PROJECT TITLE:

IoT Based Safety Gadget for Child Safety Monitoring and Notification

TEAM ID:

PNT2022TMID12698

TEAM MEMBERS:

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ABSTRACT

Attacks on children have increased at an alarming rate in recent years, with victims finding themselves in risky situations with few options for reaching their relatives. The primary purpose of this project is to develop a smart wearable gadget for children that leverages modern technologies to assure their safety. As a result, this method is seen as sending an SMS from the children's wearable to their parents. Through the use of a GSM module, this invention leverages cutting-edge technology to protect the child. The wearable will incorporate an ESP8266, GSM, GPS, a temperature sensor, and an accelerometer sensor. If the kid falls unexpectedly, the accelerometer detects it and warns the parents. As a result, the parent feels secure.

INTRODUCTION

The Internet of things (IoT) describes the network of physical objects “things” that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet.

Things have evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of things. In the consumer market, IoT technology is most synonymous with products pertaining to the concept of the "smart home", including devices and appliances that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smartphones and smart speakers. IoT can also be used in healthcare systems.

The IoT is the strategy for gadgets that encase hardware, and network, which enables these devices to fix, act together and switch information. IoT incorporates broadening Internet beneficial than standard gadgets. Inserted through innovation, these gadgets can banter and coordinate over the Internet, and they can be a little checked and restricted**.**

The inspiration for the wearable systems from the growing demand for kid protection in modern times, since there are situations of children becoming lost in densely populated regions. This study focuses on the essential point that those surrounding missing children may aid and play a vital part in the child's safety until they are reunited with their parents. As a result, SMS is designed to be used as the communication type between the parent and child's wearable gadget, as it has lower failure risks than Wi-Fi and Bluetooth. Despite the fact that technology

is continually advancing, these actions continue to take place in a variety of settings. The primary purpose of this project is to employ cutting-edge technology to develop a device that delivers "Child Safety" to safeguard children, which will be significantly more successful than present ways of aiding victims. The gadget has IoT monitoring as well as a GSM module, allowing the youngster to be observed at all times. It also features a number of sensors attached to a CPU that measure temperature and other characteristics and inform the parents. The GSM module aids in the transmission of information through SMS to selected contacts. The gadget in this technique attempts to provide kid safety while staying inconspicuous.

EXISTING SYSTEM

To design and implement a child safety wearable device using wireless technology which is a smart device

It provides parents with information such as temperature, along with the alarm buzzer.

This device responds to commands sent by guardian to ensure safety of children. It provides temperature, heartbeats and buzzer in emergency case.

DISADVANTAGES

- Old technology, GSM Technology is used.
- Only temperature is monitored.
- Time delay issues were present.

PROPOSED SYSTEM

The security of the child by using wearable device is to help the parent to locate their child easily and the location can be sent to the parent's mobile via SMS. Some past works on SMS based tracking which is not supportive to get an accurate temperature and in our proposed system we have provided real time tracking.

ADVANTAGE AND APPLICATIONS

- IOT based wearable for children.
- Can monitor the temperature and fall detection the child.
- Sensor data are accurate and will updated for every minute in the cloud server.
- If any abnormalities found automatically it makes a call to the parents or guardian.

LITERATURE REVIEW

TITLE: Heart Rate Monitoring System Using Finger Tip Through Arduino And Processing Software

AUTHOR: B. Mallick and A. K. Patro

YEAR: 2016

DESCRIPTION: This paper offers the design and construction of a wireless heart rate monitoring system based on the Arduino Lilypad, which includes the ability to send SOS messages or make phone calls using the GSM module. If abnormal conditions are detected during monitoring, a call or a message is sent to the designated contacts, depending on the severity of the problem. The data transmission is made wireless with the help of an RF module, which was programmed using the Arduino IDE. The concept of a smart wearable for tiny children is introduced in the study

TITLE: Wearable Heart Rate Monitor Technology Accuracy in Research: A Comparative Study between PPG and ECG Technology

AUTHOR: Dustin T. Weiler, Stefanie O. Villajuan, Laura Edkins, Sean Cleary and Jason J. Saleem

YEAR: 2017

DESCRIPTION: The main purpose of this article is to use a GSM module to enable SMS communication between the child's wearable and the parent. Parents can text particular phrases such as "LOCATION," "TEMPERATURE," "SOS," "BUZZ," "UV," and so on, and the wearable device will answer with a text outlining the child's current location, which when pressed will show the child's exact location on Google maps. It also shows the temperature and UV radiation index so that parents can keep an eye on their children's surroundings.

TITLE: Wireless monitoring system of the heart rate

AUTHOR: Marius Valerian Paulet, Oana Maria Neacsu and Andrei Salceanu,

YEAR: 2014

DESCRIPTION: The research proposes the use of an IoT device to supply the server with the patient's precise GPS coordinates. The doctor and hospital personnel can determine the patient's exact location and serve him using a web interface on the server and Google maps. This device can also be useful for animals and transportation services where location is important. Sensors such as the GPS Neo 6m, Arduino, GSM Sim800L, and different programming libraries and APIs are used in this system.

