for 2020. Specifications are given below.

1. Prompt the user for the 3 inputs specified in the description above.
2. Perform the necessary calculations and create a "tax owed" statement such as shown in the sample output, with similar formatting. Requirements include:
 - a. The statement must include all items included in the sample output, including the Taxpayer Name, SSN, 2020 Income, Federal Tax Due, and Effective Tax Rate (i.e. pct of income)
 - b. Create a nice mock "box" around the item listing in the receipt, as in the sample output.
 - c. Monetary values must be printed to exactly 2 decimal places and percentages must be printed to exactly 1 decimal place. Do not use **round** here – instead, look up how to use *format*. Although not required, for monetary output consider using the *locale* library (Google how to use this).
 - d. Dots must be used instead of spaces between the data titles and their description, such as in the sample output.
 - e. Make sure that the SSN is exactly 9 characters long, and is a valid number (look up how to use `isdigit()` on a string). If both of these conditions don't hold, loop asking the user to reenter.
 - f. The statement should display how much is owed in federal tax, both in terms of price, and percentage of total income (similar to sample output).
3. Finally, add an outer loop to your program so that the entire process can be repeated (i.e. a new taxpayer name, SSN, and income can be entered in, and a new Tax Statement will be output. End the program when the taxpayer name entered in is ###

Sample Output

```
-----  
|Name:.....Jake Spettler|  
|SSN:.....008973334|  
|2020 Income:.....$43,000.00|  
-----
```

```
                Federal Income Tax Due: $5,250.00 (12.2% of income)  
-----
```

This project is worth **70** points and is **due on Wednesday, September 8th before class starts**. Submission must include:

- A paper printout of your code, along with an output printout from at least one program run with at least three different tax payers. One taxpayer input should correspond to the data used in the given sample output.
- Electronic submission of your python code file, and a file containing your output, to Canvas

The following is required for CSCI 536 students. CSCI 336 students who implement this correctly will earn 3 bonus points:

Read in the tax brackets from a file, rather than hard-coding them into your code for performing your calculations. The file should look like:

```
.10
9875
.12
40125
.22
85525
.24
163300
.32
207350
.35
518400
.37
Inf
```