Problem 1

Q: 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.

A:

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

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 {
            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 IllegalArgumentException("Invalid marks! Marks
should be between 0 and 100.");
              }
              total += marks[i];
            }

            avg = total / 5.0;

            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';

            System.out.println("\nTotal Marks = " + total);
            System.out.printf("Average = %.2f%n", avg);
            System.out.println("Grade = " + grade);
        } catch (InputMismatchException ime) {
            System.out.println("❌ Invalid input! Please enter numbers only.");
        } catch (Exception e) {
            System.out.println("❌ " + e.getMessage());
        } finally {
            sc.close();
        }
    }
}
```

Problem 2

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

A:

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

public class SimpleBill {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        try {
            System.out.print("Enter item name: ");
            String item = sc.nextLine();

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

            System.out.print("Enter quantity: ");
```

```
            int qty = sc.nextInt();

            double total = price * qty;
            double finalAmount = total > 2000 ? total - (total * 0.10) : total;

            System.out.println("\n----- BILL -----");
            System.out.println("Item Name   : " + item);
            System.out.printf("Price       : %.2f%n", price);
            System.out.println("Quantity    : " + qty);
            System.out.printf("Total       : %.2f%n", total);
            if (total > 2000) System.out.println("Discount    : 10%");
            System.out.printf("Final Amount: %.2f%n", finalAmount);
            System.out.println("----------------");
        } catch (InputMismatchException e) {
            System.out.println("❌ Invalid input! Please enter numeric values for price and quantity.");
        } finally {
            sc.close();
        }
    }
}
```

Problem 3

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

A:

```
import java.util.Scanner;

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();

        String[] words = sentence.trim().split("\\s+");
        int totalWords = (sentence.trim().isEmpty()) ? 0 : words.length;
        int count = 0;

        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

Q: Check password strength: Length ≥ 8, contains uppercase, lowercase, digit, and symbol. Throw an exception if invalid.

A:

```
import java.util.Scanner;

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 long.");
            if (!pwd.matches(".*[A-Z].*"))
                throw new Exception("Password must contain at least one uppercase
```

```
letter.");
            if (!pwd.matches(".*[a-z].*"))
                throw new Exception("Password must contain at least one lowercase
letter.");
            if (!pwd.matches(".*[0-9].*"))
                throw new Exception("Password must contain at least one digit.");
            if (!pwd.matches(".*[@#$%^&+=!].*"))
                throw new Exception("Password must contain at least one symbol
(@,#,$,%,^,&,+,=,!).");

            System.out.println(" ✅ Password is strong.");
        } catch (Exception e) {
            System.out.println(" ❌ " + e.getMessage());
        } finally {
            sc.close();
        }
    }
}
```

Problem 5

Q: Simulate ATM operations like deposit, withdraw, and check balance. Use methods for each operation and handle insufficient balance with exception handling.

A:
```
import java.util.InputMismatchException;
import java.util.Scanner;

public class VeryEasyATM {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        double balance = 0;

        while (true) {
            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: ");

            try {
                int choice = sc.nextInt();

                if (choice == 1) {
                    System.out.print("Enter amount to deposit: ");
                    double amt = sc.nextDouble();
                    if (amt > 0) {
                        balance += amt;
                        System.out.printf("✅ Deposited: %.2f%n", amt);
                    } else System.out.println("❌ Invalid amount!");
                } else if (choice == 2) {
                    System.out.print("Enter amount to withdraw: ");
                    double amt = sc.nextDouble();
                    if (amt <= 0) System.out.println("❌ Invalid amount!");
                    else if (amt > balance) System.out.println("❌ Insufficient balance!");
                    else {
                        balance -= amt;
                        System.out.printf("✅ Withdrawn: %.2f%n", amt);
                    }
                } else if (choice == 3) {
                    System.out.printf("💰 Current Balance: %.2f%n", balance);
                } else if (choice == 4) {
                    System.out.println("Thank you for using the ATM! 👋");
                    break;
                } else System.out.println("❌ Invalid choice!");
            } catch (InputMismatchException e) {
                System.out.println("❌ Invalid input! Please enter numbers only.");
                sc.nextLine();
            }
        }
        sc.close();
    }
```

}

▨ Problem 6

Q: Accept basic salary and compute HRA, DA, PF, and gross salary. Display results using methods and handle invalid inputs with exceptions.

A:

