Arduino Based Mp3 Player And Alarm Clock System

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Abstract- *The Assistive Technology is an integrative area of cognition, which incorporate products, especial software and hardware that aim to raise or extend functional abilities of people with disabilities, in capabilities or reduced mobility, improving their accessibility, social incorporation, digital incorporation and quality life . The digital incorporation of people with disabilities, discussed in , is the allow able to access autonomously to cognition and Communication Technologies for clever growth (education, knowledge generation and leisure activities) and operational, promoting the incorporate of all in the cognition society. The software presented in this paper, called "MP3 Player", was implemented using the integrated environment of visible development with support for object-oriented programming and used to make applications with graphical interface. That application is designed to respond to 7 (seven) voice commands: "Prior", "Next", "Select", "Clear", "Play", "Stop", and "Close". By means of the commands "Prior", "Next", "Select", and "Clear" the user select which songs will be played. The "Play" command connect the player and the selected songs status to be played. The "Stop" command stops the music running and, finally, the "Close" command shuts down the application. The ability of speech recognition implemented in software was designed using the component "DEscuta" of the technology "DVOZ Biometria".*

Keywords- Arduino, MP3 Player, TFT Display, GUI, SD Card, Speaker.

I. INTRODUCTION

In this project we will show you how you can make an Arduino Touch Screen MP3 Music Player and Alarm Clock. If we enter the Music Player we can start playing the music by pressing the big Play button in the middle of the screen. Right beside it, there are two more buttons, for playing the previous or the next song. On the other hand, if we enter the Alarm Clock we can set an alarm by using the two buttons for setting the hours and the minutes. When the alarm will be activated, a song will start playing at a higher volume, and it will keep playing until we press the "Dismiss" button.

The Mini MP3 Module is a small and low cost MP3 module with an simplified output directly to the speaker. The module can be used as a stand-alone module with attached battery, speaker and push buttons or used in combination with an Arduino or any other microcontroller with RX/TX capabilities. It is perfectly integrates hard decoding module, which supports common audio formats such as MP3, WAV and WMA.

This project we will be building a simple mp3 player which will have 3 buttons, The rst button will be used to Play/Pause the music currently being played, while the second one will be used to load the next song(the next button) and the last one will be used to load the previous song (the previous button. it also supports TF card with FAT16, FAT32 le system. Through a simple serial port, you can play the designated music without any other tedious underlying operations.

II. OBJECTIVES AND PROBLEM STATEMENT OF PROJECT

There are four objectives of this project, which is stated in the following texts:

- To make the cost is effective.
- To reduce the Noise pollution of manually operated MP3 player as far as possible.
- The home screen features a clock, date and temperature information, as well as, two buttons for the Music Player and the Alarm Clock.

Problem Statement

As per our college requirement we creating this project for to listening the National Anthem at 10 AM and listening the Vande-Mataram at 4:45 PM. That's why we built this project as per our college requirement.

III. BLOCK DIAGRAM

The basic block diagram of the Arduino based Mp3 player & Alarm Clock System consists of:

1. BY8001-16pMP3 Player
2. Power Supply

3. DS3231 RTC
   - Arduino Mega2560 R3
   - TFT Display
   - Speakers

Now lets take a look how this device works. It uses an Arduino Mega board and a 3.2 TFT touch screen with a suitable shield for connecting the screen with the Arduino Board. For playing the music, it uses the BY8001 MP3 Player module and for the alarm clock it uses the DS3231 Real Time Clock module. We can note here that the TFT shield is blocking the free pins of the Arduino board so we need to make a custom-made pin header which we will be able to insert them between the shield and the Arduino.

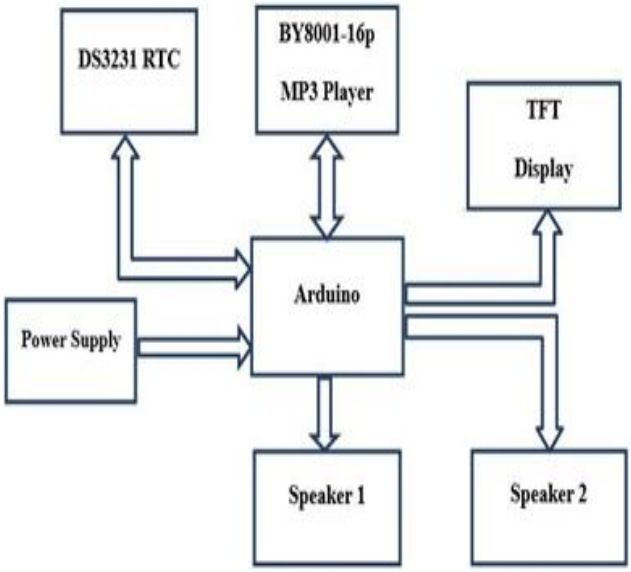

Fig1: Block diagram of floor cleaning robot

Also note that for powering the Arduino we need to solder additional pin header to the 5 V pin on the shield, as the shield already uses all Arduino VCC pins. Once we connect everything together we can proceed with programming the Arduino. However, before we continue I would to suggest you to check my previous detailed tutorials for the TFT touch screen and the DS3231 Real Time Clock module. And as for the MP3 Player module I will give it a quick explanation here in this article.

