

JAVA QUESTION BANK

Problem 1: Write a program to input marks of students in 5 subjects, calculate total, average, and grade using methods and handle invalid marks using exception handling.

```
import java.util.*;

public class StudentMarksEasy {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        int marks[] = new int[5];

        int total = 0;

        double avg;

        char grade;

        try {

            // Input marks

            for (int i = 0; i < 5; i++) {

                System.out.print("Enter marks of subject " + (i + 1) + ": ");

                marks[i] = sc.nextInt();

                if (marks[i] < 0 || marks[i] > 100) {

                    throw new Exception("Invalid marks! Marks should be between 0
and 100.");

                }

                total += marks[i];

            }

            // Calculate average

            avg = total / 5.0;

            // Find grade

            if (avg >= 90)
```

```

        grade = 'A';
    else if (avg >= 75)
        grade = 'B';
    else if (avg >= 60)
        grade = 'C';
    else if (avg >= 45)
        grade = 'D';
    else
        grade = 'F';
    // Display result
    System.out.println("\nTotal Marks = " + total);
    System.out.println("Average = " + avg);
    System.out.println("Grade = " + grade);
} catch (Exception e) {
    System.out.println(e.getMessage());
}
sc.close();
}
}

```

Problem 2: Accept item names, price, and quantity. Calculate total, apply a discount if total > 2000, and display formatted bill using methods.

```
import java.util.*;
```

```
public class SimpleBill {
```

```
public static void main(String[] args) {  
    Scanner sc = new Scanner(System.in);  
    String item;  
    double price, total, finalAmount;  
    int qty;  
  
    System.out.print("Enter item name: ");  
    item = sc.nextLine();  
  
    System.out.print("Enter price: ");  
    price = sc.nextDouble();  
  
    System.out.print("Enter quantity: ");  
    qty = sc.nextInt();  
  
    total = price * qty;  
  
    if (total > 2000)  
        finalAmount = total - (total * 0.10); // 10% discount  
    else  
        finalAmount = total;  
    System.out.println("\n----- BILL -----");  
    System.out.println("Item Name   : " + item);  
    System.out.println("Price      : " + price);  
    System.out.println("Quantity   : " + qty);  
    System.out.println("Total      : " + total);  
    if (total > 2000)
```

```

        System.out.println("Discount    : 10%");
        System.out.println("Final Amount : " + finalAmount);
        System.out.println("-----");
        sc.close();
    }
}

```

Problem 3: Take a sentence and count the number of words and occurrences of a specific word using arrays and string methods

```

import java.util.*;

public class SimpleWordCount {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter a sentence: ");
        String sentence = sc.nextLine();

        System.out.print("Enter a word to count: ");
        String search = sc.next();

        // Split sentence into words
        String words[] = sentence.split(" ");

        int totalWords = words.length;
        int count = 0;

        // Count occurrences of the specific word
        for (String w : words) {
            if (w.equalsIgnoreCase(search)) {
                count++;
            }
        }

        System.out.println("\nTotal words: " + totalWords);
        System.out.println("Occurrences of \"" + search + "\": " + count);
    }
}

```

```

        sc.close();
    }
}

```

Problem 4: Check password strength: Length ≥ 8 , contains uppercase, lowercase, digit, and symbol, throw exception if invalid.

```

import java.util.*;

public class EasyPasswordCheck { public static void main(String[] args)
{ Scanner sc = new Scanner(System.in); System.out.print("Enter your
password: "); String pwd = sc.nextLine(); try {
    if (pwd.length() < 8)
        throw new Exception("Password must be at least 8 characters.");

    if (!pwd.matches(".*[A-Z].*"))
        throw new Exception("Password must have at least 1 uppercase letter.");

    if (!pwd.matches(".*[a-z].*"))
        throw new Exception("Password must have at least 1 lowercase letter.");
    if (!pwd.matches(".*[0-9].*"))
        throw new Exception("Password must have at least 1 digit.");
    if (!pwd.matches(".*[@#$%^&+=!].*"))
        throw new Exception("Password must have at least 1 symbol.");
    System.out.println("✅ Password is strong.");
} catch (Exception e) {
    System.out.println("❌ " + e.getMessage());
}

    sc.close();
}

}

