SMART WATCH

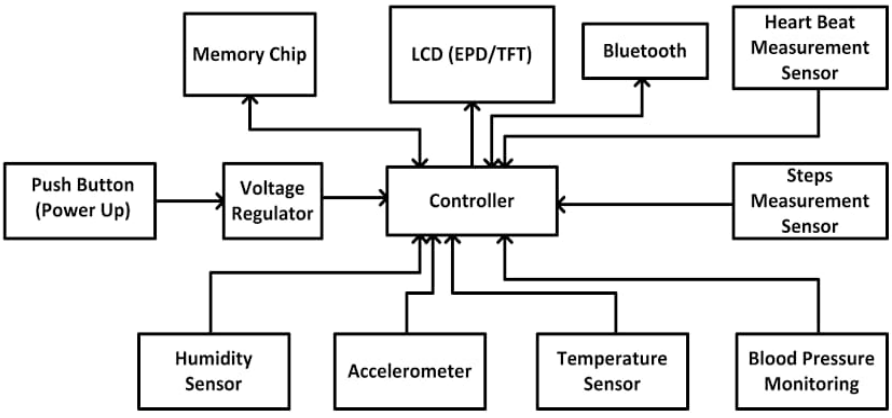
INTRODUCTION:

It is undeniable that computers are becoming smaller, quicker, more competent, cheaper, and more efficient as technology advances. Such advancements may be seen across the whole computing spectrum, from the tiniest microcontrollers to enormous supercomputers. Technology has progressed to the point that we can now fit a large amount of computer processing power into small portable devices.

HISTORY:

A smartwatch is a wearable computer in the shape of a watch; current smartwatches have a local touchscreen interface for daily use, as well as management and telemetry via a smartphone app (such as long-term biomonitoring). While early models could only do basic functions like computations, digital timekeeping, translations, and game play, smartwatches in the 2010s have more general capabilities similar to smartphones, such as mobile apps, a mobile operating system, and WiFi/Bluetooth connectivity. Some smartwatches may be used as portable media players, featuring FM radio and Bluetooth headset playing of digital audio and video files. Some types, referred to as watch phones (or vice versa), have mobile cellular capabilities, such as the ability to make calls.

BLOCK DIAGRAM:



MICROCONTROLLER:

A microcontroller (MCU for microcontroller unit) is a small computer on a single metal-oxide-semiconductor (MOS) integrated circuit (IC) chip. A microcontroller contains one or more CPUs (processor cores) along with memory and programmable input/output peripherals.

STEPS MEASUREMENT SENSOR:

A wearable tracker continuously senses the movements of the body on a 3 axis accelerometer. The data is recorded all the time it is worn and powered up, which enables the tracker to trace if the individual is walking forward, running fast, or even standing still.All this data is stored in the tracker for further processing. Processing occurs when the data is transferred to the software associated with the fitness tracker on the smartphone or laptop with which it is synced.

BLOOD PRESSURE SENSOR:

The Blood Pressure Sensor is a non-invasive sensor designed to measure human blood pressure. It measures systolic, diastolic and mean arterial pressure utilizing the oscillometric method. Pulse rate is also reported.

TEMPERATURE SENSOR:

Wearable temperature sensor ICs are digital thermometers which provide clinical-grade accuracy combined with ultra-low power operation to support wearable fitness and medical applications, such as wrist watches, medical patches, and smart clothing.

ACCELEROMETER:

Accelerometer sensors are ICs that measure acceleration, which is the change in speed (velocity) per unit time. Measuring acceleration makes it possible to obtain information such as object inclination and vibration. ... g is also used as a unit for acceleration, relative to standard gravity (1g = 9.80665m/s2).

HUMIDITY SENSOR:

A humidity sensor is an electronic device that measures the humidity in its environment and converts its findings into a corresponding electrical signal.RH sensors must therefore measure

temperature in order to determine relative humidity. In contrast, absolute humidity is measured without reference to temperature.

VOLTAGE REGULATOR:

A smart watch powers a variety of sensors (with varying input impedances), and a microcontroller. In operation, the wearable's controller will look for out-of-true measurements, and, where necessary, issue an alert to the fitness band wearer via a screen change, a haptic vibration, or a wireless Bluetooth signal (BTLE).Multiple power rails are required. But rather than increase the number of batteries, the number of voltage regulators, or the number of inductors, the preferred power management architecture is "single inductor, multiple outputs" (SIMO).

MEMORY CHIP:

A memory chip can store data or can be used to process code. Memory chips can hold memory either temporarily through random access memory (RAM), or permanently through read only memory (ROM).

LCD DISPLAY:

LCD or Liquid Crystal Display is the most common type of display used in smartwatches. It refers to an array of liquid crystals powered by a backlight to project elements on the screen.This type of display generally costs cheaper to the manufacturers.The LCDs are generally bright enough to be seen in direct sunlight as they have a separate backlight.

BLUETOOTH:

Bluetooth is a short-range wireless technology standard that is used for exchanging data between fixed and mobile devices over short distances using UHF radio waves in the ISM bands, from 2.402 to 2.48 GHz, and building personal area networks.

ADVANTAGES:

- Fitness and Health.
- Locate your Phone and Key.
- Play Music.
- Navigation.

- Make and Receive Calls.
- Access Notifications.
- Emergency Call and Fall Detection.

DISADVANTAGES:

- Smart watches are pretty costly.
- Some of the watches are not water resistant.
- Touch screen is smaller compare to phone.
- Battery life is short which is a concern.

CONCLUSION:

Smart watches will become the mainstream of the development of smart devices and change modern way of life. They offer an exciting platform for new types of applications and have the potential to more tightly integrate computing within daily life. They also pose new security and privacy concerns. Meanwhile, research on hardware materials and battery life has not achieved a breakthrough.Limited screen space makes the product design very difficult.