CODSOFT TASK 4

QUIZ APPLICATION WITH TIMER

import java.util.Scanner;

import java.util.concurrent.TimeUnit;

public class QuizProgram {

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

static int score = 0;

static final int QUESTION\_TIME\_LIMIT\_SECONDS = 10;

public static void main(String[] args) {

displayWelcomeMessage();

try {

startQuiz();

} catch (TimeLimitExceededException e) {

System.out.println("\nTime's up! Quiz terminated.");

}

displayResult();

}

public static void displayWelcomeMessage() {

System.out.println("Welcome to the Quiz Program!");

System.out.println("You have " + QUESTION\_TIME\_LIMIT\_SECONDS + " seconds to answer each question.");

System.out.println("Let's begin...\n");

}

public static void startQuiz() throws TimeLimitExceededException {

Question[] questions = {

new Question("What is the capital of France?", new String[]{"A. Paris", "B. London", "C. Rome", "D. Berlin"}, "A"),

new Question("Which planet is known as the Red Planet?", new String[]{"A. Venus", "B. Mars", "C. Jupiter", "D. Saturn"}, "B"),

new Question("What is the powerhouse of the cell?", new String[]{"A. Nucleus", "B. Mitochondria", "C. Ribosome", "D. Golgi apparatus"}, "B")

};

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

System.out.println("Question " + (i + 1) + ":");

displayQuestion(questions[i]);

String userAnswer = getUserAnswerWithTimer(questions[i]);

checkAnswer(questions[i], userAnswer);

System.out.println();

}

}

public static void displayQuestion(Question question) {

System.out.println(question.getQuestion());

for (String option : question.getOptions()) {

System.out.println(option);

}

}

public static String getUserAnswerWithTimer(Question question) throws TimeLimitExceededException {

System.out.print("Your answer (within " + QUESTION\_TIME\_LIMIT\_SECONDS + " seconds): ");

Thread timerThread = new Thread(() -> {

try {

TimeUnit.SECONDS.sleep(QUESTION\_TIME\_LIMIT\_SECONDS);

throw new TimeLimitExceededException();

} catch (InterruptedException e) {

// Timer thread interrupted because time's up

}

});

timerThread.start();

String userAnswer = scanner.nextLine().toUpperCase();

timerThread.interrupt(); // Stop the timer thread

return userAnswer.isEmpty() ? null : userAnswer; // Return null if user did not input anything

}

public static void checkAnswer(Question question, String userAnswer) {

if (userAnswer == null) {

throw new TimeLimitExceededException();

}

if (userAnswer.equals(question.getCorrectAnswer())) {

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

score++;

} else {

System.out.println("Incorrect! The correct answer is " + question.getCorrectAnswer());

}

}

public static void displayResult() {

System.out.println("Quiz completed!");

System.out.println("Your score: " + score + "/" + Question.getTotalQuestions());

}

}

class Question {

private String question;

private String[] options;

private String correctAnswer;

private static int totalQuestions = 0;

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

this.question = question;

this.options = options;

this.correctAnswer = correctAnswer.toUpperCase();

totalQuestions++;

}

public String getQuestion() {

return question;

}

public String[] getOptions() {

return options;

}

public String getCorrectAnswer() {

return correctAnswer;

}

public static int getTotalQuestions() {

return totalQuestions;

}

}

class TimeLimitExceededException extends RuntimeException {

public TimeLimitExceededException() {

super("Time limit exceeded!");

}

}