TITLE: Design and Implementation of an Accidental Fall Detection System for Elderly

AUTHOR: Enku Yosef Kefyalew, Abubakr Rahmtalla Abdalla Mohamed

YEAR: 2013

DESCRIPTION: The aim of the project was to design and build a prototype of design and implementation of an accidental fall detection system for elderly which alerts for the loved ones or care givers when the elder populations are in need of immediate attention due to an emergency. Then having developed this prototype it worth much as long we are dealing with human safety. the caring of elderly person becomes a globally concerned problem. The old want an independent living space and their family members need to work, so an intelligent old person surveillance system is in urgent need. An accidental fall detection system for elderly is constructed to detect whether an old person has fallen down and inform his or her family members through public mobile service, so as to get the elderly helped in time. This fall detection system is created using microcontroller technology as the heart of the system, the accelerometer as to

detect the sudden movement or fall and the Global System for Mobile (GSM) modem, to send out message to the receiver without any participation of the person who needs help. The system designed can detect the accidental fall of people accurately and send a message originally edited to supposed family members.

TITLE: Fall Detection Sensor System for the Elderly

AUTHOR: Alicia Y.C. Tang , Chin-Hao Ong , Azhana Ahmad

YEAR: 2015

DESCRIPTION: This paper describes the design of the android-based fall detection sensor system. The system is able to acknowledge a falling incident to the contact person such that the incident can be reported to the ambulance department soonest possible, and to provide necessary medical treatments for the injured elderly. The design and implementation combines both hardware and software that work seamlessly in detecting and reporting a fall at home. The hardware part consists of the falling detection sensor that detects the body position of the user whether it is on a falling mode while the software side consists of some formulas that detect the fallings and triggers the alarm.

TITLE: Automatic fall detection of elderly living alone at home environment

AUTHOR: Ivo T. Iliev , Serafim D. Tabakov , Ivan A. Dotsinsky

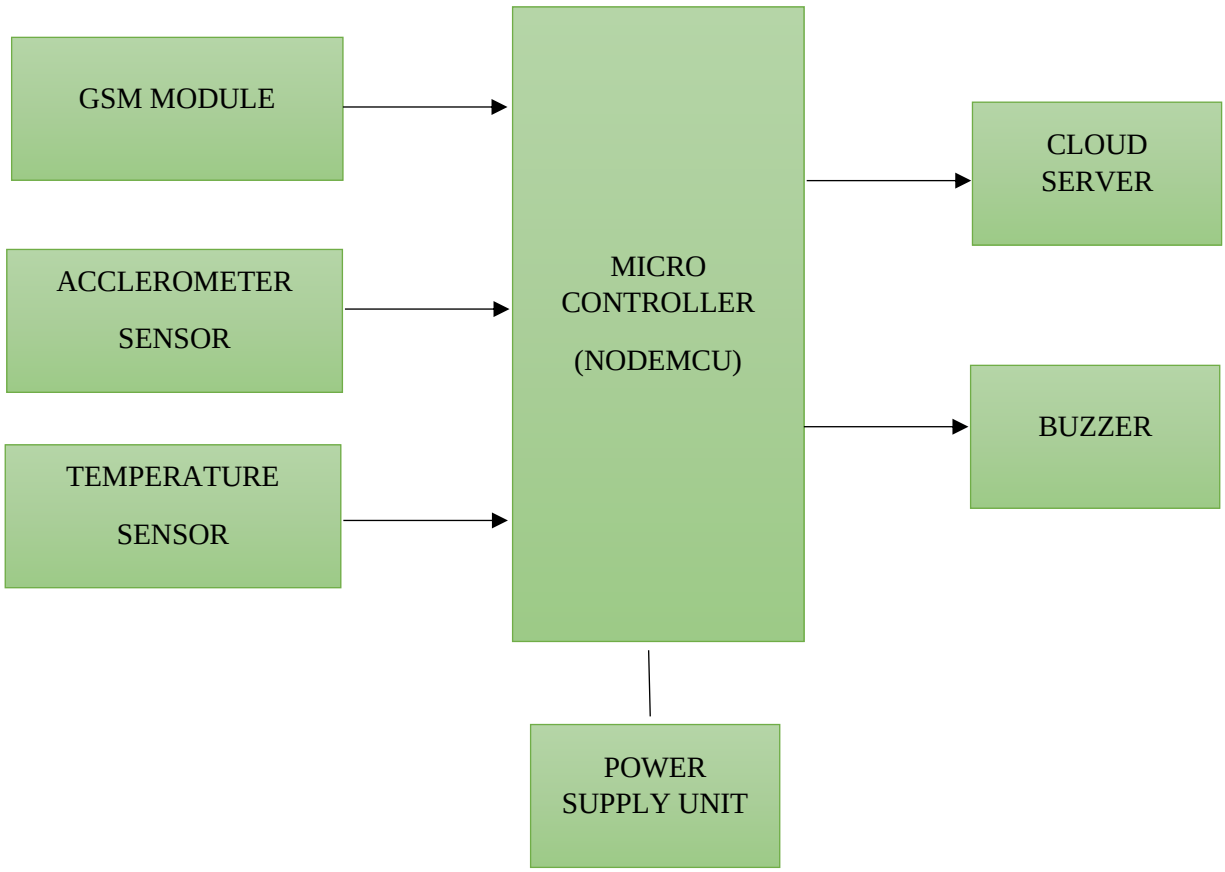
YEAR: 2011

DESCRIPTION: Different sensor systems have been proposed for monitoring the functional abilities in elderly and for detecting their functional decline. The sensors are located in the bathroom, bedroom, closet, front door, kitchen, living room and shower. The statistic shows that 30% of the old people fall at least once a year and 75% of these events are responsible for accidental death. The feeling of fall increases the anxiety and the depression in the elderly. Therefore, the

