Introduction to Computer System

Assignment 2

1. Program that will construct a menu for performing arithmetic operations. The user will give two real numbers **(a, b)** on which the arithmetic operations will be performed and an integer number (1 <= **Choice** <= 4) as a choice. Choice-1, 2, 3, 4 are for performing addition, subtraction, multiplication, division respectively.

If Choice-4 is selected, the program will check if **b** is nonzero.

If the check is true, the program will ask for another choice (1 <= **Case** <=2), where Case-1, 2 evaluate quotient and reminder respectively. If the check is false, it will print an error message "Error: Divisor is zero" and halt.

Sample input	**Sample output**
5 10 3	Multiplication: 50
-5 10.5 4 2	Reminder: -48
-5 0 4	Error: Divisor is zero

2. Program for "Guessing Game":
Player-1 picks a number **X** and Player-2 has to guess that number within **N = 3** tries. For each wrong guess by Player-2, the program prints "Wrong, **N-1** Chance(s) Left!" If Player-2 successfully guesses the number, the program prints "Right, Player-2 wins!" and stops allowing further tries (if any left). Otherwise after the completion of **N = 3** wrong tries, the program prints "Player-1 wins!" and halts.

[**Restriction:** Without using loop/break/continue
Hint: Use flag]

Sample input (X, n1, n2, n3)	***Sample output***
5 12 8 5	Wrong, 2 Chance(s) Left! Wrong, 1 Chance(s) Left! Right, Player-2 wins!
100	Wrong, 2 Chance(s) Left!

	50 100	Right, Player-2 wins!
	20 12 8 5	Wrong, 2 Chance(s) Left! Wrong, 1 Chance(s) Left! Wrong, 0 Chance(s) Left! Player-1 wins!

3. Write a program that **classifies the air quality index (AQI)** into different categories:

- "Good" (0-50)
- "Moderate" (51-100)
- "Unhealthy for Sensitive Groups" (101-150)
- "Unhealthy" (151-200)
- "Very Unhealthy" (201-300)
- "Hazardous" (above 300)

Sample Input	Sample Output
99	Moderate
300	Very Unhealthy

4. Write a program that calculates the discount a customer receives based on their total purchase amount.

- "No discount" (below 50),
- "5% discount" (50-100),
- "10% discount" (101-200),
- "15% discount" (201-500),
- "20% discount" (above 500).

Sample Input	Sample Output
250	15% discount Final amount after discount is: 212.50
75	5% discount Final amount after discount is: 71.25