KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF ENGINEERING
(AUTONOMOUS)

KADAPA-516003. AP

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)

(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATION COURSE
ON
"INTERNET OF THINGS"

Resource Person : 1. Mr. N.J. Pramod Dhinakar, Assistant Professor, Dept. of CSE, KSRMCE

2. Mr. K. Khader Basha, Assistant Professor, Dept. of CSE, KSRMCE

Course Coordinator: Mr. Y. Prasada Reddy, Assistant Professor, Dept. of CSE, KSRMCE

Duration: 03/06/2019 to 22/06/2019

K.S.R.M. COLLEGE OF ENGINEERING

(UGC - AUTONOMOUS)

Kadapa, Andhra Pradesh, India - 516003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

An ISO 14001:2004 & 9001: 2015 Certified Institution

Lr./KSRMCE/ (Department of CSE)/2018-19

Date: 29/05/2019

To
The Principal
KSRM College of Engineering
Kadapa, AP.

Sub: KSRMCE - (Department of CSE) – Permission to conduct certification course on Internet of Things- Requested – reg.

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Respected Sir,

With reference to the cited, the Department of CSE is planning to conduct certificate course on "**Internet of Things**" for B.Tech students from 03/06/2019 to 22/06/2019. So I request you to grant permission to conduct the certificate course. This is submitted for your kind perusal.

Thanking you sir,

Yours Faithfully,
Coordinator,
Y. Prasada Reddy,
Assistant Professor,
CSE Dept.,

Forwarded to the Principal Sir,

Cc:

To The Director for Information

To All Deans/HODs

Permitted
V. S. S. Murty

K.S.R.M. COLLEGE OF ENGINEERING

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Dated: 30/05/2019

Circular

All the B.Tech students are here by informed that department of Computer Science & Engineering is going to organize certification course on **"Internet of Things"** from 03/06/2019 to 22/06/2019. Interested students do register their names with the below mentioned coordinator on or before 01/06/2019, 5PM.

For any queries contact,

Coordinator:
Y. Prasada Reddy,
Assistant Professor,
CSE Dept.,

HoD
Dr. M. Sreenivasulu,
M. E., Ph. D.
Professer & HOD CSE
K.S.R.M. College of Engineering
K A D A P A - 516 003

Cc to:

The Management /Director / All Deans / All HODS/Staff / Students for information

The IQAC Cell for Documentation

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Date:30/05/2019

Department of Computer Science & Engineering
Certificate Course on Internet of Things from 03/06/2019 to 22/06/2019
Registered Student List

S.NO.	ROLL NUMBER	NAME OF THE STUDENT	YEAR & BRANCH	SIGNATURE

Coordinator **HoD**

K.S.R.M. COLLEGE OF ENGINEERING

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Date:30/05/2019

Department of Computer Science & Engineering
Certificate Course on Internet of Things from 03/06/2019 to 22/06/2019
Registered Student List

S.NO.	ROLL NUMBER	NAME OF THE STUDENT	YEAR & BRANCH	SIGNATURE
1	17941A0519	B. Reddy Prasad	Btech III -sem	Prasad
2	1794YA0573	M. Mamatha	B-TECH II sem	m. mamatha
3	17941A0587	m. vishnu vardhan reddy	B.Tech II sem	vishnu
4	1794YA0598	P. Afreen	3rd sem	P. Afreen
5	1794YA05A8	P. Sai sanjay Bhagav	B.Tech 3rd sem	P. Sai
6	17941A05A9	P. Rajesh	3rd sem	P. Rajesh
7	1794YA0582	C. Lohith kumar	3rd sem	C. Lohith
8	1794YA05B4	S. Lalavathi	3rd sem	lead
9	17941A0576	M. Purushotham	B Tech 3rd sem	M. Purushotham
10	17941A0588	m. priyanka	B.Tech 3rd sem	Priyanka
11	17941A0586	M. Rakeshkumar Ry	III rd sem	M. Rakeshkumar Ry
12	1794YA05A4	P. Soumya	III rd sem/m	P. Soumya
13	1794YA0520	B. Bhavathi	B.Tech 3rd sem	B. Bhavathi
14	17941A0589	M. yogananda Reddy	B.Tech 3rd sem	y.
15	17941A05B0	P. vinay kumar Reddy	3rd sem	vinay
16	17941A0574	M. Tejaswini	B.Tech 3rd sem	M. Tejaswini
17	1794YA05A0	P. Priyanka.	B.Tech III sem	P