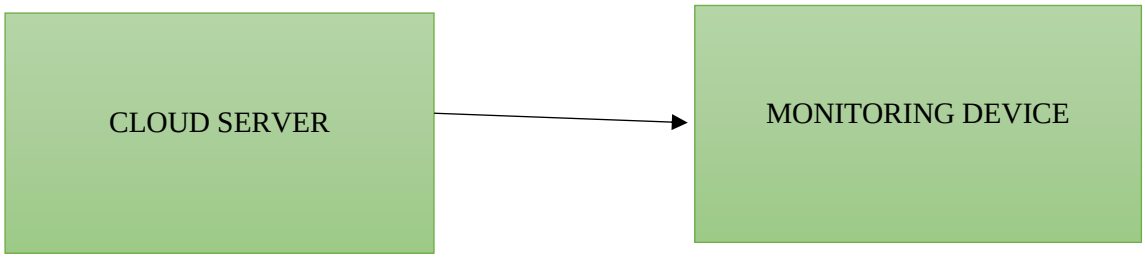
monitoring system must enable the caregiver to track remotely the user's walk around the rooms and to perceive immediately the falls without the need of confirmation request. We started to develop and implement a low-cost system directed to monitor the user walk, to detect the falls and to check the cardiac activity by analyzing the photo-pletismographic signals. An interface for communication between the patient and health care expert is also provided.

BLOCK DIAGRAM

TRANSMITTER SIDE



RECEIVER SIDE



HARDWARE AND SOFTWARE REQUIREMENTS

HARDWARE REQUIREMENTS

- NODEMCU ESP8266
- TEMPERATURE SENSOR
- ACCELEROMETER MOTORS
- GSM MODULE
- BUZZER
- POWER SUPPLY UNIT
- SOLDERING ROD
- SOLDERING LEAD, FLUX
- CONNECTING WIRES

SOFTWARE REQUIREMENTS

- ARDUINO IDE
- EMBEDDED C

MODULES:

1. SENSOR INTERFACING
2. PREPARING POWER SUPPLY UNIT
3. MICRO-CONTROLLER PROGRAMMING
4. READING ANALOG DATA
5. TEST AND DEBUG
6. SUBMISSION

MODULE DESCRIPTION:

1. SENSOR INTERFACING

Sensor interfacing is a mix of amplification, filtering, and other signal conditioning as well as analog-to-digital conversion. The analog-to-digital converter (ADC) may be in your microcontroller, but you will still need to make the sensor compatible with the ADC input.

2. PREPARING POWER SUPPLY UNIT

A power supply unit (or PSU) converts mains AC to low-voltage regulated DC power for the internal components of a controller. A power supply is used to reduce the mains electricity at 240 volts AC down to something more useable, say 12 volts DC. There are two types of power supply, linear and switch mode. A linear power supply uses a transformer to reduce the voltage. The AC signal is rectified and regulated to produce a high DC voltage.

An AC adapter, AC/DC adapter, or AC/DC converteris a type of external power supply, often enclosed in a case similar to an AC plug. Adapters for battery-powered equipment may be described as chargers or rechargers (see also battery charger). AC adapters are used with electrical devices that require power but do not contain internal components to derive the required voltage and power from main power. The internal circuitry of an external power supply is very similar to the design that would be used for a built-in or internal supply.

3. MICRO-CONTROLLER PROGRAMMING

A microcontroller is a programmable IC, capable of multiple functions depending on how it’s programed. Many different kinds of microcontrollers exist that offer a wide range of functionality. The versatility of the microcontroller is what makes

it one of the most powerful tools in modern design. This guide will explain the basics of microcontrollers and how they are programmed.

4. READING ANALOG DATA

The microcontroller of the board has a circuit inside called an analog-to-digital converter or ADC that reads this changing voltage and converts it to a number between 0 and 1023. When the shaft is turned all the way in one direction, there are 0 volts going to the pin, and the input value is 0. When the shaft is turned all the way in the opposite direction, there are 5 volts going to the pin and the input value is 1023. In between, analog Read() returns a number between 0 and 1023 that is proportional to the amount of voltage being applied to the pin.

5. TEST AND DEBUG

Testing means verifying correct behavior. Testing can be done at all stages of module development: requirements analysis, interface design, algorithm design, implementation, and integration with other modules. In the following, attention will be directed at implementation testing. Implementation testing is not restricted to execution testing. An implementation can also be tested using correctness proofs, code tracing, and peer reviews, as described below.

Debugging is a cyclic activity involving execution testing and code correction. The testing that is done during debugging has a different aim than final module testing. Final module testing aims to demonstrate correctness, whereas testing during debugging is primarily aimed at locating errors. This difference has a significant effect on the choice of testing strategies.

6. SUBMISSION

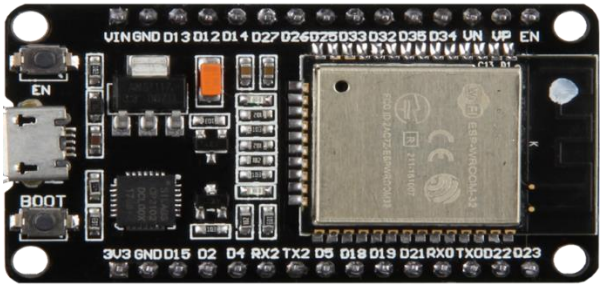
Submitting the prototype for the presentation to the faculty guide for review purpose

HARDWARE DESCRIPTION

NODE MCU ESP32

ESP32 is a single 2.4 GHz Wi-Fi-and-Bluetooth combo chip designed with the TSMC ultra-low-power 40 nm technology. It is designed to achieve the best power and RF performance, showing robustness, versatility and reliability in a wide variety of applications and power scenarios.

