



Presentation:  
ABC of IoT  
&  
Proposed IoT Project

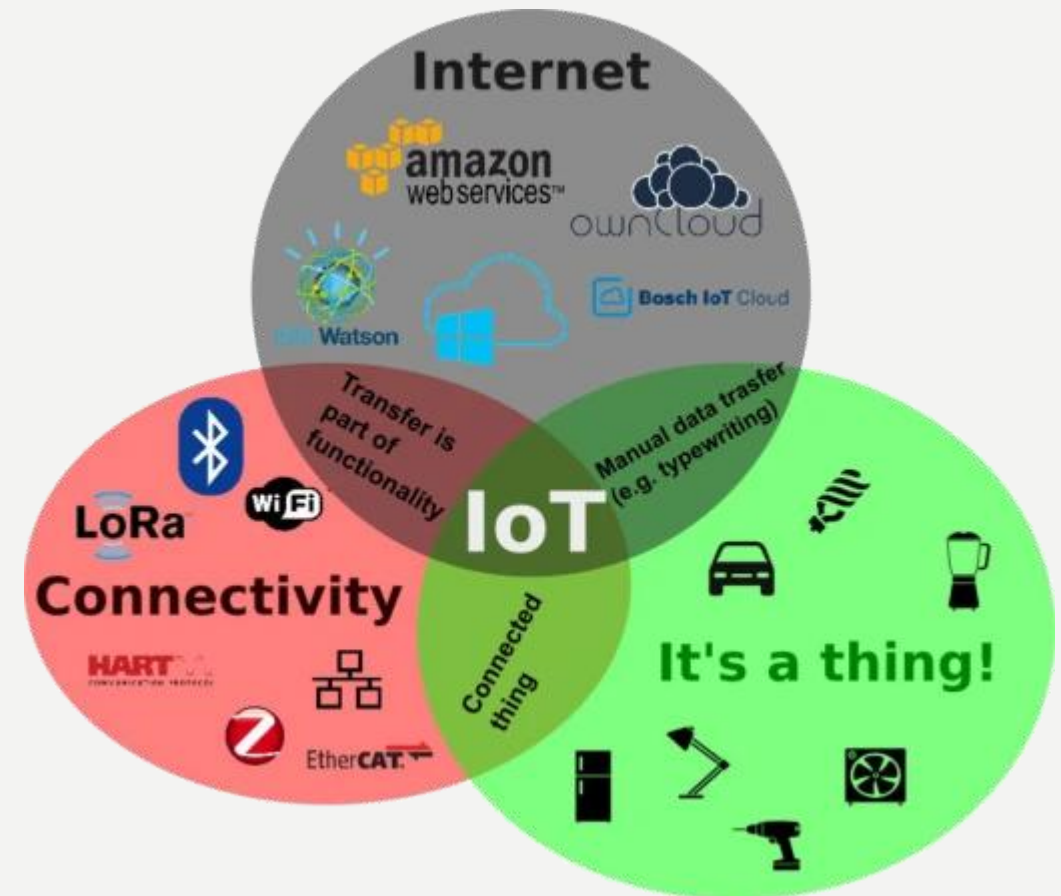
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# What is IoT?

*In layman term, the concept of combining computers, sensors, and networks to monitor and control devices.*

*Berif Explanation...*



# Computers and IoT?

LET'S CONCENTRATE FOR A BIT ON

## THE COMPUTER

COMPUTERS ARE UBIQUITOUS -  
WHAT ARE THEY EXACTLY?

PROGRAMMABLE  
COMPUTER IS A MACHINE THAT CAN

### 1. TAKE IN AN INPUT

INPUTS CAN BE - FILES, MOUSE-CLICKS,  
TOUCH INPUT, TYPING THROUGH KEYBOARDS,  
DATA SENT FROM SENSORS

### 2. PERFORM A PRE-RECORDED SET OF INSTRUCTIONS ON THAT INPUT PROGRAM

MOST COMPUTERS USE MULTIPLE  
PROGRAMS FOR MULTIPLE TASKS



### 3. PRODUCE AN OUTPUT

OUTPUTS CAN BE -  
FILES, TEXT/IMAGES  
DISPLAYED ON A SCREEN, SOUND,  
INSTRUCTIONS TO OTHER DEVICES  
(TURN THE AC DOWN, TURN ON THE TV)

