Automatic Recue System in Private Swimming Pools

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Introduction

In recent years there is an increasing of numbers of families that have a swimming pool in their homes. No doubt those private swimming pools represent an entertainment facility which increases the life quality of people, but in the same time, private swimming pools can be a source of serious or even deadly incidents specially for children in case of the absence of adult observation.
This project aims to solve this problem, by building an automated rescue system around the pool. This system is able to prevent the child from drowning into the pool, in addition our system has the ability to differentiate between kids and adults. The idea of the project came originally from our supervisor Dr. Raed Amro.
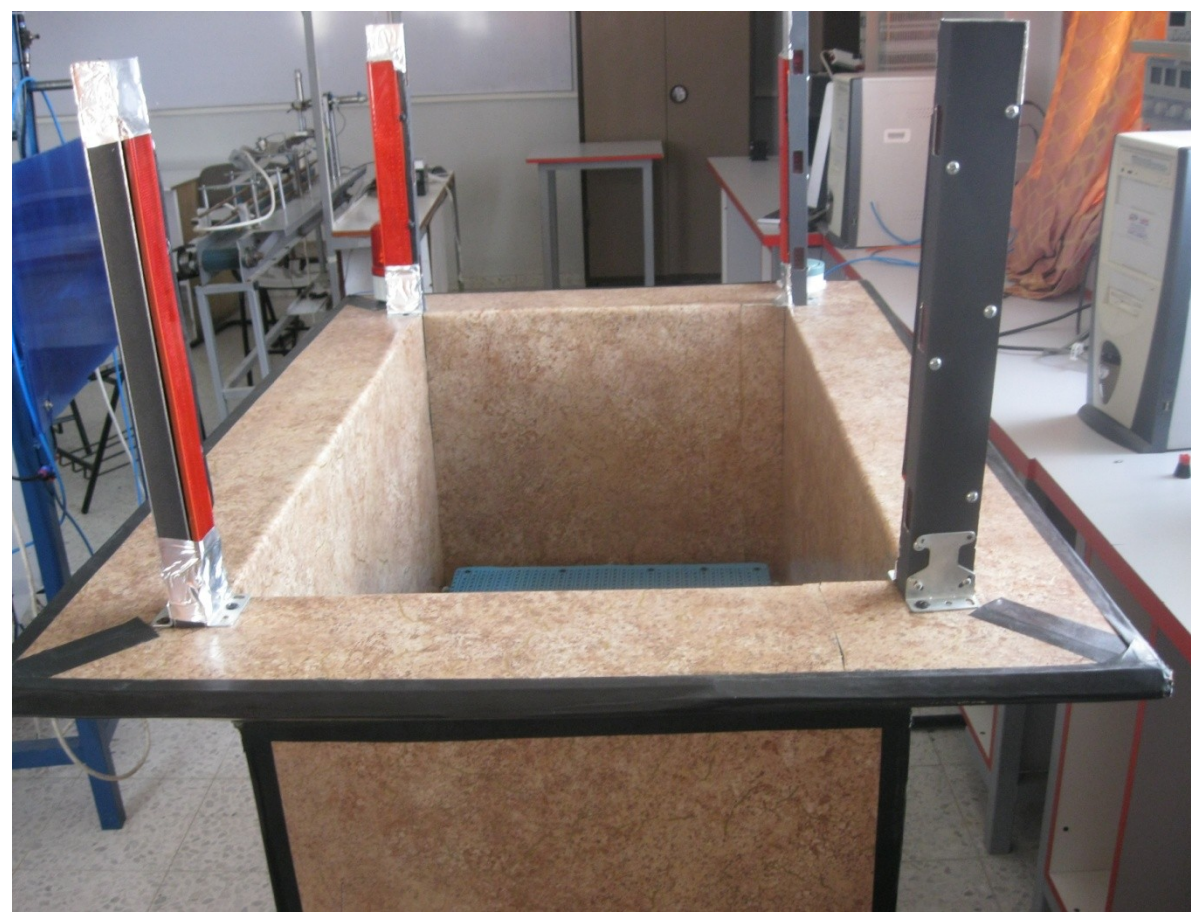
Project Objectives:

1. To make the private pools more safe for children.
2. To reduce the number of drowning incidents in private pools..

Results:

