National University of Computer & Emerging Sciences

Lab # 6

For

Programming Fundamentals - Lab

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FAST School of Computing

Instructions:

1. Attempt all your questions on visual studio, once done paste your code and it's screenshot in a word file clearly marking its question number
2. Plagiarism is strictly prohibited.
3. Late submissions are not allowed.
4. This is a solo programming task.
5. Write your roll numbers, lab#, section and date in the name of the file e.g., "ROLLNUM_LAB#_SECTION"
6. Test your code with at least **three** sets of inputs.

1. Write a C++ code to print the following on the screen:

```
Line 1: "Act as if what you do makes a difference. It does."

Line 2: - WILLIAM JAMES"
```

2. Write the C++ code for the following pseudocode

```
print "Enter first number"
input num1
print "Enter second number"
input num2

num3=num2
num2=num1
num1=num3

print "Numbers have no been swapped", num1, num2
```

3. Write a C++ code to take input 3 integers from the user and print average on screen that would include decimal places as well.
   Note: You are only allowed to use 2 variables.
4. Write a C++ code to take a character input from the screen and display its ASCII equivalent on screen.
5. Print heart character on screen using its ASCII value (You can use Google for this as long as you understand what you are doing).
6. Take a lower-case character from user and convert it into a higher case character and print it on the screen.

7. You are tasked with writing a program that converts a given number of seconds into a formatted time representation. The program should take an input in seconds and output the equivalent time in hours, minutes, and seconds.

   Here are the specific requirements:

   Prompt the user to enter the total number of seconds.
   Read and store the input.
   Calculate and convert the input into hours, minutes, and seconds.
   Output the formatted time in the following format: HH:MM:SS, where HH represents hours, MM represents minutes, and SS represents seconds.
   Use integer division and modulo operation for the calculations.
   For example:

   Sample:
   Enter total seconds: 3661
   Time: 1:1:1

8. The program asks the user for various types of income: total income, capital gains, interest income, and total sales amount.
   It then asks the user for the tax rates for each type in percentage form.
   The program calculates the taxes for each type based on the user-provided tax rates.
   Finally, it prints out the calculated taxes.
   Tax Explanations:

   Income Tax: This is the tax you pay on the money you earn from working. For example, your salary from a job.

   Capital Gains Tax: This tax applies when you make money by selling an asset (like stocks, real estate, etc.) that has increased in value since you bought it.

   Interest Tax: This is the tax on the interest earned from savings accounts, investments, or other forms of lending your money.

   Sales Tax: This is a tax you pay when you buy certain goods and services. It's usually a percentage of the price of the item you're buying.

   Please note that the tax rates are provided in percentage form, so if you want to enter a 10% tax rate, you should enter '10' when prompted.

Algorithm:

1. Print "Enter total income: "
2. Input income
3. Print "Enter capital gains: "
4. Input capitalGains
5. Print "Enter interest income: "
6. Input interest
7. Print "Enter total sales amount: "
8. Input salesAmount

9. Print "Enter income tax rate (in percentage): "
10. Input incomeTaxRate
11. Print "Enter capital gains tax rate (in percentage): "
12. Input capitalGainsTaxRate
13. Print "Enter interest tax rate (in percentage): "
14. Input interestTaxRate
15. Print "Enter sales tax rate (in percentage): "
16. Input salesTaxRate

17. Set incomeTax = (incomeTaxRate / 100) * income
18. Set capitalGainsTax = (capitalGainsTaxRate / 100) * capitalGains
19. Set interestTax = (interestTaxRate / 100) * interest
20. Set salesTax = (salesTaxRate / 100) * salesAmount

21. Print "Income Tax: ", incomeTax
22. Print "Capital Gains Tax: ", capitalGainsTax
23. Print "Interest Tax: ", interestTax
24. Print "Sales Tax: ", salesTax

Write C++ code for the above