**Data Types and Arrays**

**Module 3**

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CSC500-1

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**Critical Thinking Assignment**

**Part 1:**

Write a program that calculates the total amount of a meal purchased at a restaurant. The program should ask the user to enter the charge for the food and then calculate the amounts with an 18 percent tip and 7 percent sales tax. Display each of these amounts and the total price.

**Part 2:**

Many people keep time using a 24-hour clock (11 is 11am and 23 is 11pm, 0 is midnight). If it is currently 13 and you set your alarm to go off in 50 hours, it will be 15 (3pm). Write a Python program to solve the general version of the above problem. Ask the user for the time now (in hours) and then ask for the number of hours to wait for the alarm. Your program should output what the time will be on a 24-hour clock when the alarm goes off.

**Pseudocode**

**Part 1:**

*food\_charge = float(input("Enter the charge for the food: $"))*

*tip\_rate = 0.18*

*sales\_tax\_rate = 0.07*

*tip = food\_charge \* tip\_rate*

*sales\_tax = food\_charge \* sales\_tax\_rate*

*total = food\_charge + tip + sales\_tax*

*print(‘Food Charge: ’, food\_charge)*

*print(‘Tip: ‘, tip)*

*print(‘Sales tax: ‘, sales\_tax)*

*print(‘Total: ‘, total)*

**Part 2:**

*current\_time = int(input("What is the current time (in hours, 0-23)? "))*

*wait\_hours = int(input("How many hours do you want to wait for the alarm? "))*

*alarm\_time = (current\_time + wait\_hours) % 24*

*print(f"\nThe alarm will go off at {alarm\_time}:00 on a 24-hour clock.")*

**Source code**

**Part 1:**

*# Ask the user for the charge of the food*

food\_charge = float(input("Enter the charge for the food: $"))

*# Calculate tip and tax*

tip\_rate = 0.18

sales\_tax\_rate = 0.07

tip = food\_charge \* tip\_rate

sales\_tax = food\_charge \* sales\_tax\_rate

total = food\_charge + tip + sales\_tax

*# Display the results*

print(f"\nFood Charge: ${food\_charge:.2f}")

print(f"Tip (18%): ${tip:.2f}")

print(f"Sales Tax (7%): ${sales\_tax:.2f}")

print(f"-------------------------")

print(f"Total Price: ${total:.2f}")

print(f"-------------------------")

**Part 2:**

*# Ask the user for the current time in hours (0-23)*

*while* True:

current\_time = int(input("What is the current time (in hours, 0-23)? "))

*if* current\_time >=0 and current\_time < 24:

*break*

*else*:

print("Please enter a valid hour between 0 and 23.")

*# Ask the user for the number of hours to wait for the alarm*

wait\_hours = int(input("How many hours do you want to wait for the alarm? "))

*# Calculate the alarm time*

alarm\_time = (current\_time + wait\_hours) % 24

*# Display the result*

print(f"\nThe alarm will go off at {alarm\_time}:00 on a 24-hour clock.\n")

**Screenshots and code execution**

**Part 1**

Step1: Enter the command to run the python script (python part1.py).

A screenshot of a computer program

AI-generated content may be incorrect.

Step 2: Hit enter and provide the input value for food charge.

**Screenshots and code execution**A screenshot of a computer program

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Step 3: After the food charge input is provided, hit enter to calculate the total charge.

**Screenshots and code execution**A screenshot of a computer program

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**Screenshots and code execution**

**Part 2:**

Step1: Enter the command to run the python script (python part2.py).

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Step 2: Hit enter and provide the input value for the current time.

**Screenshots and code execution**

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Step 3: After the current time input is provided, hit enter to provide the input value for the hours to wait for the alarm.

**Screenshots and code execution**

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Step 4: After providing the input value for the hours to wait for the alarm, hit enter to calculate the time the alarm will go off on a 24-hour clock.

**Screenshots and code execution**

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**Results**

**Part 1**

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**Part 2**

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**GitHub**

Link to critical thinking assignment

<https://github.com/dayothompson/CSC500/tree/main/Module3>

**References**

Zybooks. (2025).

*Iterating through arrays.* <https://learn.zybooks.com/zybook/CSC500-1_8/chapter/3/section/14>