Software for a laser obstacle course (laser maze)

Description

A laser obstacle course is a form of entertainment, where a room with lasers, light detectors and smoke is used to create beams of light which have to be avoided by a participating player in order to win. Usually, an electronic stopper is used to measure the time it took the player to successfully complete the course. Interrupting the light beams one or several times results in a failure to complete the course.

![Examples of laser obstacle courses](image)

The Challenge

Two communicating programmes will have to be written on two different platforms. First platform is the Arduino which controls any peripheral devices and handles the input from the light sensors and any buttons. Programming the Arduino will have to be accomplished in C or in Arduino C.

The second platform is a PC, which harbours a user-interface that enables inserting player names, handles the hall-of-fame, outputs sounds any feedback sounds, displays video from an infrared camera and provides visual feedback to the instructor to assist with the alignment of the laser sources to the laser detectors during setup. The software must enable editing of certain settings - such as the total allowable beam interruptions and the time penalty for interrupting a beam. Eventually, it must be possible to run this programme from an executable file in order to make using this as simple as possible. This programming task can be completed using any suitable programming language. It is encouraged to suggest any additional functionality for the project.
Additional Information

A primitive prototype of the laser obstacle course has been created and is located at UT’s Institute of Physics. Upon agreement it is possible to see the prototype.

First prototype under construction in UT Physics Institute

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