

Homework Programming Logic and Design Chapter 1 Part 1
For each of the following questions, find the inputs and outputs, write the pseudocode, and desk check the pseudocode.

1. A store sells cups and plates for parties. The owners want a program that allows them to enter the price of a cup, the price of a plate, the number of cups purchased, the number of plates purchased, and the sales tax rate. The program should calculate and display the total cost of the purchase.

Inputs	Process	Outputs
cupPrice	subtotal	totalCost
PlatePrice	tax	
cupNum		
plateNum		
salesTaxRate		

Pseudo Code:

1. ENTER cupPrice, platePrice, cupNum, plateNum, salesTaxRate
2. CALCULATE subTotal by $\text{cupPrice} * \text{cupNum} + \text{platePrice} * \text{plateNum}$
3. CALCULATE tax by $\text{subtotal} * \text{salesTaxRate}$
4. CALCULATE totalCost by $\text{subtotal} + \text{tax}$
5. DISPLAY totalCost

Desk Check

Cup Price	Plate Price	Cup Num	Plate Num	Sales Tax Rate	Sub Total	Tax	Total Cost
2	3	10	20	0.05	$2 * 10 + 3 * 20 = 80$	$80 * 0.05 = 4$	$80 + 4 = 84$
5	7	50	60	0.03	$5 * 50 + 7 * 60 = 670$	$670 * 0.03 = 20.10$	$670 + 20.10 = 690.10$

2. A sales manager wants a program that allows him to enter the sales made in each of two states. The program should calculate and display the commission, which is a percentage of the total sales. This percentage is called the commission rate.

Inputs	Process	Outputs
State1Sales		commission
State2Sales		
commRate		

Pseudo Code:

1. ENTER state1Sales, state2Sales, commRate
2. CALCULATE totalSales by state1Sales + state2Sales
3. CALCULATE commission by totalSales * commRate
4. DISPLAY commission

Desk Check

State1 Sales	State2 Sales	Comm Rate	Total Sales	Commission
100	200	0.12	100 + 200 = 300	300 * 0.12 = 36
500	200	0.20	500 + 200 = 700	700 * 0.20 = 140

3. The manager of a hotel wants a program that calculates and displays a guest's total bill. Each guest pays a room charge that is based on a per-night rate. For example, if the per-night rate is \$100 and the guest stays two nights, the room charge is \$200. Customers also may incur a one-time room service charge and a one-time telephone charge.

Inputs	Process	Outputs
nightlyRate		totalBill
numNights		
telephoneCharge		
roomServiceCharge		

Pseudo Code:

1. ENTER nightlyRate, numNights, telephoneCharge, roomServiceCharge
3. CALCULATE the totalBill by $\text{nightlyRate} * \text{numNights} + \text{telephoneCharge} + \text{roomServiceCharge}$
4. DISPLAY totalBill

Desk Check

Nightly Rate	Num Nights	Telephone Charge	Room Service Charge	Total Bill
100	3	40	30	$100 * 3 + 40 + 30 = 370$
200	2	20	15	$200 * 2 + 20 + 15 = 435$

4. A store is having a sale. The manager wants a program that allows the sales clerk to enter the original price of an item and the discount rate. The program should calculate and display the sale price.

Inputs	Process	Outputs
originalPrice	discount	salePrice
discountRate		

Pseudo Code:

1. ENTER originalPrice, discountRate
2. CALCULATE discount by $\text{originalPrice} * \text{discountRate}$
3. CALCULATE salePrice by $\text{originalPrice} - \text{discount}$
4. DISPLAY the salePrice

Desk Check

Original Price	Discount Rate	Discount	Sale Price
20	0.30	$20 * 0.30 = 6$	$20 - 6 = 14$
60	0.40	$60 * 0.40 = 24$	$60 - 24 = 36$