18	1794 1A05A7	P. Anudeep Reddy	B. Tech III sem	P. Anudeep Reddy
19	1794 1A0595	O.C Bhargav Reddy	III sem	Bhargav
20	1794 1A0523	C. Harinath reddy	III semester	Harinath reddy
21	1794 1A05E4	v. maimunnish	3rd sem	
22	1794 1A05B6	S. Akram razak	3rd sem	
23	1794 1A024	C. Harshavardhan reddy	III sem	C Harsh
24	1794 1A0575	M. Deekshith Reddy	III sem	M. Deekshith
25	1794 1A05B1	P. Ganesh	3rd sem	P. Gan
26	1794 1A05E3	V. venkatesh	3r sem	
27	1794 1A0585	M. veera Sai Shavath	III sem	M. Sai
28	1794 1A05B7	S. Anish Ahamed	3rd sem	
29	1794 1A0525	C. Sravani	III sem	Sravani
30	1794 1A0596	O. Gangi Reddy	III sem	O. G
31	1794 1A05E5	V. sipha	3rd sem	
32	1794 1A0526	C. V. Skoushiknath Reddy	III sem	C. V. K
33	1794 1A0597	P. Rakesh Reddy	III sem	P. Rakesh Reddy
34	1794 1A05A1	P. Tejeswar Reddy	3rd Semester	P. Tej
35	1794 1A05B3	S. Sai chavitha	3rd sem	S. Sai ch
36	1794 1A05B5	S. kavya	3rd sem	
37	1794 1A05B2	P. Nagavaju	3rd sem	P. Naga Raju
38	1794 1A05E2	V. Mounika	3rd sem	
39	1794 1A0572	L. Hanumantha Reddy	3rd sem	L. Hanu
40	1794 1A05A6	P. Sai chaitan	III sem	

Coordinator

HoD

Dr. M. Sreenivasulu,
M. E., Ph. D.
Professer & HOD CSE
K.S.R.M. College of Engineering
K A D A P A - 516 003

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Date:30/05/2019

Department of Computer Science & Engineering

Certificate Course on Internet of Things from 03/06/2019 to 22/06/2019

Registered Student List

S.No.	Roll Number	NAME OF THE STUDENT	Year & Branch	Email id
1	179Y1A0519	B. Reddyprasad	B.Tech III Semester	179Y1A0519@ksrmce.ac.in
2	179Y1A0520	B. Bharathi	B.Tech III Semester	179Y1A0520@ksrmce.ac.in
3	179Y1A0522	C. Lohith Kumar	B.Tech III Semester	179Y1A0522@ksrmce.ac.in
4	179Y1A0523	C. Harinadh Reddy	B.Tech III Semester	179Y1A0523@ksrmce.ac.in
5	179Y1A0524	C. Harsha Vardhan Reddy	B.Tech III Semester	179Y1A0524@ksrmce.ac.in
6	179Y1A0525	C. Sravani	B.Tech III Semester	179Y1A0525@ksrmce.ac.in
7	179Y1A0526	C.V.S. Kowshiknath Reddy	B.Tech III Semester	179Y1A0526@ksrmce.ac.in
8	179Y1A0572	L. Hanumantha Reddy	B.Tech III Semester	179Y1A0572@ksrmce.ac.in
9	179Y1A0573	M. Mamatha	B.Tech III Semester	179Y1A0573@ksrmce.ac.in
10	179Y1A0574	M. Tejaswini	B.Tech III Semester	179Y1A0574@ksrmce.ac.in
11	179Y1A0575	M. Deekshith Reddy	B.Tech III Semester	179Y1A0575@ksrmce.ac.in
12	179Y1A0576	M. Purushotham	B.Tech III Semester	179Y1A0576@ksrmce.ac.in
13	179Y1A0585	M. Veera Sai Sarath Chandra	B.Tech III Semester	179Y1A0585@ksrmce.ac.in
14	179Y1A0586	M. Rakesh Kumar Reddy	B.Tech III Semester	179Y1A0586@ksrmce.ac.in
15	179Y1A0587	M. Vishnu Vardhan Reddy	B.Tech III Semester	179Y1A0587@ksrmce.ac.in
16	179Y1A0588	M. Priyanka	B.Tech III Semester	179Y1A0588@ksrmce.ac.in
17	179Y1A0589	M. Yogananda Reddy	B.Tech III Semester	179Y1A0589@ksrmce.ac.in
18	179Y1A0595	O. C. Bhargav Reddy	B.Tech III Semester	179Y1A0595@ksrmce.ac.in
19	179Y1A0596	O. Gangi Reddy	B.Tech III Semester	179Y1A0596@ksrmce.ac.in
20	179Y1A0597	P. Rakesh Reddy	B.Tech III Semester	179Y1A0597@ksrmce.ac.in
21	179Y1A0598	P. Afreen	B.Tech III Semester	179Y1A0598@ksrmce.ac.in
22	179Y1A0599	P. Soumya	B.Tech III Semester	179Y1A0599@ksrmce.ac.in
23	179Y1A05A0	P. Priyanka	B.Tech III Semester	179Y1A05A0@ksrmce.ac.in
24	179Y1A05A1	P. Tejeswar Reddy	B.Tech III Semester	179Y1A05A1@ksrmce.ac.in
25	179Y1A05A6	P Sai Charan	B.Tech III Semester	179Y1A05A6@ksrmce.ac.in
26	179Y1A05A7	P Anudeep Reddy	B.Tech III Semester	179Y1A05A7@ksrmce.ac.in
27	179Y1A05A8	P. Saisnjay Bhargav	B.Tech III Semester	179Y1A05A8@ksrmce.ac.in
28	179Y1A05A9	P. Rajesh	B.Tech III Semester	179Y1A05A9@ksrmce.ac.i