The ESP32 series of chips includes ESP32-D0WD-V3, ESP32-D0WDQ6-V3, ESP32-D0WD, ESP32-D0WDQ6, ESP32-D2WD, ESP32-S0WD, and ESP32-U4WDH, among which, ESP32-D0WD-V3, ESP32-D0WDQ6-V3, and ESP32-U4WDH are based on ECO V3 wafer.



Featured Solutions:

- Ultralow Power Solution

ESP32 is designed for mobile, wearable electronics, and Internet-of-Things (IoT) applications. It features all the state-of-the-art characteristics of low-power chips, including fine-grained clock gating, multiple power modes, and dynamic power scaling. For instance, in a low-power IoT sensor hub application scenario, ESP32 is woken up periodically and only when a specified condition is detected. Low-duty cycle is used to minimize the amount of energy that the chip expends. The

output of the power amplifier is also adjustable, thus contributing to an optimal trade-off between communication range, data rate and power consumption.

- Complete Integration Solution

ESP32 is a highly-integrated solution for Wi-Fi-and-Bluetooth IoT applications, with around 20 external components. ESP32 integrates an antenna switch, RF balun, power amplifier, low-noise receive amplifier, filters, and power management modules. As such, the entire solution occupies minimal Printed Circuit Board (PCB) area. ESP32 uses CMOS for single-chip fully-integrated radio and baseband, while also integrating advanced calibration circuitries that allow the solution to remove external circuit imperfections or adjust to changes in external conditions. As such, the mass production of ESP32 solutions does not require expensive and specialized Wi-Fi testing equipment.

Wi-Fi Key Features

- ✓ 802.11 b/g/n
- ✓ 802.11 n (2.4 GHz), up to 150 Mbps
- ✓ WMM
- ✓ TX/RX A-MPDU, RX A-MSDU
- ✓ Immediate Block ACK
- ✓ Defragmentation
- ✓ Automatic Beacon monitoring (hardware TSF)
- ✓ 4 × virtual Wi-Fi interfaces
- ✓ Simultaneous support for Infrastructure Station, SoftAP, and Promiscuous modes Note that when ESP32 is in Station mode, performing a scan, the SoftAP channel will be changed.
- ✓ Antenna diversity

BT Key Features

• Compliant with Bluetooth v4.2 BR/EDR and BLE specifications

• Class-1, class-2 and class-3 transmitter without external power amplifier

• Enhanced Power Control

• +12 dBm transmitting power

• NZIF receiver with –94 dBm BLE sensitivity

• Adaptive Frequency Hopping (AFH)

• Standard HCI based on SDIO/SPI/UART

• High-speed UART HCI, up to 4 Mbps

• Bluetooth 4.2 BR/EDR BLE dual mode controller

• Synchronous Connection-Oriented/Extended (SCO/eSCO)

• CVSD and SBC for audio codec

• Bluetooth Piconet and Scatternet

• Multi-connections in Classic BT and BLE

• Simultaneous advertising and scanning

MCU and Advanced Features:

CPU and Memory:

• Xtensa® single-/dual-core 32-bit LX6 microprocessor(s), up to 600 MIPS (200 MIPS for ESP32-S0WD/ESP32-U4WDH, 400 MIPS for ESP32-D2WD)

• 448 KB ROM

• 520 KB SRAM

• 16 KB SRAM in RTC

• QSPI supports multiple flash/SRAM chips

Clocks and Timers:

• Internal 8 MHz oscillator with calibration

• Internal RC oscillator with calibration

• External 2 MHz ~ 60 MHz crystal oscillator (40 MHz only for Wi-Fi/BT functionality)

• External 32 kHz crystal oscillator for RTC with calibration

• Two timer groups, including 2 × 64-bit timers and 1 × main watchdog in each group

• One RTC timer

• RTC watchdog

Advanced Peripheral Interfaces

• 34 × programmable GPIOs

• 12-bit SAR ADC up to 18 channels

• 2 × 8-bit DAC

• 10 × touch sensors

• 4 × SPI

• 2 × I²S

• 2 × I²C

• 3 × UART

• 1 host (SD/eMMC/SDIO)

• 1 slave (SDIO/SPI)

• Ethernet MAC interface with dedicated DMA and IEEE 1588 support

• Two-Wire Automotive Interface (TWAI®, compatible with ISO11898-1)

• IR (TX/RX)