```
import java.util.InputMismatchException;
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();

         if (basic < 0) {
            System.out.println("❌ Salary cannot be negative!");
            return;
         }

         double HRA = basic * 0.10;
         double DA = basic * 0.08;
         double PF = basic * 0.05;
         double gross = basic + HRA + DA - PF;

         System.out.println("\n--- Salary Details ---");
         System.out.printf("Basic Salary : %.2f%n", basic);
         System.out.printf("HRA (10%%)    : %.2f%n", HRA);
         System.out.printf("DA (8%%)      : %.2f%n", DA);
         System.out.printf("PF (5%%)      : %.2f%n", PF);
         System.out.printf("Gross Salary : %.2f%n", gross);
      } catch (InputMismatchException e) {
```

```
            System.out.println("❌ Invalid input! Please enter a valid number.");
        } finally {
            sc.close();
        }
    }
}
```

🔲 Problem 7

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

A:

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

public class EasyMembershipDiscount {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        try {
            System.out.print("Enter total bill amount: ");
            double total = sc.nextDouble();
            sc.nextLine();

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

            double finalAmount = total;
            if (membership.equalsIgnoreCase("Silver"))
                finalAmount -= total * 0.05;
            else if (membership.equalsIgnoreCase("Gold"))
                finalAmount -= total * 0.10;
            else if (membership.equalsIgnoreCase("Platinum"))
                finalAmount -= total * 0.15;
            else System.out.println("❌ Invalid membership! No discount applied.");
```

```
            System.out.printf("%nTotal Bill      : %.2f%n", total);
            System.out.println("Membership Type : " + membership);
            System.out.printf("Final Amount    : %.2f%n", finalAmount);
        } catch (InputMismatchException e) {
            System.out.println("❌ Invalid input! Please enter numeric values.");
        } finally {
            sc.close();
        }
    }
}
```

Problem 8

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

A:

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

public class SuperEasyProductStock {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
      try {
            System.out.print("Enter number of products: ");
            int n = sc.nextInt();
            if (n <= 0) {
                System.out.println("❌ Number of products must be positive!");
                return;
            }

            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.printf("%nTotal Stock Value: %.2f%n", totalStockValue);
    } catch (InputMismatchException e) {
        System.out.println("❌ Invalid input! Please enter numbers correctly.");
    } finally {
        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.InputMismatchException;
import java.util.Scanner;

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

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

        String[] drinks = {"Espresso", "Latte", "Cappuccino", "Mocha",
"Americano"};
        double[] prices = {120, 150, 160, 170, 140};

      try {
            System.out.println("Available Drinks:");
            for (int i = 0; i < drinks.length; i++) {
               System.out.println((i + 1) + ". " + drinks[i] + " - ₹" + prices[i]);
            }

            System.out.print("Choose your drink (1-5): ");
            int choice = sc.nextInt();

            if (choice < 1 || choice > 5)
               throw new Exception("Invalid drink selection!");

            System.out.print("Select size (S/M/L): ");
            char size = sc.next().toUpperCase().charAt(0);
            double sizeCost = switch (size) {
               case 'S' -> 0;
               case 'M' -> 20;
               case 'L' -> 40;
               default -> throw new Exception("Invalid size choice!");
            };

            System.out.print("Add whipped cream? (yes/no): ");
            String cream = sc.next();
            double addOn = cream.equalsIgnoreCase("yes") ? 15 : 0;

            double total = prices[choice - 1] + sizeCost + addOn;

            System.out.printf("%n✅ Order
Summary:%nDrink: %s%nSize: %c%nAdd-on: %s%nTotal Price: ₹%.2f%n",
                  drinks[choice - 1], size, cream, total);
         } catch (InputMismatchException e) {
            System.out.println("❌ Enter numbers only for choices!");
```