1-The system prevents the child from drowning in the pool.
2-The sensors detected the child.
3-The cylinder was completely fully extended after 6 seconds of receiving the signal from the controller.
The system sent an alarm to the people around the pool and in the home.
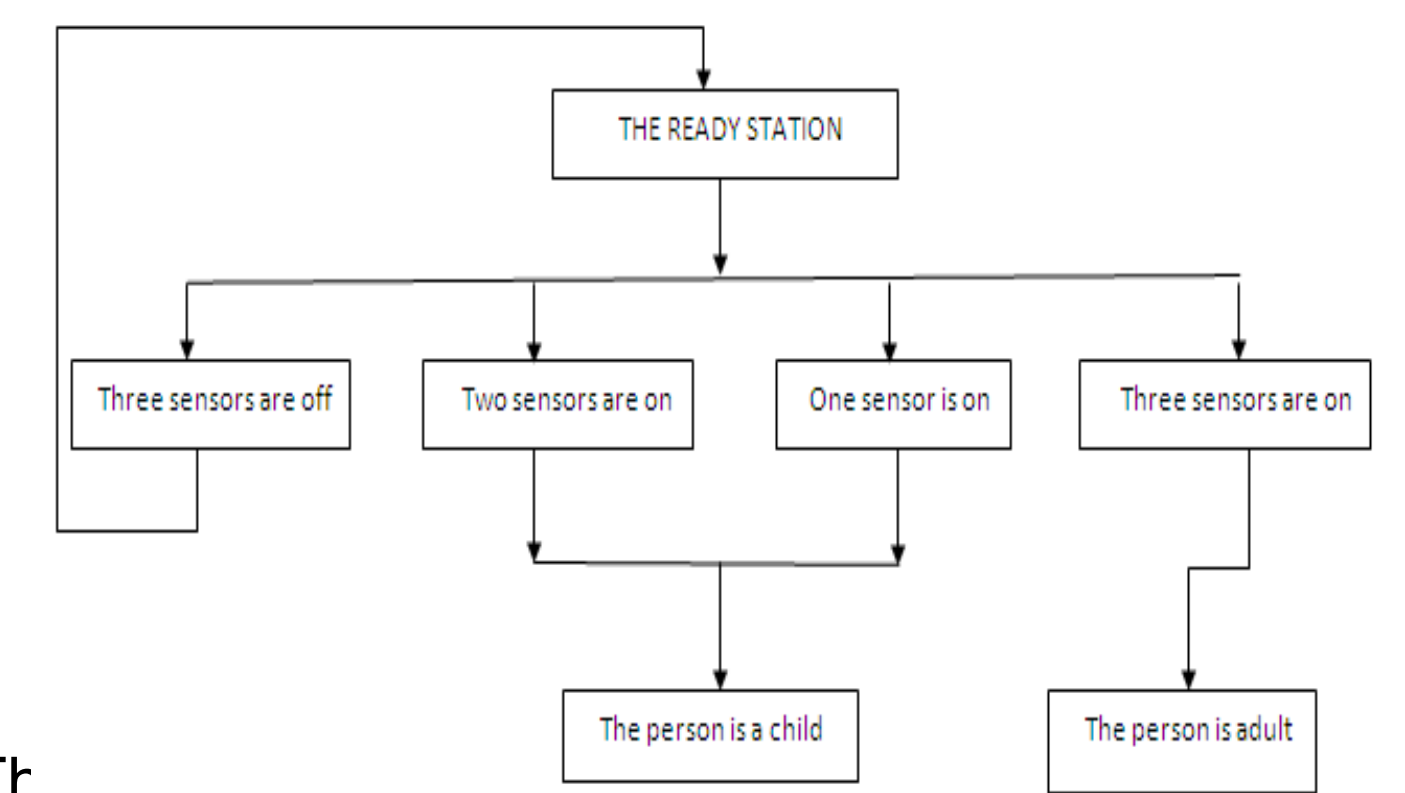5-The sensors system can't differentiate between human and other things.

Proposed project

The idea of the system is based on activation of a safety ground mounted on the bottom of the pool. In the normal state (there's no children around the pool) ,the plate remains in the bottom without moving .When a child comes to the pool, the sensors that mounted around the pool detect the child, so the plate is lifted up to prevent a child from drowning into the pool. Then the plat still in the above carrying the child with it, this process is achieved by using pneumatic cylinders mounted on the bottom. Also an alarm is sent to the people around the pool and in the home, this alarm brings the attention of the family. When the user makes a reset, the plate move down to the bottom and the system now is in the ready station

Project Block Diagram:

Figure 2 is the general block diagram for a project,

F2: Rest the system.
F3: Standby.
F4: the system detect child.
F5: The system detect adult.
S0,S1,S2,S3: are Switches.
S1-S8: Lower Sensors.
S9-S12: Upper sensors.
R: Red Light
Y: Yellow Light
Ora: Orange Light
G: Green Light.