```

Problem 5: Simulate ATM operations like deposit, withdraw, and check balance. Use methods for each operation and handle insufficient balance

with exception handling.

```
import java.util.Scanner;
```

```
public class VeryEasyATM {
```

```
    public static void main(String[] args) {
```

```
        // Create Scanner object to read user input
```

```
        Scanner sc = new Scanner(System.in);
```

```
        // Variable to store current balance
```

```
        double balance = 0;
```

```
        // Variable to store user choice from menu
```

```
        int choice;
```

```
        // Infinite loop for ATM menu, will run until user chooses to exit
```

```
        while (true) {
```

```
            // Display menu
```

```
            System.out.println("\n--- ATM MENU ---");
```

```
            System.out.println("1. Deposit");
```

```
            System.out.println("2. Withdraw");
```

```
            System.out.println("3. Check Balance");
```

```
            System.out.println("4. Exit");
```

```
            System.out.print("Enter your choice: ");
```

```
choice = sc.nextInt(); // Read user choice

// If user chooses Deposit
if (choice == 1) {
    System.out.print("Enter amount to deposit: ");
    double amt = sc.nextDouble(); // Read amount
    if (amt > 0) { // Check if amount is positive
        balance += amt; // Add amount to balance
        System.out.println("✅ Deposited: " + amt);
    } else {
        System.out.println("❌ Invalid amount!"); // Negative or zero
        deposit not allowed
    }
}

// If user chooses Withdraw
} else if (choice == 2) {
    System.out.print("Enter amount to withdraw: ");
    double amt = sc.nextDouble(); // Read amount
    if (amt > balance) { // Check for insufficient balance
        System.out.println("❌ Insufficient balance!");
    } else if (amt <= 0) { // Check if amount is positive
        System.out.println("❌ Invalid amount!");
    } else {
```

```

        balance -= amt; // Subtract amount from balance

        System.out.println("✅ Withdrawn: " + amt);
    }

    // If user chooses Check Balance
    } else if (choice == 3) {

        System.out.println("💰 Current Balance: " + balance);

    // If user chooses Exit
    } else if (choice == 4) {

        System.out.println("Thank you for using the ATM! 🙌");

        break; // Exit the loop and program

    // If user enters invalid choice
    } else {

        System.out.println("❌ Invalid choice! Try again.");

    }
}

sc.close(); // Close Scanner to avoid resource leak
}
}

```

Problem 6: Accept basic salary and compute HRA, DA, PF, and gross salary.

Display results using methods and handle invalid inputs with exceptions.

```
import java.util.Scanner;
```

```
public class EasySalaryCalculator {
```

```
    public static void main(String[] args) {
```

```
        Scanner sc = new Scanner(System.in);
```

```
        try {
```

```
            System.out.print("Enter basic salary: ");
```

```
            double basic = sc.nextDouble();
```

```
            // Check for invalid input
```

```
            if (basic < 0) {
```

```
                System.out.println(" ❌ Salary cannot be negative!");
```

```
                return; // Stop program if salary is invalid
```

```
            }
```

```
            // Calculate allowances and deductions
```

```
            double HRA = basic * 0.10; // 10% of basic
```

```
            double DA = basic * 0.08; // 8% of basic
```

```
            double PF = basic * 0.05; // 5% of basic
```

```
            double gross = basic + HRA + DA - PF;
```

```

        // Display results

        System.out.println("\n--- Salary Details ---");

        System.out.println("Basic Salary : " + basic);

        System.out.println("HRA (10%)   : " + HRA);

        System.out.println("DA (8%)    : " + DA);

        System.out.println("PF (5%)    : " + PF);

        System.out.println("Gross Salary : " + gross);

    } catch (Exception e) {

        System.out.println(" ❌ Invalid input! Please enter a number.");

    }

    sc.close();

}

}