• Motor PWM

• LED PWM up to 16 channels

• Hall sensor

Security

• Secure boot

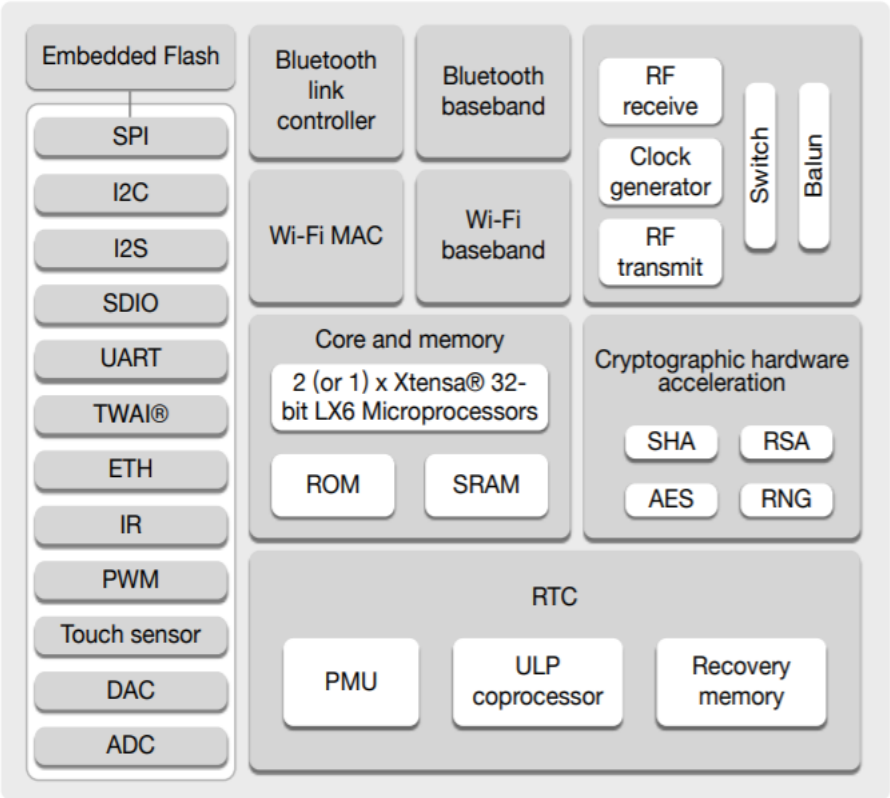
• Flash encryption

• 1024-bit OTP, up to 768-bit for customers

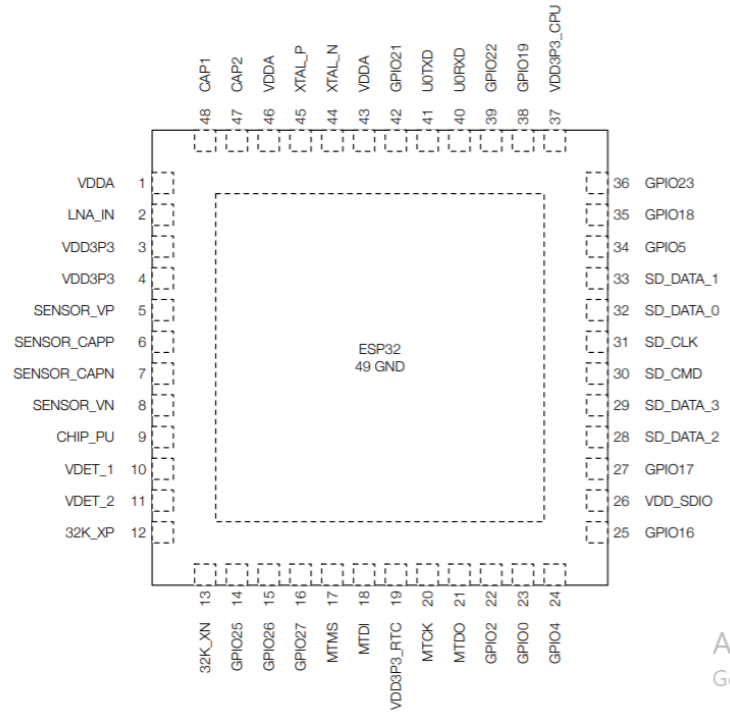
• Cryptographic hardware acceleration: – AES – Hash (SHA-2)

– RSA – ECC – Random Number Generator (RNG)

BLOCK DIAGRAM:



Pin Layout:



CPU and Memory:

CPU:

ESP32 contains one or two low-power Xtensa® 32-bit LX6 microprocessor(s) with the following features:

• 7-stage pipeline to support the clock frequency of up to 240 MHz (160 MHz for ESP32-S0WD, ESP32-D2WD, and ESP32-U4WDH)

• 16/24-bit Instruction Set provides high code-density

• Support for Floating Point Unit

• Support for DSP instructions, such as a 32-bit multiplier, a 32-bit divider, and a 40-bit MAC

• Support for 32 interrupt vectors from about 70 interrupt sources The single-/dual-CPU interfaces include:

• Xtensa RAM/ROM Interface for instructions and data

• Xtensa Local Memory Interface for fast peripheral register access

• External and internal interrupt sources

• JTAG for debugging

Internal Memory:

ESP32's internal memory includes:

• 448 KB of ROM for booting and core functions

• 520 KB of on-chip SRAM for data and instructions

• 8 KB of SRAM in RTC, which is called RTC FAST Memory and can be used for data storage; it is accessed by the main CPU during RTC Boot from the Deep-sleep mode.

• 8 KB of SRAM in RTC, which is called RTC SLOW Memory and can be accessed by the co-processor during the Deep-sleep mode.

• 1 Kbit of eFuse: 256 bits are used for the system (MAC address and chip configuration) and the remaining 768 bits are reserved for customer applications, including flash-encryption and chip-ID.

• Embedded flash

External Flash and SRAM:

ESP32 supports multiple external QSPI flash and SRAM chips. More details can be found in Chapter SPI in the ESP32 Technical Reference Manual. ESP32 also supports hardware encryption/decryption based on AES to protect developers' programs and data in flash.

ESP32 can access the external QSPI flash and SRAM through high-speed caches.

• Up to 16 MB of external flash can be mapped into CPU instruction memory space and read-only memory space simultaneously.

– When external flash is mapped into CPU instruction memory space, up to 11 MB + 248 KB can be mapped at a time. Note that if more than 3 MB + 248 KB are mapped, cache performance will be reduced due to speculative reads by the CPU.

– When external flash is mapped into read-only data memory space, up to 4 MB can be mapped at a time. 8-bit, 16-bit and 32-bit reads are supported.