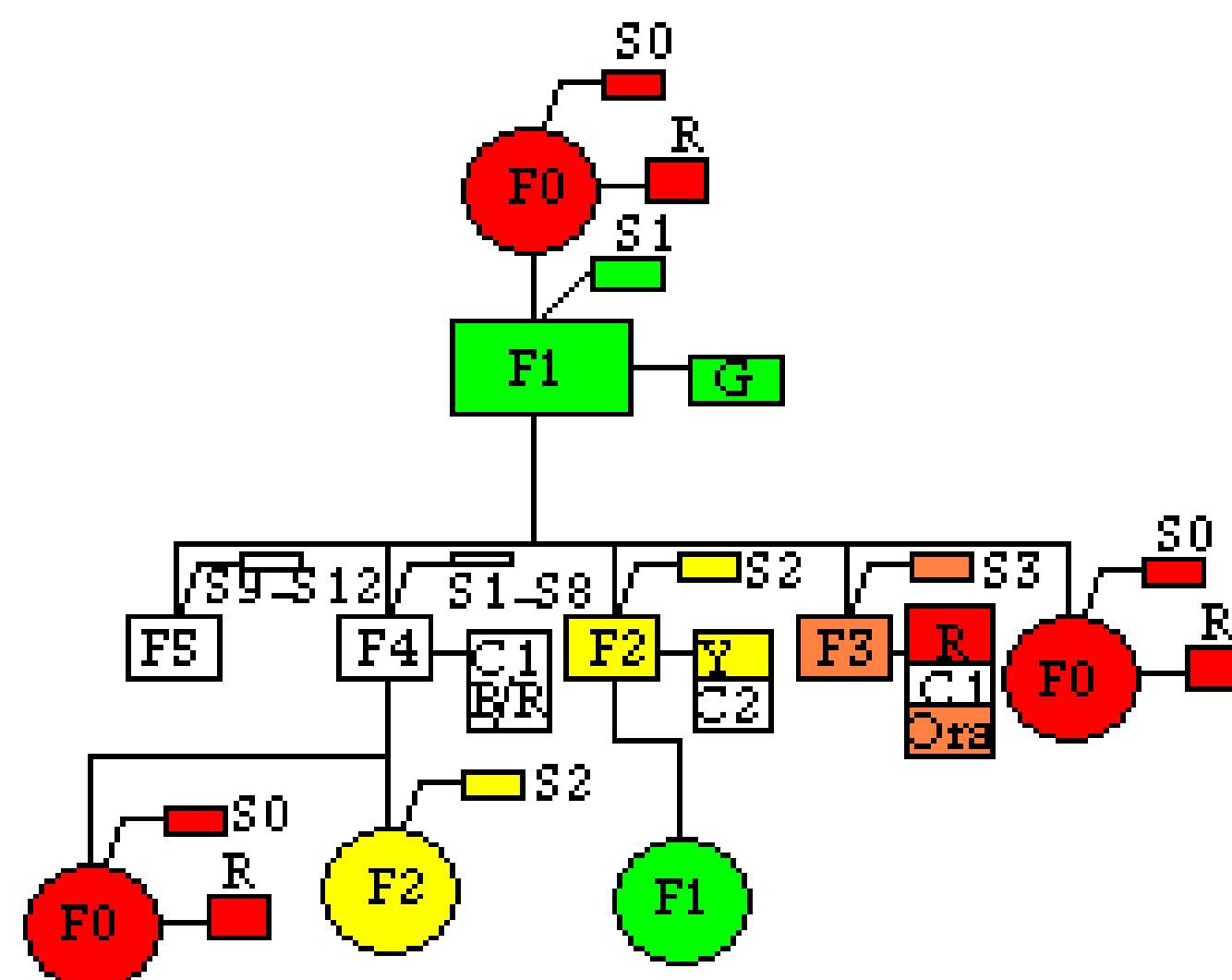## System Design and Implementation:

The system design to work automatically if person is on the verge of falling into the swimming pool by using four tower of photoelectrical sensors. If person cut 's all sensors then the controller consider him adult and if he cut the first or the second sensors then it consider him child as shown in figure 3.

Th... 4.