*Not a Smart Devices*

**MICROCONTROLLERS**  
ARE SMALL COMPUTERS THAT CAN

1. INTERACT WITH SENSORS (AND A WIDE VARIETY OF INPUT SOURCES)

2. EXECUTE A SMALL PROGRAM THAT IS STORED IN THEIR MEMORY

3. PRODUCE AN OUTPUT

MICROCONTROLLERS ARE PRETTY VERSATILE  
THEY ARE USED FOR A LARGE VARIETY OF APPLICATIONS -

AUTOMOBILE ENGINE CONTROL SYSTEMS,  
IMPLANTABLE MEDICAL DEVICES,  
REMOTE CONTROLS, OFFICE MACHINES,  
APPLIANCES, POWER TOOLS, TOYS

USUALLY THEY ARE PROGRAMMED FOR ONE SPECIFIC TASK, AND IF YOU WANT THEM TO PERFORM ANOTHER TASK YOU WILL REPROGRAM THEM I.E. ERASE THE OLD PROGRAM

TYPICALLY - MICROCONTROLLER PROGRAMS NEED TO BE SMALL SO THEY CAN FIT IN THE SMALL AMOUNT OF MEMORY AVAILABLE

THE PINS OF THE MICROCONTROLLER ARE CONFIGURABLE - THEY CAN BE USED FOR BOTH INPUT AND OUTPUT - AND ANY KIND OF INPUT/OUTPUT

THESE PINS ARE **GPIO**  
GENERAL PURPOSE  
INPUT/OUTPUT PINS

START OR CHANGE THE SPEED OF A MOTOR

SOUND THROUGH A BUZZER


BLINK AN LED OR A SEVEN-SEGMENT DISPLAY



*Microcontrollers makes a Devices Smart*

# Experimental Boards for R & D?

*Arduino and Raspberry Pi....*



THE COOLEST THING ABOUT AN ARDUINO IS THE ABILITY TO USE **SHIELDS**

THESE SAVE A LOT OF EFFORT AND ABSTRACT YOU FROM HAVING TO BUILD THIS FUNCTIONALITY FROM SCRATCH

YOU CAN EVEN USE MULTIPLE SHIELDS IN PARALLEL

WHILE ARDUINO BOARDS ARE VERY VERSATILE AND EASY TO USE - THEY ARE STILL 'MICROCONTROLLER' BASED

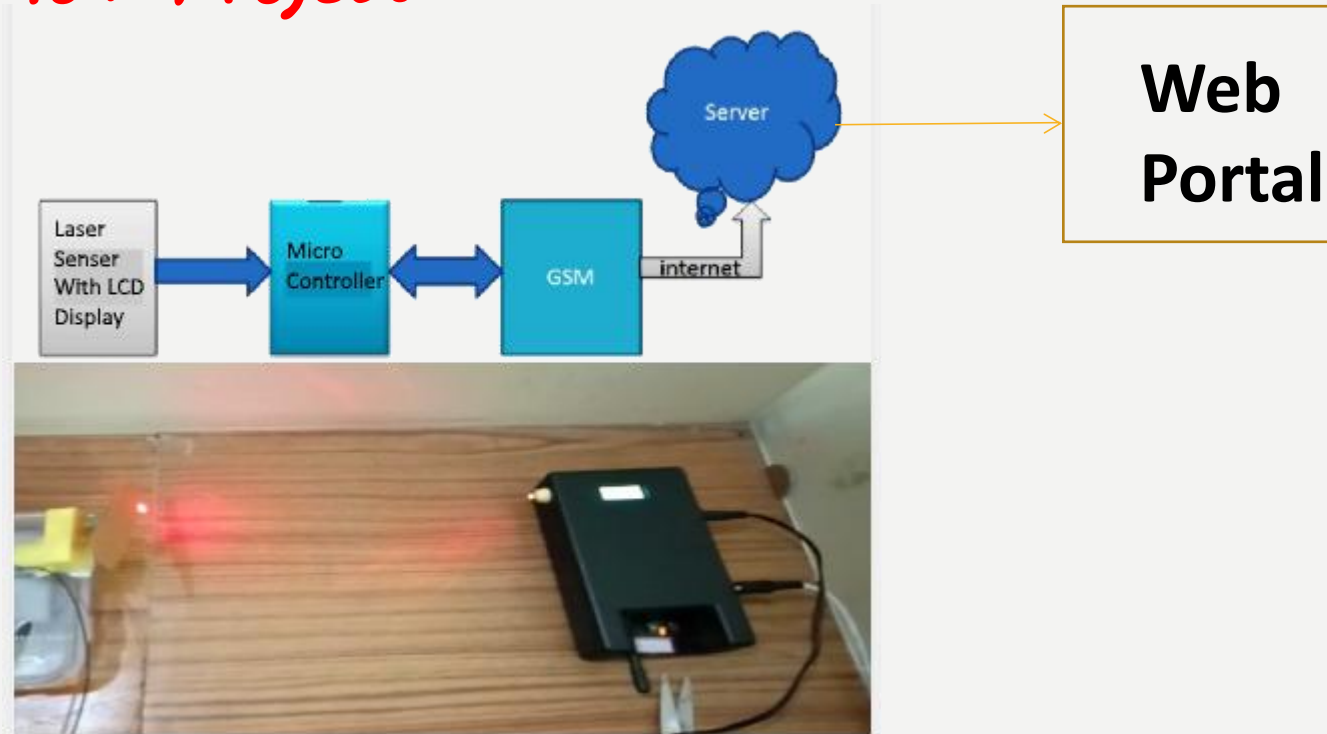
ARE ANALOG  
MORE ON DIGITAL AND ANALOG LATER