				n
29	179Y1A05B0	P . Vinay Kumar Reddy	B.Tech III Semester	179Y1A05B0@ksrmce.ac.in
30	179Y1A05B1	P. Ganesh	B.Tech III Semester	179Y1A05B1@ksrmce.ac.in
31	179Y1A05B2	P. Nagaraju	B.Tech III Semester	179Y1A05B2@ksrmce.ac.in
32	179Y1A05B3	S. Sai Cheritha	B.Tech III Semester	179Y1A05B3@ksrmce.ac.in
33	179Y1A05B4	S. Leelavathi	B.Tech III Semester	179Y1A05B4@ksrmce.ac.in
34	179Y1A05B5	S. Kavya	B.Tech III Semester	179Y1A05B5@ksrmce.ac.in
35	179Y1A05B6	S. Akramrazak	B.Tech III Semester	179Y1A05B6@ksrmce.ac.in
36	179Y1A05B7	S. Aneesh Ahamed	B.Tech III Semester	179Y1A05B7@ksrmce.ac.in
37	179Y1A05E2	V. Mounika	B.Tech III Semester	179Y1A05E2@ksrmce.ac.in
38	179Y1A05E3	V. Venkatesh	B.Tech III Semester	179Y1A05E3@ksrmce.ac.in
39	179Y1A05E4	V. Maimunnisa	B.Tech III Semester	179Y1A05E4@ksrmce.ac.in
40	179Y1A05E5	V. Silpa	B.Tech III Semester	179Y1A05E5@ksrmce.ac.in

Coordinator

HoD

Dr. M. Sreenivasulu,
M. E., Ph. D.
Professor & HOD CSE
K.S.R.M. College of Engineering
KADAPA - 516 003

Internet of Things

Course Objectives:

- Learn the basic python programming.
- Understand Raspberry Pi hardware and its relevant software.
- Gain knowledge to verify working of simple sensor circuits with Raspberry Pi.
- Understand the Internet of Things.

Course Outcomes:

The students will be able to:

- Learn the python programming language and IDE
- Prototype circuits and connect them to the Raspberry Pi
- Program the Raspberry Pi board to make the circuits work
- Analyze the internet of things

Module 1: Python Programming part 1

Introduction-History, Features, Setting up path, working with Python, Basic Syntax, Variable and Data Types, Operator; Conditional Statements-If, If- else, Nested if-else; Looping-For, While, Nested loops; Control Statements-Break, Continue, Pass; String Manipulation-Accessing Strings, Basic Operations, String slices, Function and Methods; Lists-Introduction, Accessing list, Operations, Working with lists, Function and Methods; Tuple-Introduction, Accessing tuples, Operations, Working, Functions and Methods.

Module 2: Python programming part 2

Dictionaries-Introduction, Accessing values in dictionaries, working with dictionaries, Properties, Functions; Functions- Defining a function, Calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables; Modules- Importing module, Math module, Random module, different type of Packages, Composition; Input-Output-Printing on screen, Reading data from keyboard, Opening and closing file, Reading and writing files, Functions.

