SOFTWARE ENGINEERING CS 487
Homework #1

Name: Anirudha Kapileshwari
Email: akapileshwari@hawk.iit.edu

Consider an automated (robot) tutor who helps a student with their assignments (but avoids doing the work for the student).

1. Clarify each of the following requirements to minimize ambiguity:
a. "Robo-tutor must explain concepts effectively."
=>
1) Robo-tutor should be clear and not confusing.
2) The robot should be like a human teacher using examples while teaching, drawing figures, etc
3) Use of student-understandable language and speed also have human-like speech
4) It should check if the tutorial and objective of the teaching is correct and on the same track
5) Check for student level and understanding

b. "Robo-tutor must recognize a student's mistake and explain the error without 'giving away' the answer."
=>
1) Firstly check for the mistake of the student.
2) Checking if the student is logically and technically correct or wrong.
3) If the student is Wong give him feedback with a hint or a path to get the correct answer.
4) Should not provide the answer key.
5) Check for the student how close he is to the answer.

c. "Robo-tutor must make learning fun."
=>
1) Robo-tutor should have a humorous touch while teaching as fun in teaching makes the student take an interest in learning.
2) Taking quizzes, concept-related games, etc helps students understand more.
3) It should set a fun learning environment where all students can interact.

2. Document a test case for each of the clarified requirements (definitively determine correctness).
=>
"Robo-tutor must explain concepts effectively."

Input	Behavior
To explain a concept in Software Engineering to a student	Teaching should be clear and understandable
	Explanation should be in student-understandable language and level
	Matches the learning Objective.
	Correct Teaching Flow

Input	Behavior
Mistake in an Assignment Given to a Student	Correctly Identify Mistake
	Help with hints or steps to get to the answer
	Should not provide Answer Key
	Check if the mistake is not repeated

"Robo-tutor must make learning fun."

Input	Behavior
To explain a concept in Software Engineering to a student	The learning is Enjoyable
	It will have games, quizzes, etc
	Set and fun environment to make students interact and enjoy

3. Propose an H-C-I "protocol" to allow a student and a robo-tutor to effectively interact:
=>

1) Start - Introduction, Welcome the student and provide him settings for adjusting features
2) Settings - Student will now adjust the language, speed of speech, topic, etc
3) Start with the topic - Make it fun and enjoyable
4) Ask for any Questions - after a small explanation check if the student has any questions
5) Quiz and Interaction - Topic related quizzes and help students in finding answers without giving answers
6) check the answers - Check for mistakes and provide Corrections with explanations.
7) Track Progress - Do analysis of the student.
8) Give End Details - Give feedback to students and a report of strengths and weaknesses.
9) End the session - Back to the main menu
10) Continue learning.

If the student is not able to select settings provide a default language, level and topics which should be learned by the selected age group.