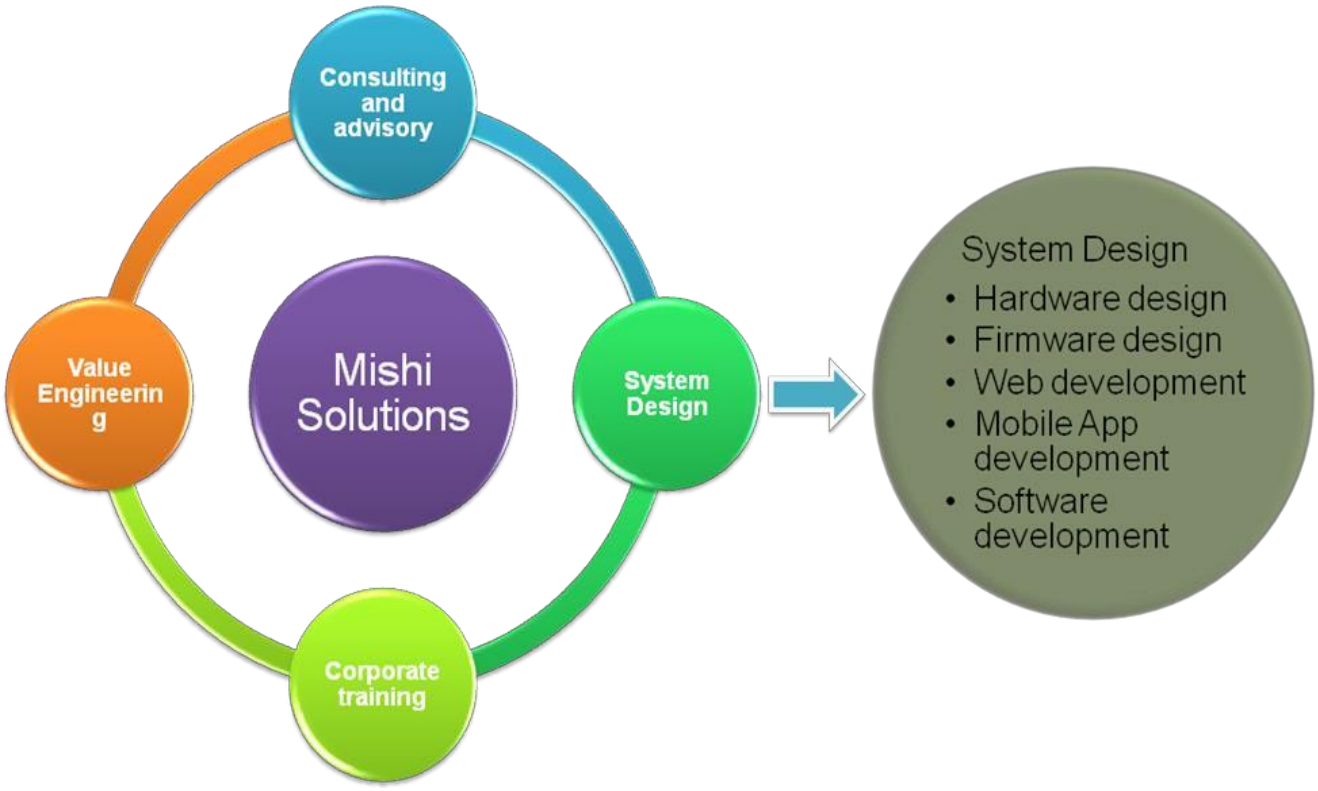
An embedded system is a computer system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is combination of hardware and software where software is usually known as firmware that is embedded into the hardware.

Why Us:

We know there are plenty of courses in the market and we standout ourselves because we develop your routes by clearing your basics and build the knowledge empire on top on it instead of just providing the knowledge from top. Because of same, you will be benefited in getting jobs easily comparative to others.

