CS602 Module4 Assignment

General Rules for Homework Assignments

- You are strongly encouraged to add comments throughout the program. Doing so will help your instructor to understand your programming logic and grade you more accurately.
- You must work on your assignments individually. You are not allowed to copy the answers from the others.
- Each assignment has a strict deadline. Assignments submitted after the deadline will carry a penalty.
- When the term *lastName* is referenced in an assignment, please replace it with your last name.

Download and extract the starter template zip file, CS602_HW4_*lastName*. *Rename the folder with your last name.* **Complete the corresponding assignment files in this folder.**

Part 1 – Conditionals (40 Points)

Write a single PHP script, income_tax_v1.php, with the following functionality:

The script will first prompt the user to enter a gross annual income. Upon receiving any valid numeric (integer or float/double) value from the form, the script will then calculate the *corresponding income tax* based on the following tables:

Single

If taxable income is over—	but not over—	the tax is:
$0	$9,700	10% of the amount over $0
$9,700	$39,475	$970 plus 12% of the amount over $9,700
$39,475	$84,200	$4,543 plus 22% of the amount over $39,475
$84,200	$160,725	$14,382 plus 24% of the amount over $84,200
$160,725	$204,100	$32,748 plus 32% of the amount over $160,725
$204,100	$510,300	$46,628 plus 35% of the amount over $204,100
$510,300	no limit	$153,798 plus 37% of the amount over $510,300

Married Filing Jointly or Qualifying Widow (Widower)

If taxable income is over—	but not over—	the tax is:
$0	$19,400	10% of the amount over $0
$19,400	$78,950	$1,940 plus 12% of the amount over $19,400
$78,950	$168,400	$9,086 plus 22% of the amount over $78,950
$168,400	$321,450	$28,765 plus 24% of the amount over $168,400
$321,450	$408,200	$65,497 plus 32% of the amount over $321,450
$408,200	$612,350	$93,257 plus 35% of the amount over $408,200
$612,350	no limit	$164,709 plus 37 % of the amount over $612,350

Married Filing Separately

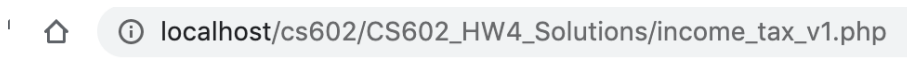| If taxable income is over—	but not over—	the tax is:
$0	$9,700	10% of the amount over $0
$9,700	$39,475	$970 plus 12% of the amount over $9,700
$39,475	$84,200	$4,543 plus 22% of the amount over $39,475
$84,200	$160,725	$14382.50 plus 24% of the amount over $84,200
$160,725	$204,100	$32,748.50 plus 32% of the amount over $160,725
$204,100	$306,175	$46,628.50 plus 35% of the amount over $204,100
$306,175	no limit	$82,354.75 plus 37% of the amount over $306,175

Head of Household

If taxable income is over—	but not over—	the tax is:
$0	$13,850	10% of the amount over $0
$13,850	$52,850	$1,385 plus 12% of the amount over $13,850
$52,850	$84,200	$6,065 plus 22% of the amount over $52,850
$84,200	$160,700	$12,962 plus 24% of the amount over $84,200
$160,700	$204,100	$31,322 plus 32% of the amount over $160,700
$204,100	$510,300	$45,210 plus 35% of the amount over $204,100
$510,300	no limit	$152,380 plus 37% of the amount over $510,300

The initial view of the web application is shown below.

← → C ⓘ localhost/cs602/CS602_HW4_Kalathur/income_tax_v1.php

Income Tax Calculator

Your Net Income: | Taxable Income |

[Submit]

After the user enters the income, say 150000, the view of the application is as shown below. The input form along with the results should be displayed.

