TASK 1:

import java.util.Random;

import java.util.Scanner;

public class NumberGame {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

Random random = new Random();

int randomNumber = random.nextInt(100) + 1; // Random number between 1 and 100

int attempts = 0;

int guess = -1;

System.out.println("Welcome to the Number Guessing Game!");

System.out.println("Guess a number between 1 and 100.");

while (guess != randomNumber) {

System.out.print("Enter your guess: ");

guess = scanner.nextInt();

attempts++;

if (guess < randomNumber) {

System.out.println("Too low! Try again.");

} else if (guess > randomNumber) {

System.out.println("Too high! Try again.");

} else {

System.out.println("Congratulations! You guessed the correct number in " + attempts + " attempts.");

}

}

scanner.close();

}

}

TASK 2:

import java.util.Scanner;

public class StudentGradeCalculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of subjects: ");

int subjects = scanner.nextInt();

int[] marks = new int[subjects];

int totalMarks = 0;

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

System.out.print("Enter marks for subject " + (i + 1) + " (out of 100): ");

marks[i] = scanner.nextInt();

totalMarks += marks[i];

} double averagePercentage = (double) totalMarks / subjects;

char grade;

if (averagePercentage >= 90) {

grade = 'A';

} else if (averagePercentage >= 80) {

grade = 'B';

} else if (averagePercentage >= 70) {

grade = 'C';

} else if (averagePercentage >= 60) {

grade = 'D';

} else {

grade = 'F';

}

System.out.println("\nTotal Marks: " + totalMarks);

System.out.println("Average Percentage: " + averagePercentage + "%");

System.out.println("Grade: " + grade);

scanner.close();

}

}

TASK 3:

import java.util.Scanner;

class BankAccount {

private double balance;

public BankAccount(double initialBalance) {

this.balance = initialBalance;

}

public double getBalance() {

return balance;

}

public boolean withdraw(double amount) {

if (amount > 0 && amount <= balance) {

balance -= amount;

return true;

}

return false;

}

public void deposit(double amount) {

if (amount > 0) {

balance += amount;

}

}

}

class ATM {

private BankAccount account;

private Scanner scanner;

public ATM(BankAccount account) {

this.account = account;

this.scanner = new Scanner(System.in);

}

public void showMenu() {

int choice;

do {

System.out.println("\nATM Menu:");

System.out.println("1. Check Balance");

System.out.println("2. Deposit");

System.out.println("3. Withdraw");

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

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

choice = scanner.nextInt();

switch (choice) {

case 1:

System.out.println("Balance: $" + account.getBalance());

break;

case 2:

System.out.print("Enter deposit amount: ");

double depositAmount = scanner.nextDouble();

account.deposit(depositAmount);

System.out.println("Deposited: $" + depositAmount);

break;

case 3:

System.out.print("Enter withdrawal amount: ");

double withdrawAmount = scanner.nextDouble();

if (account.withdraw(withdrawAmount)) {

System.out.println("Withdrawn: $" + withdrawAmount);

} else {

System.out.println("Insufficient balance or invalid amount.");

}

break;

case 4:

System.out.println("Exiting ATM. Thank you!");

break;

default:

System.out.println("Invalid choice, please try again.");

}

} while (choice != 4);

}

}

public class ATMInterface {

public static void main(String[] args) {

BankAccount myAccount = new BankAccount(1000);

ATM atm = new ATM(myAccount);

atm.showMenu();

}

}

TASK 4:

import java.util.\*;

class Question {

String question;

String[] options;

int correctAnswer;

public Question(String question, String[] options, int correctAnswer) {

this.question = question;

this.options = options;

this.correctAnswer = correctAnswer;

}

public void displayQuestion() {

System.out.println(question);

for (int i = 0; i < options.length; i++) {

System.out.println((i + 1) + ". " + options[i]);

}

}

public boolean checkAnswer(int userAnswer) {

return userAnswer == correctAnswer;

}

}

public class QuizApp {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

List<Question> questions = new ArrayList<>();

questions.add(new Question("What is the capital of France?", new String[]{"Berlin", "Madrid", "Paris", "Rome"}, 3));

questions.add(new Question("Which language is used for Android development?", new String[]{"Java", "Python", "C#", "Swift"}, 1));

questions.add(new Question("What is 5 + 3?", new String[]{"5", "8", "10", "15"}, 2));

int score = 0;

for (Question q : questions) {

q.displayQuestion();

System.out.print("Enter your choice (1-4) within 10 seconds: ");

long startTime = System.currentTimeMillis();

int userAnswer = -1;

// Start a timer for 10 seconds

while (System.currentTimeMillis() - startTime < 10000) {

if (scanner.hasNextInt()) {

userAnswer = scanner.nextInt();

break;

}

}

if (userAnswer != -1 && q.checkAnswer(userAnswer)) {

System.out.println("Correct!\n");

score++;

} else {

System.out.println("Wrong or time expired!\n");

}

}

System.out.println("Quiz Over! Your final score: " + score + "/" + questions.size());

scanner.close();

}}

TASK 5:

import java.util.\*;

class Course {

String code, title;

int capacity;

List<String> students;

public Course(String code, String title, int capacity) {

this.code = code;

this.title = title;

this.capacity = capacity;

this.students = new ArrayList<>();

}

public boolean registerStudent(String studentID) {

if (students.size() < capacity) {

students.add(studentID);

return true;

}

return false;

}

public boolean removeStudent(String studentID) {

return students.remove(studentID);

}

public void displayCourse() {

System.out.println(code + " - " + title + " (Capacity: " + students.size() + "/" + capacity + ")");

}

}

public class CourseRegistration {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

Map<String, Course> courses = new HashMap<>();

courses.put("CS101", new Course("CS101", "Intro to Programming", 3));

courses.put("CS102", new Course("CS102", "Data Structures", 2));

courses.put("CS103", new Course("CS103", "Operating Systems", 2));

while (true) {

System.out.println("\n1. List Courses\n2. Register for a Course\n3. Remove a Course\n4. Exit");

System.out.print("Choose an option: ");

int choice = scanner.nextInt();

if (choice == 1) {

for (Course course : courses.values()) {

course.displayCourse();

}

} else if (choice == 2) {

System.out.print("Enter Course Code: ");

String courseCode = scanner.next();

if (courses.containsKey(courseCode)) {

System.out.print("Enter Student ID: ");

String studentID = scanner.next();

if (courses.get(courseCode).registerStudent(studentID)) {

System.out.println("Registration successful!");

} else {

System.out.println("Course full!");

}

} else {

System.out.println("Invalid Course Code.");

}

} else {

break;

}

}

scanner.close();

}

}