• External SRAM can be mapped into CPU data memory space. SRAM up to 8 MB is supported and up to 4 MB can be mapped at a time. 8-bit, 16-bit and 32-bit reads and writes are supported.

MEMS SENSOR/ ACCELEROMETER SENSOR

DESCRIPTION

Micro Electro Mechanical System (MEMS, also written a micro-electro-mechanical, Micro Electro Mechanical System or microelectronic and Micro Electro Mechanical System and the related micro mechatronics) is the technology of microscopic devices, particularly those with moving parts.

The accelerometer is a low power, low profile capacitive micro machined Accelerometer featuring signal conditioning, a 1-pole low pass filter, temperature Compensation, self-test, 0g-Detect which detects linear free-fall, and g-Select which Allows for the selection between 2 sensitivities Zero-g offset and sensitivity is Factory set and requires no external devices.

MEMS SENSOR OR ACCELEROMETER SENSOR

This includes a Sleep Mode that makes it ideal for handheld battery powered elect You can use an accelerometer's ability to sense acceleration to measure a variety of things that are very useful to electronic and robotic projects and designs:

- Acceleration
- Tilt and tilt angle
- Incline
- Rotation
- Vibration

- Collision
- Gravity

Acceleration is a measure of how quickly speed changes. Just as a speedometer is a meter that measures speed, an accelerometer is a meter that measures acceleration. Accelerometers are useful for sensing vibrations in systems or for orientation applications. Accelerometers can measure acceleration on one, two, or three axis. 3-axis units are becoming more common as the cost of development for them decreases. You can use an accelerometer's ability to sense acceleration to measure a variety of things that are very useful to electronic and robotic projects.

FEATURES

- Low Current Consumption: 400 Ma
- Sleep Mode: 3μA
- Low Voltage Operation: 2.2 V – 3.6 V
- High Sensitivity (800 mV/g @ 1.5g)
- Selectable Sensitivity (±1.5g, ±6g)
- Fast Turn on Time (0.5 ms Enable Response Time)
- Self-Test for Free-fall Detect Diagnosis

APPLICATIONS:

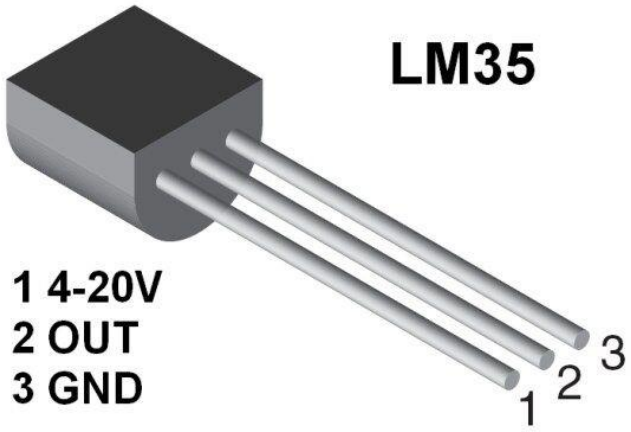
- Self-balancing robots
- Tilt-mode game controllers
- Model airplane auto pilot
- Car alarm systems
- Crash detection/airbag deployment

TEMPERATURE SENSOR

DEESCRIPTION

A temperature sensor is a device, typically, a thermocouple or RTD, that provides for temperature measurement through an electrical signal. A thermocouple (T/C) is made from two dissimilar metals that generate electrical voltage in direct proportion to changes in temperature.

The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly-proportional to the Centigrade temperature. The LM35 device has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling.



TEMPERATURE SENSOR

The LM35 device does not require any external calibration or trimming to provide typical accuracies of ±¼°C at room temperature and ±¾°C over a full −55°C to 150°C temperature range. The low-output impedance, linear output, and precise inherent calibration of the LM35 device makes interfacing to readout or control circuitry especially easy.

LM35 is a precision IC temperature sensor with its output proportional to the temperature (in oC). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With LM35, temperature can be measured more accurately than with a thermistor. It also possess low self heating and does not cause more than 0.1 oC temperature rise in still air.

The device is used with single power supplies, or with plus and minus supplies. As the LM35 device draws only 60 µA from the supply, it has very low self-heating of less than 0.1°C in still air. The LM35 device is rated to operate over a −55°C to 150°C temperature range.

FEATURES

- Calibrated Directly in Celsius (Centigrade)
- Linear + 10-mV/°C Scale Factor
- 0.5°C Ensured Accuracy (at 25°C)
- Rated for Full −55°C to 150°C Range
- Suitable for Remote Applications

APPLICATIONS

- Power Supplies
- Battery Management
- HVAC
- Appliances

BUZZER

DESCRIPTION

A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as a microwave oven, or game shows.

BUZZER

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or key stroke.

Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms, electronic toys, automotive electronic equipment, telephones, timers and other electronic products for sound devices. Active buzzer 5V Rated power can be directly connected to a continuous sound, this section dedicated sensor expansion module and the board in combination, can complete a simple circuit design, to "plug and play."

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include

alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

It generates consistent single tone sound just by applying D.C voltage. Using a suitably designed resonant system, this type can be used where large sound volumes are needed. At Future Electronics we stock many of the most common types categorized by Type, Sound Level, Frequency, Rated Voltage, Dimension and Packaging Type.