```

Problem 7: Accept total bill and membership type (Silver/Gold/Platinum) and apply discounts accordingly using if-else and methods.

```

import java.util.Scanner;

public class EasyMembershipDiscount {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        // Input total bill
    }
}

```

```

System.out.print("Enter total bill amount: ");
double total = sc.nextDouble();

sc.nextLine(); // Consume newline

// Input membership type
System.out.print("Enter membership type (Silver/Gold/Platinum): ");
String membership = sc.nextLine();

double finalAmount = total; // Initialize final amount

// Apply discount based on membership
if (membership.equalsIgnoreCase("Silver")) {
    finalAmount = total - (total * 0.05); // 5% discount
} else if (membership.equalsIgnoreCase("Gold")) {
    finalAmount = total - (total * 0.10); // 10% discount
} else if (membership.equalsIgnoreCase("Platinum")) {
    finalAmount = total - (total * 0.15); // 15% discount
} else {
    System.out.println("✗ Invalid membership! No discount applied.");
}

// Display final bill
System.out.println("\nTotal Bill    : " + total);
System.out.println("Membership Type : " + membership);
System.out.println("Final Amount   : " + finalAmount);

sc.close();
}
}

```

Problem 8: For ‘n’ products, store product name, price, and quantity in arrays. Calculate total stock value and handle out-of-stock errors via exception handling.

```

import java.util.Scanner;

public class SuperEasyProductStock {

```

```
public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);

    System.out.print("Enter number of products: ");
    int n = sc.nextInt();

    double totalStockValue = 0;

    for (int i = 1; i <= n; i++) {
        System.out.println("\nProduct " + i + ":");

        System.out.print("Enter product name: ");
        String name = sc.next();

        System.out.print("Enter price: ");
        double price = sc.nextDouble();

        System.out.print("Enter quantity: ");
        int qty = sc.nextInt();

        if (qty <= 0) {
            System.out.println("✗ Product " + name + " is out of stock!");
        } else {
            totalStockValue += price * qty;
        }
    }

    System.out.println("\nTotal Stock Value: " + totalStockValue);
    sc.close();
}
```

Problem 1

Q: Process a coffee order: take customer size choice, calculate total price based on size and add-ons, and handle a list of 5 drink types.

A:

```
import java.util.Scanner;

public class CoffeeOrder {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Drinks: 1.Espresso 2.Latte 3.Cappuccino 4.Mocha
5.Americano");
        System.out.print("Choose drink (1-5): ");
        int choice = sc.nextInt();

        if(choice<1 || choice>5) System.out.println("Invalid choice!");
        else {
            System.out.print("Size (S=50,M=100,L=150): ");
            char size = sc.next().toUpperCase().charAt(0);
            int price = 0;
            if(size=='S') price=50; else if(size=='M') price=100; else if(size=='L')
price=150;

            System.out.print("Add-ons? y/n: ");
            char add = sc.next().toLowerCase().charAt(0);
            if(add=='y') price += 20;

            System.out.println("Total price: " + price);
        }
        sc.close();
    }
}
```

Problem 2

Q: Create a method that accepts two numbers and an operation symbol. Use a switch to perform and return the result of addition, subtraction, multiplication, or division.

A:

```
import java.util.Scanner;
```

```
public class Calculator {  
    public static double calculate(double a, double b, char op){  
        switch(op){  
            case '+': return a+b;  
            case '-': return a-b;  
            case '*': return a*b;  
            case '/': return a/b;  
            default: return 0;  
        }  
    }  
}
```

```
public static void main(String[] args){  
    Scanner sc = new Scanner(System.in);  
    System.out.print("Enter two numbers: ");  
    double n1 = sc.nextDouble();  
    double n2 = sc.nextDouble();  
    System.out.print("Enter operation (+,-,*,/): ");  
    char op = sc.next().charAt(0);  
    System.out.println("Result: " + calculate(n1,n2,op));  
    sc.close();  
}
```

Problem 3

Q: Input a string and count vowels, consonants, digits, and special characters using loops and conditionals.