Module 3: The Raspberry Pi and its uses

Introduction (Video),Raspberry Pi Board (Updated), Raspberry Pi Processor, Raspberry Pi vs. Arduino (Updated), Operating System Benefits, Processes, Raspberry Pi IoT, Raspberry Pi Setup, Raspberry Pi Configuration, Overclocking (Updated)

Introduction (Video), General Purpose IO Pins, Protocol Pins, GPIO Access, General Purpose IO Pins , Pulse Width Modulation, Demo of a Blink, Graphic User Interface, Tkinter Library, Interaction.

Module 4: Introduction to Internet of Things

What is IoT, how does it work, Difference between Embedded device and IoT device, Properties of IoT device, IoT Ecosystem, IoT Decision Framework, IoT Solution Architecture Models, How IoT is Transforming Businesses, Major IoT Boards in Market and Explore Raspberry Pi.

Module 5: Setting up Raspberry Pi and Sensors (Sense HAT Board)

Setting up Raspberry Pin Showing working of Raspberry Pi using SSH Client and Team Viewer, Understand Sensing actions, Understand Actuators and MEMS, Programming Sense HAT Board

Build a weather station using Sense HAT and Python, Prepare google spreadsheet for weather data collection ,Understand OpenCV.

Text book:

1. Python Crash Course: A Hands-On, Project-Based Introduction to Programming by Eric Matthes, No starch press 1st edition.

Reference:

1. Think Python How to Think Like a Computer Scientist by Allen B. Downey, O'Reilly media 1st edition.
2. https://www.youtube.com/watch?v=LlhmzVL5bm8&t=1s: Internet of things
3. https://www.guru99.com/iot-tutorial.html: IoT for beginners
4. https://www.tutorialspoint.com/internet_of_things/index.htm: IoT absolute beginners

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Department of Computer Science & Engineering

Certificate Course on Internet of Things from 03/06/2019 to 22/06/2019

Schedule

S.No	Date	Time	Faculty	Topic
1	03/06/2019	4PM t0 5PM	Y. Prasada Reddy N.J. Pramod Dhinakar S. Khader Basha	Inauguration,
		5PM to 6PM	N.J. Pramod Dhinakar	Introduction to IoT
2	04/06/2019	3PM to 5PM	N.J. Pramod Dhinakar	Basic Syntax, Variable and Data Types, Operator
		5PM to 6PM	N.J. Pramod Dhinakar	Conditional Statements-If, If- else, Nested if-else; Looping-For, While, Nested loops; Control Statements-Break, Continue, Pass
3	05/06/2019	4PM to 5PM	S. Khader Basha	String Manipulation-Accessing Strings, Basic Operations, String slices
		5PM to 6PM	S. Khader Basha	Function and Methods; Lists-Introduction, Accessing list, Operations, Working with lists
4	06/06/2019	3PM t0 5PM	S. Khader Basha	Function and Methods; Tuple-Introduction, Accessing tuples, Operations, Working, Functions and Methods
		5PM to 6PM	S. Khader Basha	Practical's
5	07/06/2019	4PM to 5PM	S. Khader Basha	Dictionaries-Introduction, Accessing values in dictionaries, working with dictionaries, Properties
		5PM to 6PM	S. Khader Basha	Practical's
6	10/06/2019	4PM to 5PM	N.J. Pramod Dhinakar	Functions- Defining a function, Calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables
		5PM to 6PM	N.J. Pramod Dhinakar	Practical's
7	11/06/2019	4PM to 5PM	N.J. Pramod Dhinakar	Modules- Importing module, Math module, Random module, different type of Packages, Composition
		5PM to 6PM	N.J. Pramod Dhinakar	Practical's
8	12/06/2019	4PM to 5PM	N.J. Pramod Dhinakar	Input-Output- Printing on screen, Reading data from keyboard, Opening and closing file, Reading and writing files, Functions.