FEATURES

- Input supply: 5 VDC
- Current consumption: 9.0 mA max.
- Oscillating frequency: 3.0 ±0.5 KHz
- Sound Pressure Level: 85dB min

APPLICATIONS

- Confirmation of user input (ex: mouse click or keystroke)
- Electronic metronomes
- Sporting events
- Judging Panels
- Annunciator panels

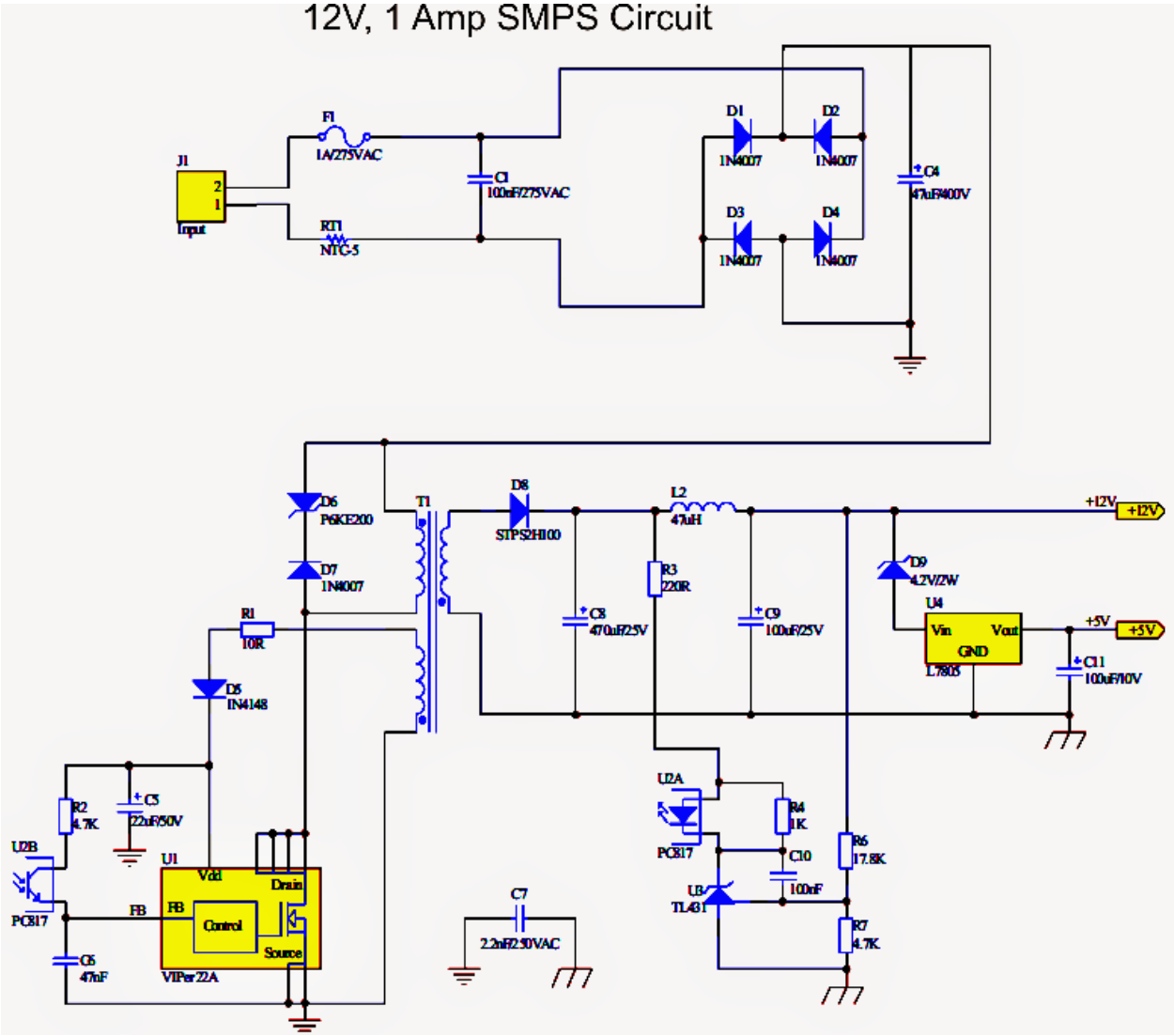
ADAPTER (12V 1AMP)

DESCRIPTION

An AC adapter, AC/DC adapter, or AC/DC converter is a type of external power supply, often enclosed in a case similar to an AC plug. Adapters for battery-powered equipment may be described as chargers or rechargers (see also battery charger). AC adapters are used with electrical devices that require power but do not contain internal components to derive the required voltage and power from main power. The internal circuitry of an external power supply is very similar to the design that would be used for a built-in or internal supply.

ADAPTER (12V 1AMP)

An adapter is a device that converts attributes of one electrical device or system to those of an otherwise incompatible device or system. Some modify power or signal attributes, while others merely adapt the physical form of one electrical connector to another. In a computer, an adapter is often built into a card that can be inserted into a slot on the computer's motherboard. The card adapts information that is exchanged between the computer's microprocessor and the devices that the card supports.



CIRCUIT DIAGRAM

An electric power adapter may enable connection of a power plug, sometimes called, used in one region to a AC power socket used in another, by offering connections for the disparate contact arrangements, while not changing the voltage. An AC adapter, also called a "recharger", is a small power supply that changes household electric current from distribution voltage) to low voltage DC suitable for consumer electronics.

Some modify power or signal attributes, while others merely adapt the physical form of one electrical connector to another. For computers and related items, one kind of serial port adapter enables connections between 25-contact and

nine-contact connectors, but does not affect electrical power- and signalling-related attributes

FEATURES

- Output current:1A
- Supply voltage: 220-230VAC
- Output voltage: 12VDC
- Reduced costs
- Increased value across front-office and back-office functions
- Access to current, accurate, and consistent data
- It generates adapter metadata as WSDL files with J2CA extension.

