```python
# name: Justin Dang
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# Homework 2, PS4
# Calculates taxable income for both the new and old tax bracket

#Variables
TAXES = True
while TAXES:
#input
   TAX = int(input('\nEnter income as an integer with no commas:'))

#calculations
   NTAX = TAX
   TAX1 = TAX
#ends the loop
   if TAX < 0:
      break

   if TAX < 9526:
      FTAX = TAX * .10

   elif TAX > 9525 and TAX < 38701:
      TAX -= 9525
      TAX = TAX * .12
      FTAX = float(952.5 + TAX)

   if TAX > 38700 and TAX < 82501:
      TAX -= 38700
      TAX = TAX * .22
      FTAX = float(4453.38 + TAX)

   elif TAX > 82500 and TAX < 157501:
      TAX -= 82500
      TAX = TAX * .24
      FTAX = float(14089.16 + TAX)

   if TAX > 157500 and TAX < 200001:
      TAX -= 157500
      TAX = TAX * .32
      FTAX = float(32088.92 + TAX)

   elif TAX > 200000 and TAX < 500001:
      TAX -= 200000
      TAX = TAX * .35
      FTAX = float(45688.6 + TAX)

   if TAX > 500000:
      TAX -= 500000
      TAX = TAX * .37
      FTAX = float(150688.25 + TAX)






   if NTAX < 9326:
      FTAX1 = TAX * .10

   elif NTAX > 9325 and NTAX < 37951:
      NTAX -= 9325
      NTAX = NTAX * .15
      FTAX1 = float(932.5 + NTAX)

   if NTAX > 37950 and NTAX < 91901:
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        NTAX -= 37950
        NTAX = NTAX * .25
        FTAX1 = float(5226.1 + NTAX)

    elif NTAX > 91900 and NTAX < 191651:
        NTAX -= 91900
        NTAX = NTAX * .28
        FTAX1 = float(18713.35 + NTAX)

    if NTAX > 191650 and NTAX < 416701:
        NTAX -= 191650
        NTAX = NTAX * .33
        FTAX1 = float(46643.07 + NTAX)

    elif NTAX > 416700 and NTAX < 418401:
        NTAX -= 416700
        NTAX = NTAX * .35
        FTAX1 = float(120909.24 + NTAX)

    if NTAX > 418400:
        NTAX -= 418400
        NTAX = NTAX * .396
        FTAX1 = float(121503.89 + NTAX)

    DIFFERENCE = FTAX - FTAX1
    if DIFFERENCE < 0:
        DIFFERENCE1 = DIFFERENCE * -1
        PERCENT = DIFFERENCE1 / FTAX1
        PERCENT = PERCENT * 100
    elif DIFFERENCE == 0:
        PERCENT = 0


# prints output in format
    print('Income:', TAX1)
    print('2017 tax:', format(FTAX1, ',.2f'))
    print('2018 tax:', format(FTAX, ',.2f'))
    print('Difference:', format(DIFFERENCE, ',.2f'))
    print('Difference (percent):', format(PERCENT, ',.2f'))

## Output with 5 test cases
##
## Test Case 1.
##
##Enter income as an integer with no commas:40000
##Income: 40000
##2017 tax: 5,738.60
##2018 tax: 4,739.38
##Difference: -999.22
##Difference (percent): 17.41
##
##Enter income as an integer with no commas:10000
##Income: 10000
##2017 tax: 1,033.75
##2018 tax: 1,009.50
##Difference: -24.25
##Difference (percent): 2.35
##
##Enter income as an integer with no commas:10000
##Income: 10000
##2017 tax: 1,033.75
##2018 tax: 1,009.50
##Difference: -24.25
##Difference (percent): 2.35
##
##Enter income as an integer with no commas:-1
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134   ## Test Case 2.
135   ##
136   ##Enter income as an integer with no commas:-1
137
138   ## Test Case 3.
139   ##
140   ##Enter income as an integer with no commas:123974
141   ##Income: 123974
142   ##2017 tax: 27,694.07
143   ##2018 tax: 24,042.92
144   ##Difference: -3,651.15
145   ##Difference (percent): 13.18
146   ##
147   ##Enter income as an integer with no commas:21432134
148   ##Income: 21432134
149   ##2017 tax: 8,442,942.55
150   ##2018 tax: 7,895,577.83
151   ##Difference: -547,364.72
152   ##Difference (percent): 6.48
153   ##
154   ##Enter income as an integer with no commas:243214
155   ##Income: 243214
156   ##2017 tax: 63,659.19
157   ##2018 tax: 60,813.50
158   ##Difference: -2,845.69
159   ##Difference (percent): 4.47
160   ##
161   ##Enter income as an integer with no commas:1234231
162   ##Income: 1234231
163   ##2017 tax: 444,572.97
164   ##2018 tax: 422,353.72
165   ##Difference: -22,219.25
166   ##Difference (percent): 5.00
167   ##
168   ##Enter income as an integer with no commas:-1
169
170   ## Test Case 4.
171   ##
172   ##Enter income as an integer with no commas:1
173   ##Income: 1
174   ##2017 tax: 0.10
175   ##2018 tax: 0.10
176   ##Difference: 0.00
177   ##Difference (percent): 0.00
178   ##
179   ##Enter income as an integer with no commas:123
180   ##Income: 123
181   ##2017 tax: 12.30
182   ##2018 tax: 12.30
183   ##Difference: 0.00
184   ##Difference (percent): 0.00
185   ##
186   ##Enter income as an integer with no commas:432
187   ##Income: 432
188   ##2017 tax: 43.20
189   ##2018 tax: 43.20
190   ##Difference: 0.00
191   ##Difference (percent): 0.00
192   ##
193   ##Enter income as an integer with no commas:321
194   ##Income: 321
195   ##2017 tax: 32.10
196   ##2018 tax: 32.10
197   ##Difference: 0.00
198   ##Difference (percent): 0.00
199   ##
200   ##Enter income as an integer with no commas:-1
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## Test Case 4.
##
##Enter income as an integer with no commas:781902374981723498
##Income: 781902374981723498
##2017 tax: 309,633,340,492,718,272.00
##2018 tax: 289,303,878,743,203,456.00
##Difference: -20,329,461,749,514,816.00
##Difference (percent): 6.57
##
##Enter income as an integer with no commas:-1
```