		5PM to 6PM	S. Khader Basha	Practical's
9	13/06/2019	4PM to 5PM	S. Khader Basha	Introduction (Video),Raspberry Pi Board (Updated), Raspberry Pi Processor, Raspberry Pi vs. Arduino (Updated)
		5PM to 6PM	S. Khader Basha	Operating System Benefits, Processes, Raspberry Pi IoT
10	14/06/2019	4PM to 5PM	S. Khader Basha	Raspberry Pi Setup, Raspberry Pi Configuration, Overclocking (Updated)
		5PM to 6PM	N.J. Pramod Dhinakar	Introduction (Video), General Purpose IO Pins, Protocol Pins, GPIO Access, General Purpose IO Pins , Pulse Width Modulation
11	15/06/2019	4PM to 5PM	N.J. Pramod Dhinakar	Practical's
		5PM to 6PM	N.J. Pramod Dhinakar	Demo of a Blink, Graphic User Interface, Tkinter Library, Interaction.
12	17/06/2019	3PM to 5PM	N.J. Pramod Dhinakar	Practical's
		5PM to 6PM	N.J. Pramod Dhinakar	What is IoT, how does it work, Difference between Embedded device and IoT device, Properties of IoT device, IoT Ecosystem
13	18/06/2019	4PM to 5PM	S. Khader Basha	IoT Decision Framework, IoT Solution Architecture Models, How IoT is Transforming Businesses, Major IoT Boards in Market and Explore Raspberry Pi
		5PM to 6PM	S. Khader Basha	Practical's
14	19/06/2019	4PM to 5PM	S. Khader Basha	Setting up Raspberry Pin Showing working of Raspberry Pi using SSH Client and Team Viewer
		5PM to 6PM	N.J. Pramod Dhinakar	Practical's
15	20/06/2019	4PM to 5PM	N.J. Pramod Dhinakar	Build a weather station using Sense HAT and Python, Prepare google spreadsheet for weather data collection ,Understand OpenCV
		5PM to 6PM	N.J. Pramod Dhinakar	Practical's
16	21/06/2019	4PM to 6PM	Y. Prasada Reddy N.J. Pramod Dhinakar **S. Khader Basha**	Exam
17	22/06/2019	4PM to 6PM	Y. Prasada Reddy N.J. Pramod Dhinakar **S. Khader Basha**	Certificate distribution

Coordinator

HoD

Dr. M. Sreenivasulu,
M. E , Ph. D.
Professor & HOD CSE
K S R M College of Engineering

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Department of Computer Science & Engineering

Certificate Course on Internet of Things from 03/06/2019 to 22/06/2019

Attendance Sheet

S.No	Roll Num	Name of the Student	03/06/2019	04/06/2019	05/06/2019	06/06/2019	07/06/2019	10/06/2019	11/06/2019	12/06/2019	13/06/2019	14/06/2019	15/06/2019	17/06/2019	18/06/2019	19/06/2019	20/06/2019	21/06/2019	22/06/2019
1	179Y1A0519	B. Reddyprasad	P	P	a	P	P	P	P	P	P	P	P	P	P	P	P	a	P
2	179Y1A0520	B. Bharathi	P	P	P	P	P	P	a	P	P	P	P	P	P	P	P	P	P
3	179Y1A0522	C. Lohith Kumar	P	P	P	P	a	P	P	P	P	P	P	P	P	P	P	P	P
4	179Y1A0523	C. Harinadh Reddy	P	P	P	P	P	P	P	a	P	P	P	P	P	P	P	P	P
5	179Y1A0524	C. Harsha Vardhan Reddy	P	a	P	a	P	P	P	P	P	P	P	P	P	P	P	P	P
6	179Y1A0525	C. Sravani	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	179Y1A0526	C.V.S. Kowshiknath Reddy	P	P	a	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	179Y1A0572	L. Hanumantha Reddy	P	P	P	P	a	P	P	P	P	P	P	P	P	P	P	P	P
9	179Y1A0573	M. Mamatha	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
10	179Y1A0574	M. Tejaswini	P	P	P	a	P	P	P	P	P	P	P	P	P	a	P	P	P
11	179Y1A0575	M. Deekshith Reddy	P	P	P	P	P	P	P	P	P	P	P	a	a	P	P	P	P
12	179Y1A0576	M. Purushotham	P	a	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
13	179Y1A0585	M. Veera Sai Sarath	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

