Problem Set – Loops & Functions

1. Enter destination city, miles travelled to get there and gallons of gasoline used for any number of trips entered at the keyboard (use ctl+z to stop). Use a function to compute miles per gallon. Display the destination city and miles per gallon for each trip entered. Sum the miles travelled and give a count of the number of trips made. Display these at the end of the program.

INPUT	PROCESS	OUTPUT
Destination city	1.While not EOF: - Call compute_mpg(miles_travelled, gallons)	Display city and MPG for each trip
miless	Display city and mpg	Number of trips
gallons	Add miles_travelled to total_miles	Total miles travelled
	Increment trip counter	
	2. After loop: - Display total_miles and number of trips	

2. Allow the employee to enter last name, job code and hours worked (use ctl+z to stop). Use a function to calculate pay. (Job code L is $25/hr, A is $30/hr and J is $50/hr). Give time and a half for overtime. Display last name and pay for each employee. Sum the pay for each employee as well as count the entries made. After all entries are made, compute and display the average pay and the number of entries made.

INPUT	PROCESS	OUTPUT
Last name	1. While not EOF: - Call compute_pay(job_code, hours)	Display last name and pay for each employee
Job code (L, A, J)	- If hours > 40, calculate overtime pay - Display last name and pay - Add pay to total_pay - Increment employee counter	Total pay
Hours worked	2. After loop: - Compute average_pay =	Number of employees

	total_pay / number_of_employees - Display total_pay, average_pay, number_of_employees	

3. Allow any number of students to enter their last name and the credits taken (use ctl+z to stop). Charge $250 per credit hour. Use a function to compute total tuition. Display student last name, credits taken and tuition owed. Sum tuition and give a count of the number of students who entered data.

INPUT	PROCESS	OUTPUT
Last name	. While not EOF: - Call compute_tuition(credits) → tuition = credits * 250	Last name
credits	- Display last name, credits, tuition - Add tuition to total_tuition - Increment student counter	credits
	2. After loop: - Display total tuition and number of students Last name, credits, tuition for each student Total tuition Number of students	tuition for each student
		Total tuition owed
		Number of students

4. Any number of customers will enter a product code (W, C, G) and a quantity (ctl+z to stop). Use a function to determine unit price. Write another function to compute shipping. Then compute the total. Display the product code, unit price, shipping, extended price (quantity x unit price)

and total for the order for each entry. Sum and display the total of all entries made.

INPUT	PROCESS	OUTPUT
Product code (W, C, G)	1. While not EOF: - Call get_unit_price(product_code) → W:10, C:15, G:20	Product code
QUANTITY	- Call get_shipping(product_code) → W:2, C:5, G:7 - Compute extended_price = unit_price * quantity - Compute total = extended_price + shipping - Display product code, unit price, shipping, extended_price, total	unit price
	- Add total to total_all_orders	shipping
	2. After loop: - Display total of all orders	extended price
		total for each entry Total of all orders

Product Code	Unit Price	Shipping
W	$10.00	$2.00
C	$15.00	$5.00
G	$20.00	$7.00

5. Allow students to enter the department and course code as noted below for any number of courses (ctl+z to stop). Use a function to determine the lab fee also in the table below. For each entry display the department, course code and lab fee. Give the total of all lab fees to collect. Compute and display the average lab fee.

INPUT	PROCESS	OUTPUT
Department	1. While not EOF: - Call compute_lab_fee(department, course_code) → CIS 101:50, CIS 121:100, MAT 111:25, MAT 112:35, ENG 100:55, Others:50	Department
Course code	- Display department, course code, lab fee - Add lab fee to total_lab_fees - Increment course counter	course code
	2. After loop: - Compute average_lab_fee = total_lab_fees / number_of_courses - Display total_lab_fees and average_lab_fee	l ab fee for each entry
		otal lab fees Average lab fee

Department	Course Code	Lab Fee
CIS	101	$50.00
CIS	121	$100.00
MAT	111	$25.00
MAT	112	$35.00
ENG	100	$55.00
All Others		$50.00