APPLICATIONS

- Back-end systems which need to send purchase order data to oracle applications send it to the integration service via a integration server client.
- SMPS applications.

SOFTWARE DETAILS:

ARDUINO IDE:

The Arduino Integrated Development Environment – or Arduino Software (IDE) – contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them.

Programs written using Arduino Software (IDE) are called **sketches**. These sketches are written in the text editor and are saved with the file extension .ino. The editor has features for cutting/pasting and for searching/replacing text. The message area gives feedback while saving and exporting and also displays errors. The console displays text output by the Arduino Software (IDE), including complete error messages and other information. The bottom righthand corner of the window displays the configured board and serial port. The toolbar buttons allow you to verify and upload programs, create, open, and save sketches, and open the serial monitor.

Before uploading your sketch, you need to select the correct items from the **Tools > Board** and **Tools > Port** menus. The boards are described below. On the Mac, the serial port is probably something like **/dev/tty.usbmodem241** (for an Uno or Mega2560 or Leonardo) or **/dev/tty.usbserial-1B1** (for a Duemilanove or earlier USB board), or **/dev/**tty.USA19QW1b1P1**.1** (for a serial board connected with a Keyspan USB-to-Serial adapter). On Windows, it's probably COM1 or COM2 (for a serial board) or COM4, COM5, COM7, or higher (for a USB board) – to find out, you look for USB serial device in the ports section of the Windows Device Manager. On Linux, it should be **/dev/ttyACMx** , **/dev/ttyUSBx** or similar. Once you've selected the correct serial port and board, press the upload button in the toolbar or select the **Upload** item from the **Sketch** menu. Current Arduino boards will reset

automatically and begin the upload. With older boards (pre-Diecimila) that lack auto-reset, you'll need to press the reset button on the board just before starting the upload. On most boards, you'll see the RX and TX LEDs blink as the sketch is uploaded. The Arduino Software (IDE) will display a message when the upload is complete, or show an error.

When you upload a sketch, you're using the Arduino **bootloader**, a small program that has been loaded on to the microcontroller on your board. It allows you to upload code without using any additional hardware. The bootloader is active for a few seconds when the board resets; then it starts whichever sketch was most recently uploaded to the microcontroller. The bootloader will blink the on-board (pin 13) LED when it starts (i.e. when the board resets).

EMBEDDED C:

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Embedded C is a set of language extensions for the C programming language by the C Standards Committee to address commonality issues that exist between C extensions for different embedded systems. Historically, embedded C programming requires nonstandard extensions to the C language in order to support exotic features such as fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations

An embedded system is a computer system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. Embedded systems control many devices in common use today. Ninety-eight percent of all microprocessors are manufactured as components of embedded systems.

Examples of properties of typical embedded computers when compared with general-purpose counterparts are low power consumption, small size, rugged operating ranges, and low per-unit cost. This comes at the price of limited processing resources, which make them significantly more difficult to program and to interact with. However, by building intelligence mechanisms on top of the hardware, taking advantage of possible existing sensors and the existence of a network of embedded units, one can both optimally manage available resources at the unit and network levels as well as provide augmented functions, well beyond those available. For example, intelligent techniques can be designed to manage power consumption of embedded systems.

Modern embedded systems are often based on microcontrollers (i.e. CPU's with integrated memory or peripheral interfaces), but ordinary microprocessors (using external chips for memory and peripheral interface circuits) are also common, especially in more-complex systems. In either case, the processor(s) used may be types ranging from general purpose to those specialized in certain class of computations, or even custom designed for the application at hand. A common standard class of dedicated processors is the digital signal processor (DSP).

Since the embedded system is dedicated to specific tasks, design engineers can optimize it to reduce the size and cost of the product and increase the reliability and performance. Some embedded systems are mass-produced, benefiting from economies of scale.

Embedded systems range from portable devices such as digital watches and MP3 players, to large stationary installations like traffic lights, factory controllers, and largely complex systems like hybrid vehicles, MRI, and avionics. Complexity varies from low, with a single microcontroller chip, to very high with multiple units, peripherals and networks mounted inside a large chassis or enclosure.

FUTURE SCOPE

A camera module for surveillance of the child's surrounds can be added to improve the system's performance. It's also possible to do it with a Raspberry Pi and Lilypad. It is possible to develop a more energy-efficient type that can keep the battery for a longer period of time.

Following are few different issues that need to be improved the system developed in this project

1. At the time of Crime or in certain situation, the identification of offender and real time location should be sent to the nearest police station.

2. Device can be made further Compact in size.

3. Developing the ability to work in any environmental situation

CONCLUSION

The Child Safety device is capable of acting as a top IOT Smart device. It is a reliable to use anybody. But it is mainly for parents who are insecure about their child. It Provides the real time temperature and fall detection to them by using various Iot technologies like GSM, Alarm Buzzer etc. These device are enhanced much more Esp8266 module such as ESp8266 which can be sewed into fabrics.

This system will be helpful for children when they are in major crowded areas. this application is designed for trace to missing child. This device uses SMS based technology so the parents are able to use it more efficiently. Some past works on SMS based tracking which is not supportive to get an accurate temperature in our proposed system we have provided real time tracking of fall detection and temperature monitoring. With the help of sensors embedded in the wearable gadget the parents can keep track of health conditions of the child. This system can overcome the fear that scares child in the country about her safety and security.

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