		Chandra	P	P	P	P	P	P	P	P	P	a	P	P	P	P	P	P	P
14	179Y1A0586	M. Rakesh Kumar Reddy	P	P	a	P	P	P	P	P	P	P	P	P	P	P	P	P	P
15	179Y1A0587	M. Vishnu Vardhan Reddy	P	P	P	P	P	P	a	P	P	P	P	P	P	P	a	P	P
16	179Y1A0588	M. Priyanka	P	a	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
17	179Y1A0589	M. Yogananda Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
18	179Y1A0595	O. C. Bhargav Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
19	179Y1A0596	O. Gangi Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
20	179Y1A0597	P. Rakesh Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
21	179Y1A0598	P. Afreen	P	P	P	a	P	a	P	P	P	P	P	P	P	P	P	P	P
22	179Y1A0599	P. Soumya	P	P	P	P	P	P	P	P	P	P	P	P	P	P	a	P	P
23	179Y1A05A0	P. Priyanka	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
24	179Y1A05A1	P. Tejeswar Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	a	P
25	179Y1A05A6	P Sai Charan	P	P	P	P	P	P	P	P	P	P	P	P	a	P	P	P	P
26	179Y1A05A7	P Anudeep Reddy	P	P	P	P	P	P	P	P	a	P	P	P	P	P	P	P	P
27	179Y1A05A8	P. Saisnjay Bhargav	P	P	P	a	P	P	P	P	P	P	P	P	P	P	P	P	P
28	179Y1A05A9	P. Rajesh	P	a	P	P	P	P	P	a	P	P	P	P	P	P	P	P	a
29	179Y1A05B0	P . Vinay Kumar Reddy	P	P	a	P	P	P	P	P	P	P	P	P	P	P	P	P	P
30	179Y1A05B1	P. Ganesh	P	P	P	P	P	P	a	a	P	P	P	P	P	P	P	P	P
31	179Y1A05B2	P. Nagaraju	P	P	P	P	P	a	P	P	P	P	P	P	P	P	P	P	P
32	179Y1A05B3	S. Sai Cheritha	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
33	179Y1A05B4	S. Leelavathi	P	P	P	P	P	P	P	P	P	P	P	P	P	P	a	P	P
34	179Y1A05B5	S. Kavya	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
35	179Y1A05B6	S. Akramrazak	P	P	P	P	P	P	P	P	P	a	P	P	P	P	P	P	P
36	179Y1A05B7	S. Aneesh Ahamed	P	P	P	P	P	P	P	P	P	a	P	P	P	P	P	P	P
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40	179Y1A05E5	V. Silpa	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Coordinator

HOD

Dr. M. Sreenivasulu,
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Professer & HOD CSE
K.S.R.M. College of Engineering
KADAPA - 516 003

K.S.R.M. COLLEGE OF ENGINEERING

(UGC - Autonomous)
Kadapa, Andhra Pradesh, India– 516 003
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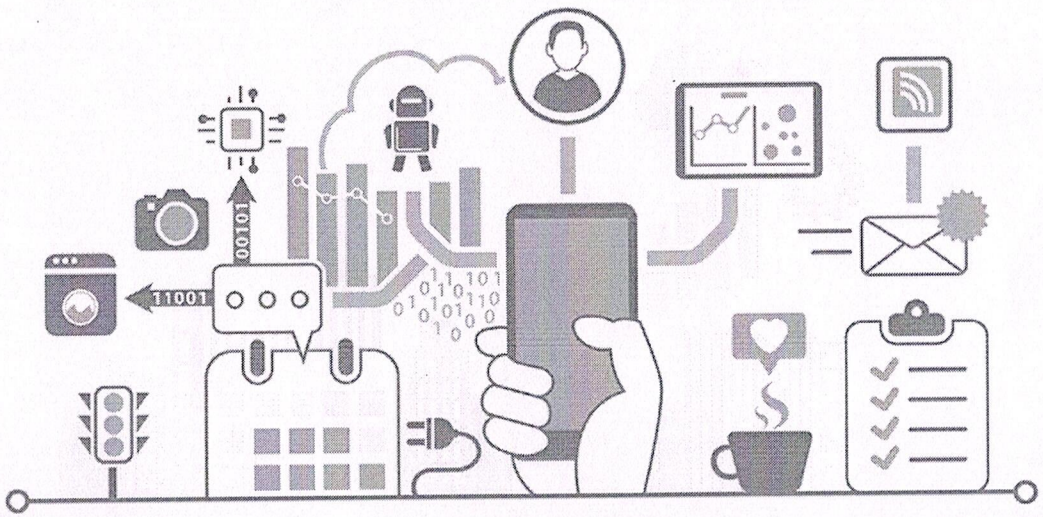
Department of Computer Science & Engineering

Certification course

on

IOT



03-June-2019 to 22-June-2019

4 Pm - 6 Pm

venue : MB 210,Java Programming Lab

Coordinator Person
Mr. Y. Prasada Reddy
Resource persons
Mr.N.J.Pramod Dinaka,
Mr. S. Khadr Basha

Ksrmceofficial www.ksrmce.ac.in 8143731980, 8575697569

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ACTIVITY REPORT

Certification Course
On
"INTERNET OF THINGS"

03/06/2019 to 22/06/2019

Target Group	:	**B.Tech CSE Students**
Details of Participants	:	**40 Students**
Coordinator	:	**Mr. Y. Prasada Reddy** **Asst. Prof, Dept. of CSE, KSRMCE**
Organizing Department	:	**Department of Computer Science & Engineering**
Venue	:	**MB110 (Programming in C Lab)**