A:

```
import java.util.Scanner;

public class CountChars {
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String s = sc.nextLine();

        int vowels=0, consonants=0, digits=0, special=0;
        for(int i=0;i<s.length();i++){
            char ch = s.charAt(i);
            if(Character.isDigit(ch)) digits++;
            else if(Character.isLetter(ch)){
                if("AEIOUaeiou".indexOf(ch)!=-1) vowels++;
                else consonants++;
            } else special++;
        }
        System.out.println("Vowels: "+vowels);
        System.out.println("Consonants: "+consonants);
        System.out.println("Digits: "+digits);
        System.out.println("Special: "+special);
        sc.close();
    }
}
```

Problem 4

Q: For n customers, input name, account type, and balance. Apply 4% interest for savings and 6% for fixed accounts, then display updated balances.

A:

```

import java.util.Scanner;

public class InterestCalculator {
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of customers: ");
        int n = sc.nextInt();
        sc.nextLine();
        for(int i=1;i<=n;i++){
            System.out.print("\nEnter name: ");
            String name = sc.nextLine();
            System.out.print("Account type (savings/fixed): ");
            String type = sc.nextLine().toLowerCase();
            System.out.print("Balance: ");
            double balance = sc.nextDouble();
            sc.nextLine();
            if(type.equals("savings")) balance += balance*0.04;
            else if(type.equals("fixed")) balance += balance*0.06;
            System.out.println(name+"'s updated balance: "+balance);
        }
        sc.close();
    }
}

```

Problem 5

Q: Read 5 daily temperatures into an array. Use a loop and a method to convert each temperature from Celsius to Fahrenheit, displaying both.

A:

```

import java.util.Scanner;

public class TempConverter {
    public static double toFahrenheit(double c){ return (c*9/5)+32; }

    public static void main(String[] args){

```



```

Scanner sc = new Scanner(System.in);
double[] temps = new double[5];
for(int i=0;i<5;i++){
    System.out.print("Enter temperature in Celsius: ");
    temps[i] = sc.nextDouble();
}
for(int i=0;i<5;i++){
    System.out.println("Celsius: "+temps[i]+" => Fahrenheit:
"+toFahrenheit(temps[i]));
}
sc.close();
}
}

```

Problem 6

Q: Accept number of units consumed and calculate bill based on slab rates using conditionals and methods.

A:

```

import java.util.Scanner;

public class ElectricityBill {
    public static double calculateBill(int units){
        if(units<=100) return units*5;
        else if(units<=200) return 100*5 + (units-100)*8;
        else return 100*5 + 100*8 + (units-200)*10;
    }

    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter units: ");
        int units = sc.nextInt();
        System.out.println("Total bill: "+calculateBill(units));
        sc.close();
    }
}

```

```
}
```

Problem 7

Q: Input a string and check if it's a palindrome (ignore case and spaces). Use string methods and exception handling.

A:

```
import java.util.Scanner;

public class PalindromeCheck {
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        try{
            System.out.print("Enter a string: ");
            String s = sc.nextLine().replace(" ", "").toLowerCase();
            String rev = "";
            for(int i=s.length()-1;i>=0;i--) rev += s.charAt(i);
            if(s.equals(rev)) System.out.println("Palindrome");
            else System.out.println("Not a palindrome");
        }catch(Exception e){
            System.out.println("Error!");
        }
        sc.close();
    }
}
```

Problem 8

Q: Read a word (String). Use a loop and a switch on each character to replace 'a' with '4', 'e' with '3', and 'o' with '0'.

A:

```
import java.util.Scanner;

public class ReplaceChars {
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a word: ");
        String word = sc.nextLine();
        String newWord = "";
        for(int i=0;i<word.length();i++){
            char ch = word.charAt(i);
            switch(ch){
                case 'a': case 'A': newWord+='4'; break;
                case 'e': case 'E': newWord+='3'; break;
                case 'o': case 'O': newWord+='0'; break;
                default: newWord+=ch;
            }
        }
        System.out.println("Converted word: "+newWord);
        sc.close();
    }
}
```