⌂ ⓘ localhost/cs602/CS602_HW4_Solutions/income_tax_v1.php

Income Tax Calculator

Your Net Income: | Taxable Income |

[Submit]

With a net taxable income of $ 150,000.00

Status	Tax
Single	$30,174.00
Married Filing Jointly	$24,717.00
Married Filing Separately	$30,174.50
Head of Household	$28,754.00

The user can then try with a different income, say 1000000, as shown below.

Income Tax Calculator

Your Net Income: [Taxable Income]

[Submit]

With a net taxable income of $ 1,000,000.00

Status	Tax
Single	$334,987.00
Married Filing Jointly	$308,139.50
Married Filing Separately	$339,070.00
Head of Household	$333,569.00

In the script, income_tax_v1.php, write four different functions, ***incomeTaxSingle***, ***incomeTaxMarriedJointly***, ***incomeTaxMarriedSeparately***, and ***incomeTaxHeadOfHousehold***. Each function takes the taxable income as its argument and returns the computed tax as per the corresponding tax table. In each function, use the ***if*** and ***elseif*** statements to implement the functionality. Hard-code the table values in the conditional statements and the income tax calculations, i.e., don't define constants to use in the functions. The form data is submitted using the POST method.

You can customize the CSS as you desire. The sample output shown uses Bootstrap.

Part 2 – Arrays and Loops (60 Points)

Write a single PHP script, income_tax_v2.php, with the following functionality:

Define the TAX_RATES using PHP7 array syntax as shown below.

```php
define('TAX_RATES',
  array(
    'Single' => array(
      'Rates' => array(10,12,22,24,32,35,37),
      'Ranges' => array(0,9700,39475,84200,160725,204100,510300),
      'MinTax' => array(0, 970,4543,14382,32748,46628,153798)
      ),
    'Married_Jointly' => array(
      'Rates' => array(10,12,22,24,32,35,37),
      'Ranges' => array(0,19400,78950,168400,321450,408200,612350),
      'MinTax' => array(0, 1940,9086,28765,65497,93257,164709)
      ),
    'Married_Separately' => array(
      'Rates' => array(10,12,22,24,32,35,37),
      'Ranges' => array(0,9700,39475,84200,160725,204100,306175),
      'MinTax' => array(0, 970,4543,14382.50,32748.50,46628.50,82354.75)
      ),
    'Head_Household' => array(
      'Rates' => array(10,12,22,24,32,35,37),
      'Ranges' => array(0,13850,52850,84200,160700,204100,510300),
      'MinTax' => array(0, 1385,6065,12962,31322,45210,152380)
      )
    )
);
```

Using the above data, write a single function, *incomeTax*, that takes two arguments, the taxable income and the filing status. In this function, access the three pieces of data for the given filing status and store them in local variables. Using a **loop** and with the help of the *if* and *break* statements, determine the index for the income range. Using this index, calculate the income tax as per the table and return this value. This function should not hard code any of the tax table information.

For example, for a taxable income of 50000, the above index value would be 2 for Single, 1 for Married_Jointly, 2 for Married_Separately, and 1 for Head_Household.

The script should also display the tax tables using the above TAX_RATES data. Use an outer *foreach* loop to iterate over the status. Output the first row, then use a *for* loop to output the rest of the rows except the last row, and then output the last row. The first and last row have a different pattern than the rest.

The initial view of the form is shown below.

Income Tax Calculator

Enter Net Income: | Taxable Income |

Submit

2019 Tax Tables

Single

Taxable Income	Tax Rate
$0 - $9,700	10%
$9,701 - $39,475	$970.00 plus 12% of the amount over $9,700
$39,476 - $84,200	$4,543.00 plus 22% of the amount over $39,475
$84,201 - $160,725	$14,382.00 plus 24% of the amount over $84,200
$160,726 - $204,100	$32,748.00 plus 32% of the amount over $160,725
$204,101 - $510,300	$46,628.00 plus 35% of the amount over $204,100
$510,301 or more	$153,798.00 plus 37% of the amount over $510,300