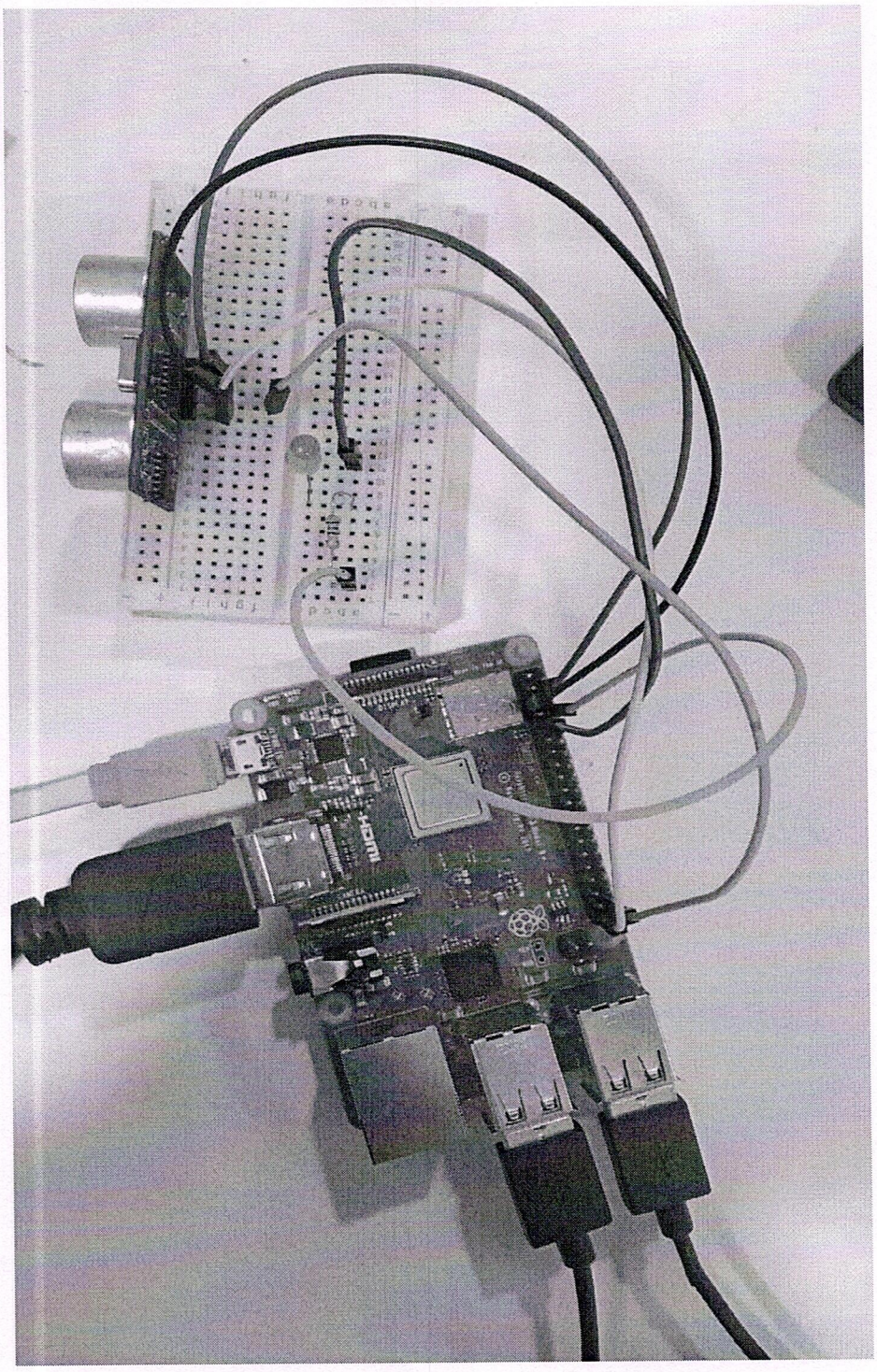
Description:

Certification course on "Android Application Development" was organized by Dept. of CSE from **03/06/2019 to 22/06/2019** in MB 110 (Programming in C lab). MR. Y. Prasada Reddy acted as Course Coordinator & resource persons are Mr. N.J. Pramod Dhinakar and Mr. S. Khadar Basha. This course will clear up the fundamental concepts of Internet of Things. 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. Thirty Four hours course was successfully completed and participation certificates were provided to the participants.

