Assignment 5

Develop a concurrent **Rust** program using threads for this assignment.

This assignment must be completed using **Rust**.

A university computer science department has a tutor who helps students with their programming assignments during regular office hours. The tutor's office is rather small and has room for only one desk with a chair and computer. There are three chairs in the hallway outside the office where students can sit and wait if the tutor is currently helping another student. When there are no students who need help during office hours, the tutor sits at the desk and takes a nap. If a student arrives during office hours and finds the tutor sleeping, the student must awaken the tutor to ask for help. If a student arrives and finds the tutor currently helping another student, the student sits on a chair in the hallway and waits. If no chairs are available, the student will come back at a later time.

Using Rust thread and concurrent features, implement a solution that coordinates the activities of the tutor and the students.

**The Students and the Tutor**

Using threads, begin by creating 10 students. Each will run as a separate thread.

The tutor will run as a separate thread as well.

Student threads will alternate between studying for a period of time and seeking help from the tutor.

If the tutor is available, students will obtain help. Otherwise, they will either sit in a chair in the hallway or, if no chairs are available, will seek help at a later time.

If a student arrives and notices that the tutor is sleeping, the student must notify the tutor.

When the tutor finishes helping a student, the tutor must check to see if there are students waiting for help in the hallway. If so, the tutor must help each of these students in turn. If no students are present, the tutor may return to napping.