Married_Jointly

Taxable Income	Tax Rate
$0 - $19,400	10%
$19,401 - $78,950	$1,940.00 plus 12% of the amount over $19,400
$78,951 - $168,400	$9,086.00 plus 22% of the amount over $78,950
$168,401 - $321,450	$28,765.00 plus 24% of the amount over $168,400
$321,451 - $408,200	$65,497.00 plus 32% of the amount over $321,450
$408,201 - $612,350	$93,257.00 plus 35% of the amount over $408,200
$612,351 or more	$164,709.00 plus 37% of the amount over $612,350

Married_Separately

Taxable Income	Tax Rate
$0 - $9,700	10%
$9,701 - $39,475	$970.00 plus 12% of the amount over $9,700
$39,476 - $84,200	$4,543.00 plus 22% of the amount over $39,475
$84,201 - $160,725	$14,382.50 plus 24% of the amount over $84,200
$160,726 - $204,100	$32,748.50 plus 32% of the amount over $160,725
$204,101 - $306,175	$46,628.50 plus 35% of the amount over $204,100
$306,176 or more	$82,354.75 plus 37% of the amount over $306,175

Head_Household

Taxable Income	Tax Rate
$0 - $13,850	10%
$13,851 - $52,850	$1,385.00 plus 12% of the amount over $13,850
$52,851 - $84,200	$6,065.00 plus 22% of the amount over $52,850
$84,201 - $160,700	$12,962.00 plus 24% of the amount over $84,200
$160,701 - $204,100	$31,322.00 plus 32% of the amount over $160,700
$204,101 - $510,300	$45,210.00 plus 35% of the amount over $204,100
$510,301 or more	$152,380.00 plus 37% of the amount over $510,300

After the user enters the income, say 150000, the view of the application is as shown below. The input form along with the results and the tax tables should be displayed.

Income Tax Calculator

Enter Net Income: [Taxable Income]

[Submit]

With a net taxable income of $ 150,000.00

Status	Tax
Single	$30,174.00
Married Filing Jointly	$24,717.00
Married Filing Separately	$30,174.50
Head of Household	$28,754.00

2019 Tax Tables
Single

Taxable Income	Tax Rate
$0 - $9,700	10%
$9,701 - $39,475	$970.00 plus 12% of the amount over $9,700
$39,476 - $84,200	$4,543.00 plus 22% of the amount over $39,475
$84,201 - $160,725	$14,382.00 plus 24% of the amount over $84,200
$160,726 - $204,100	$32,748.00 plus 32% of the amount over $160,725
$204,101 - $510,300	$46,628.00 plus 35% of the amount over $204,100
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Married_Jointly

Taxable Income	Tax Rate
$0 - $19,400	10%
$19,401 - $78,950	$1,940.00 plus 12% of the amount over $19,400
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$321,451 - $408,200	$65,497.00 plus 32% of the amount over $321,450
$408,201 - $612,350	$93,257.00 plus 35% of the amount over $408,200
$612,351 or more	$164,709.00 plus 37% of the amount over $612,350

Married_Separately

Taxable Income	Tax Rate
$0 - $9,700	10%
$9,701 - $39,475	$970.00 plus 12% of the amount over $9,700
$39,476 - $84,200	$4,543.00 plus 22% of the amount over $39,475
$84,201 - $160,725	$14,382.50 plus 24% of the amount over $84,200
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Head_Household

Taxable Income	Tax Rate
$0 - $13,850	10%
$13,851 - $52,850	$1,385.00 plus 12% of the amount over $13,850
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$84,201 - $160,700	$12,962.00 plus 24% of the amount over $84,200
$160,701 - $204,100	$31,322.00 plus 32% of the amount over $160,700
$204,101 - $510,300	$45,210.00 plus 35% of the amount over $204,100
$510,301 or more	$152,380.00 plus 37% of the amount over $510,300

Submission: Export your CS602_HW4_*lastName* folder containing all the relevant files as a zip file, and upload the zip file to the Assignment section.