YOU CAN ADD WIRELESS OR GPS FUNCTIONALITY, OR A BOARD TO WHICH YOU CAN DIRECTLY PLUG IN A BUNCH OF MOTORS AND MUCH MORE

SHIELDS ARE PLUG-AND-PLAY ADD-ON MODULES THAT COME WITH BUILT IN FUNCTIONALITY

# Project Workflow?

## *Proposed IoT Project.....*

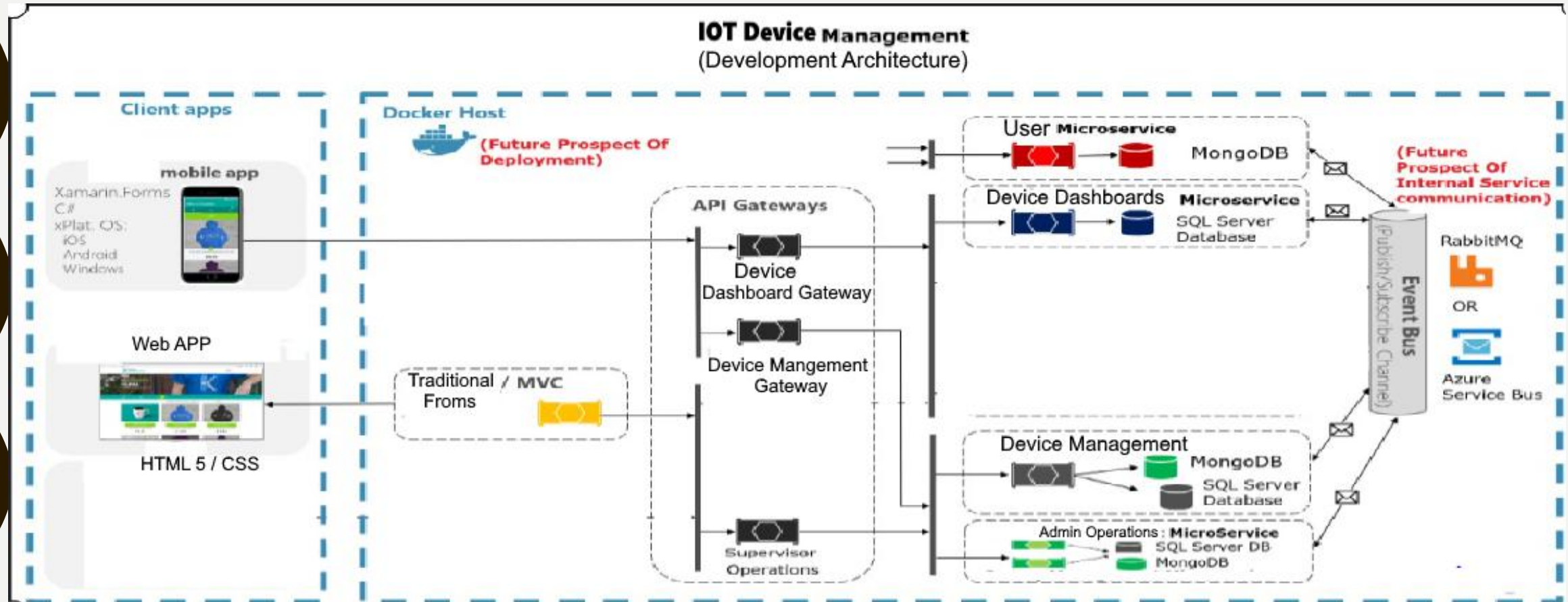


- Html 5 & CSS
- Latest web technologies
- Relational Database
- DB Connectivity
- Backend Services
- Agile 1 week Sprints
- Simulated Unit Testing

*Counter Device*  
*(College Library Footfall )*