```
        } catch (Exception e) {
            System.out.println("❌ " + e.getMessage());
        } finally {
            sc.close();
        }
    }
}
```

▨ Problem 2

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

A:

```
import java.util.Scanner;

public class SimpleCalculator {
    static double calculate(double a, double b, char op) {
        return switch (op) {
            case '+' -> a + b;
            case '-' -> a - b;
            case '*' -> a * b;
            case '/' -> (b != 0) ? a / b : Double.NaN;
            default -> Double.NaN;
        };
    }

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

```
        double result = calculate(n1, n2, op);
        if (Double.isNaN(result))
            System.out.println("❌ Invalid operation!");
        else
            System.out.println("✅ Result: " + result);
        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 CountCharacters {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String str = sc.nextLine();

        int vowels = 0, consonants = 0, digits = 0, special = 0;

        for (char ch : str.toCharArray()) {
            if (Character.isLetter(ch)) {
                ch = Character.toLowerCase(ch);
                if ("aeiou".indexOf(ch) != -1)
                    vowels++;
                else
                    consonants++;
            } else if (Character.isDigit(ch))
                digits++;
            else if (!Character.isWhitespace(ch))
                special++;
```

```
        }

        System.out.println("Vowels: " + vowels);
        System.out.println("Consonants: " + consonants);
        System.out.println("Digits: " + digits);
        System.out.println("Special Characters: " + 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 BankInterest {
    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.println("\nCustomer " + i + ":");
            System.out.print("Enter name: ");
            String name = sc.nextLine();
            System.out.print("Enter account type (Savings/Fixed): ");
            String type = sc.nextLine();
            System.out.print("Enter balance: ");
            double bal = sc.nextDouble();
            sc.nextLine();

            double rate = type.equalsIgnoreCase("Savings") ? 0.04 :
```

```
                type.equalsIgnoreCase("Fixed") ? 0.06 : 0;
        if (rate == 0)
            System.out.println("❌ Invalid account type!");
        else {
            bal += bal * rate;
            System.out.printf("✅ %s new balance: ₹%.2f%n", name, bal);
        }
    }
    sc.close();
  }
}
```

🟦 Problem 5

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

A:

```
import java.util.Scanner;

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

  public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    double[] tempC = new double[5];

    for (int i = 0; i < 5; i++) {
      System.out.print("Enter temperature " + (i + 1) + " in °C: ");
      tempC[i] = sc.nextDouble();
    }

    System.out.println("\nCelsius\t→\tFahrenheit");
    for (double c : tempC)
```

```
            System.out.printf("%.2f°C\t→\t%.2f°F%n", c, toFahrenheit(c));

        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 {
    static double calcBill(int units) {
        double bill;
        if (units <= 100)
            bill = units * 1.5;
        else if (units <= 300)
            bill = (100 * 1.5) + (units - 100) * 2;
        else
            bill = (100 * 1.5) + (200 * 2) + (units - 300) * 3;
        return bill;
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter units consumed: ");
        int units = sc.nextInt();

        System.out.printf("Total Bill: ₹%.2f%n", calcBill(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 str = sc.nextLine().replaceAll("\\s+", "").toLowerCase();

         String rev = new StringBuilder(str).reverse().toString();

         if (str.equals(rev))
            System.out.println(" ✅ Palindrome!");
         else
            System.out.println(" ❌ Not a palindrome.");
      } catch (Exception e) {
         System.out.println("Error: " + e.getMessage());
      } finally {
         sc.close();
      }
   }
}
```

Problem 8

Q: Read a word. Use a loop and a switch on each character to replace 'a' → '4', 'e' → '3', 'o' → '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().toLowerCase();

       StringBuilder newWord = new StringBuilder();

       for (char ch : word.toCharArray()) {
          switch (ch) {
             case 'a' -> newWord.append('4');
             case 'e' -> newWord.append('3');
             case 'o' -> newWord.append('0');
             default -> newWord.append(ch);
          }
       }

       System.out.println("Converted Word: " + newWord);
       sc.close();
   }
}
```