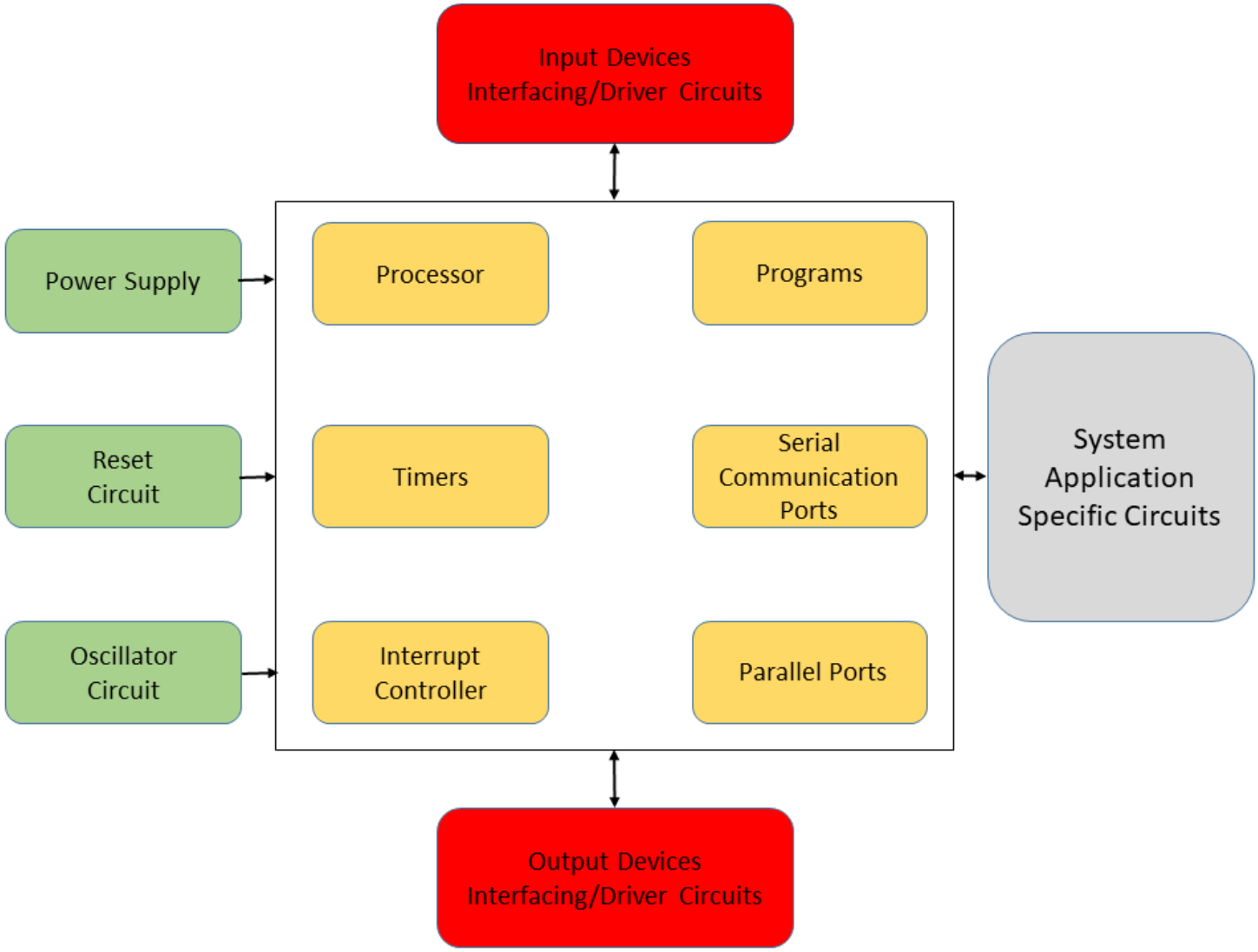
About Us:

MISHI SOLUTIONS provide design consultancy services. We help our client to design, develop and deploy products and solutions for the connected world by our expertise to help them grow in their business quickly. We empower people by providing the training on latest technologies. Our focus on delivering best in latest technologies.



Basics:

The embedded system basics are the combination of embedded hardware and embedded software called firmware.



Embedded Hardware

Hardware of an embedded system is assembled with a microprocessor/microcontroller. It has the input/output interfaces, memory, user interface and the display unit. Generally, an embedded system comprises of the following

- Power Supply
- Memory
- Processor / Microcontroller
- Timers
- Input/output circuits
- Serial communication ports
- SASC (System application specific circuits)

Embedded Software / Firmware

Firmware's are written to execute particular functions. This is generally written in a high-level language and then compiled down to offer code that can be stored within a non-volatile memory in the hardware. A firmware is intended to keep in view of the following three limits

- Convenience of system memory
- Convenience of processor's speed
- When the embedded system runs constantly, there is a necessity to limit power dissipation for actions like run, stop and wake up.

RTOS (Real Time Operating System)

This operating system is specially designed to run various applications with an exact timing and a huge amount of consistency. Particularly, this can be significant in measurement & industrial automation systems where a delay of a program could cause a safety hazard.

Memory and Processors

The different kinds of processors used in an embedded system include Digital Signal Processor (DSP), microprocessor, RISC processor, microcontroller, ASSP processor, ASIP processor, and ARM processor.

Embedded System Characteristics

- All the computing systems have limitations on design metrics, but those can be especially tight. Design metric is a measure of an execution features like size, power, cost and also performance.
- It must be based on a microcontroller or microprocessor based.
- It must require a memory, as its software generally inserts in ROM. It does not require any secondary memories in the PC.
- Typically designed for a specific application or purpose.
- It provides high reliability and real-time computation ability.

Embedded System Applications

- Detecting Rash Driving on Highways
- Street Light Control
- Traffic Signal Control System
- Motor control
- Robotics in an assembly line

Content

Session 1: Introduction of Embedded and Hardware architecture (4H)

- Selection of microcontrollers
- Datasheet reading/User manual/Errata sheet
- Basic of embedded C
- Storage classes
- Memory optimization
- Code optimization

Session 2: Software Architecture (4H)

- Bare metal coding
- State machine
- Blocking and non-blocking code
- Firmware Libraries
- Hardware and software Interrupts
- ST CubeMX software for ST Microcontrollers

Session 3: Basic of RTOS (8H)

- Hard RTOS
- Soft RTOS
- Selection of RTOS
- Component of RTOS

Session 4: Peripherals (7H)

- ADC
- PWM
- I2C
- SPI
- RTC
- TIMER
- INTERRUPTS
- I/O

Session 5: Communication protocols(2H)

- Data handling
- Linear buffer
- Circular buffer
- Basic of protocols
- Application of protocols

Session 6: Sensors (4H)

- Temperature
- Gyroscope
- Accelerometer
- Magneto

Session 7: SDLC (1H)

- SDLC Models

Session 8: Wireless technology (3H)

- Wi-fi
- Bluetooth

Session 9: Embedded IoT (5H)

- How embedded and Embedded IOT differs
- Important point for embedded IOT
- Different mode in controller
- Techniques to reduce power consumption
- Battery operated device handling
- Introduction of security in Embedded

Session 10: Project (8H)

Session 11: Embedded Companies and their details in Pune (2H)

Note:

1- In advance course, max time RTOS will be used for programming instead of bare metal coding.
2- For programming STM32F411 series controller will be used.

For more information:

For more information:

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