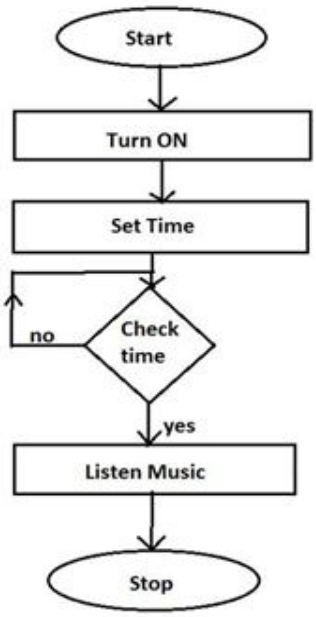

Fig2: Flow chart of floor cleaning robot

Arduino Uno: The Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to serial converter. This board is very simple and can be easily used, everything you need to support the microcontroller is in this board, just plug it in a computer via USB cable and power using an AC-to-DC adapter or battery to get started.

Fig 3: Arduino Mega 2560 Board

TFT Display: A Thin-film-transistor liquid-crystal display (TFT LCD) is a variant of a liquid-crystal display (LCD) that

uses thin- lm-transistor (TFT) technology to improve image qualities such as addressability and contrast. Thin- lm-transistor liquid-crystal display (TFT LCD) is a variant of a liquid-crystal display (LCD) that uses thin- lm-transistor (TFT) technology to improve image qualities such as addressability and contrast. A TFT LCD is an active matrix LCD, in contrast to passive matrix LCDs or simple, direct-driven LCDs with a few segments. TFT LCDs are used in appliances including television sets, computer monitors, mobile phones, handheld devices, video game systems, personal digital assistants, navigation systems, projectors, and car instrument clusters.

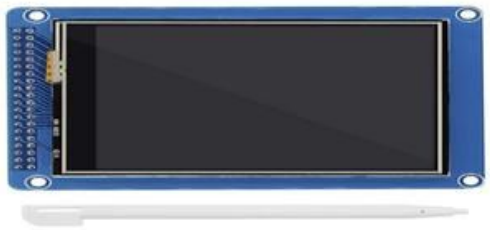

Fig 4: TFT Display Module

MP3 Module: The BY8001-16P is a compact, high quality MP3 module. The BY8001s master chip (SSOP24) supports decoding MP3 and WAV formats. The Module also has built-in TF card holder, and supports replacement audio content by an external USB stick using USB data cable. The module also has a built-in 3w power amplifer that can directly drive a single 3W speaker. This module was independently developed by Shenzhen Electronic Technology Ltd.

Fig 4: MP3 Module

IV. SIMULATIONAND OBSERVATIONS

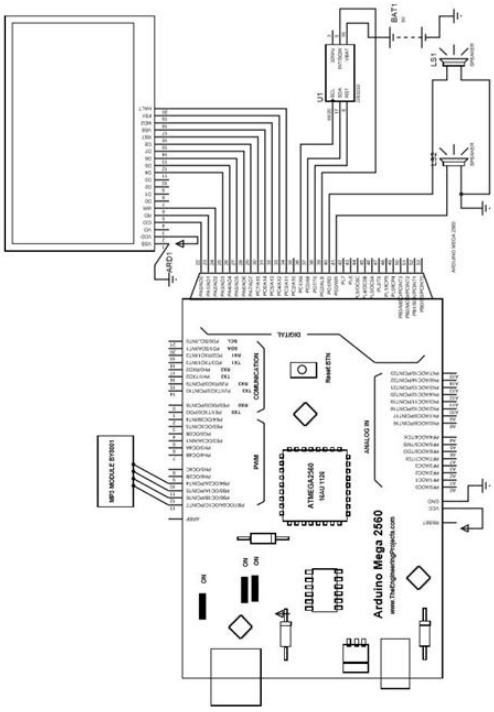

Fig.5: Simulation of our project

To program the Arduino the Arduino IDE is used which is free software that enables programming in the language that the Arduino understands. In the case of the Arduino, the language is based on C/C++ and can even be extended through C++ libraries. The IDE enables writing a computer program which is a set of step-by-step instructions that is then uploaded to the Arduino. Arduino will then carryout those instructions and interact with whatever it has been connected to it.

Fig 6: Prototype of our project

The Proteus Design Suite is a proprietary software tool suite used primarily for electronic design automation. Arduino will then carryout those instructions and interact with whatever it has been connected to it. The software is used mainly by electronic design engineers and electronic technicians to create electronic schematics and electronic prints for printed circuit boards. It was developed in

Yorkshire, England by Lab center Electronics Ltd and is available in English, French, Spanish and Chinese languages.

V. FUTURE SCOPE

- An Arduino based MP3 Player advancement can be done in this design. The advantage of this design is that the timings can be edited according to an individuals requirement. Hence it can here used in finite number of times.
- Automatic alarm clock system with announcement is also played according to the programmed time using this design.
- In future much advanced automatic alarm clock system can be made.

VI. CONCLUSION

Finally in this project we can operate this music player manually as well, as as per our time requirement. So we listen the music as per our mood. To reduce the noise pollution of manually operated MP3 players as far as possible. The home screen features a clock, date and temperature information as well as two buttons for the music player and the alarm clock.

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