# e.g. Architecture of IOT Web Portal!!



*Micro-Service Architecture*

# Technology and SDLC

 **Angular**  
+  
**WEB API / Node.Js**



**MVC +  
WEB API**



**MongoDB**

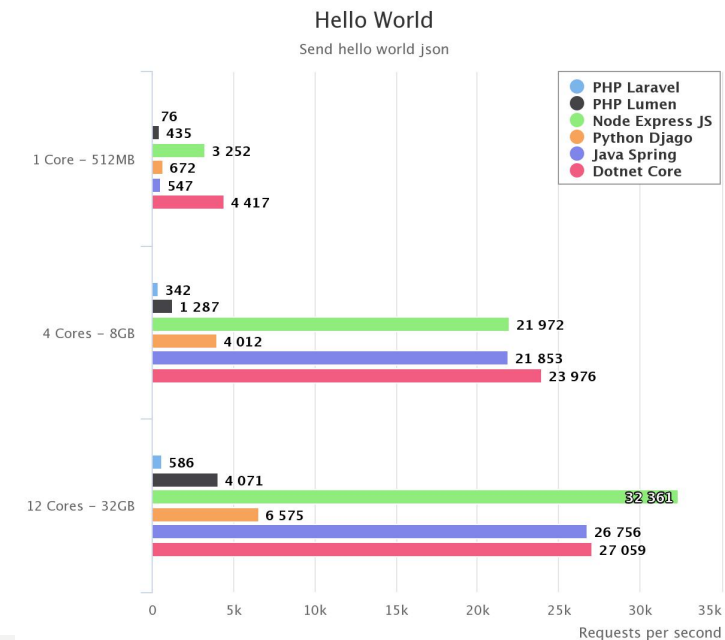
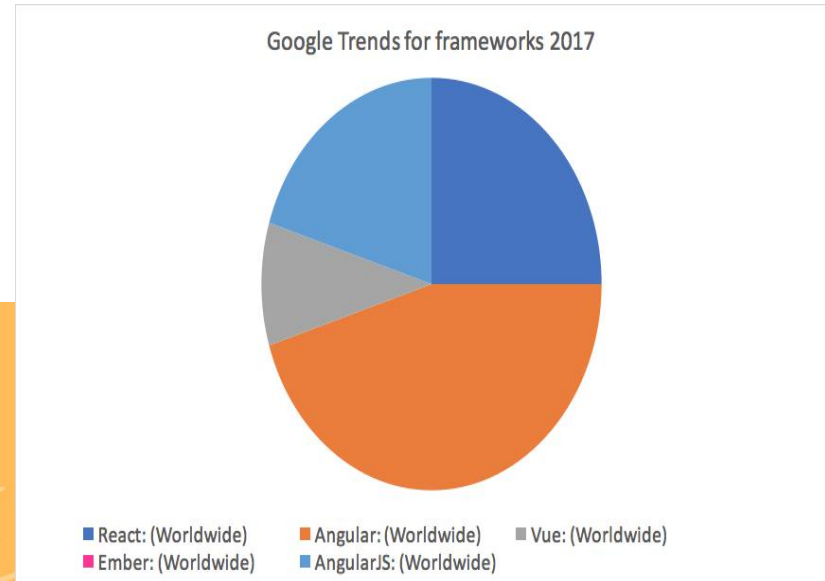


  
SQL Server  
**Micro-Services**





# Exposer Of Tools And Technologies



# *Thank You!!*

*Scan and Submit your feedback*



**Connect With Us:**

**Email:** c2c@pinetrainingacademy.com  
info@picstrainingacademy.com

**Whatsapp:** +91 9015666644

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