Photo :

Students participated in practical session

Resource Person gives overview about certificate course



Resource Person gives demonstration about experiment

Coordinator

HoD

Dr. M. Sreenivasulu,
M. E., Ph. D.
Professor & HOD CSE
K.S.R.M. College of Engineering
K A D A P A - 516 003

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE OF PARTICIPATION

This is to certify that Mr/Miss. P. Afreen bearing Roll Number. 179Y1A0598 participated in a certification course on "**Internet of Things**" organized by department of Computer Science and Engineering from 03-06-2019 to 22-06-2019.

COORDINATOR	HOD	PRINCIPAL
passed		V.S.S.Murty

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE OF PARTICIPATION

This is to certify that Mr/Miss. P. Anudeep Reddy bearing Roll Number. 179Y1A05A7 participated in a certification course on "**Internet of Things**" organized by department of Computer Science and Engineering from 03-06-2019 to 22-06-2019.

COORDINATOR	HOD	PRINCIPAL
passed		V.S.S.Murty

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE OF PARTICIPATION

This is to certify that Mr/Miss. V. Silpa bearing Roll Number. 179Y1A05F5 participated in a certification course on "**Internet of Things**" organized by department of Computer Science and Engineering from 03-06-2019 to 22-06-2019.

COORDINATOR	HOD	PRINCIPAL
Passed		V.S.S.Murty

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FEEDBACK FORM

Certificate Course on "INTERNET OF THINGS", from 03/06/2019 to 22/06/2019

Organized

by

Department of Computer Science & Engineering

NAME:

Roll No:

S.No	Feedback Item	Excellent	Very Good	Good	Average	Below Average
1	Organization of certificate course and session planning by instructor.					
2	Clarity in content delivery.					
3	Content is relevant and useful.					
4	Adequate opportunity to interact with trainer.					
5	Judicious mix of concepts. Principles and practices.					
6	Assignments and tasks are interesting and challenging.					
7	Overall rating					

Any suggestions for improvement.

Signature

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FEEDBACK FORM

Certificate Course on "INTERNET OF THINGS", from 03/06/2019 to 22/06/2019

Organized

by

Department of Computer Science & Engineering

NAME: B. Reddy Prasad

Roll No: 17941A0519

S.No	Feedback Item	Excellent	Very Good	Good	Average	Below Average
1	Organization of certificate course and session planning by instructor.	✓				
2	Clarity in content delivery.	✓				
3	Content is relevant and useful.		✓			
4	Adequate opportunity to interact with trainer.	✓				
5	Judicious mix of concepts. Principles and practices.	✓				
6	Assignments and tasks are interesting and challenging.	✓				
7	Overall rating	✓				

Any suggestions for improvement.

Prasad

Signature

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FEEDBACK FORM

Certificate Course on "INTERNET OF THINGS", from 03/06/2019 to 22/06/2019

Organized

by

Department of Computer Science & Engineering

NAME: B. Bharathi

Roll No: 179Y1A0520

S.No	Feedback Item	Excellent	Very Good	Good	Average	Below Average
1	Organization of certificate course and session planning by instructor.	✓				
2	Clarity in content delivery.	✓				
3	Content is relevant and useful.	✓	✓			
4	Adequate opportunity to interact with trainer.	✓				
5	Judicious mix of concepts. Principles and practices.	✓				
6	Assignments and tasks are interesting and challenging.	✓				
7	Overall rating		✓			

Any suggestions for improvement.

–

B. Bharathi

Signature

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Kadapa, Andhra Pradesh, India– 516 003

FEEDBACK FORM

Certificate Course on "INTERNET OF THINGS", from 03/06/2019 to 22/06/2019

Organized

by

Department of Computer Science & Engineering

NAME: C. Lohith Kumar

Roll No: 179Y1A0522

S.No	Feedback Item	Excellent	Very Good	Good	Average	Below Average
1	Organization of certificate course and session planning by instructor.	✓				
2	Clarity in content delivery.	✓				
3	Content is relevant and useful.	✓				
4	Adequate opportunity to interact with trainer.	✓				
5	Judicious mix of concepts. Principles and practices.		✓			
6	Assignments and tasks are interesting and challenging.	✓				
7	Overall rating	✓				

Any suggestions for improvement.

–

C. Lohith

Signature

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Kadapa, Andhra Pradesh, India– 516 003

FEEDBACK FORM

Certificate Course on "INTERNET OF THINGS", from 03/06/2019 to 22/06/2019

Organized

by

Department of Computer Science & Engineering

NAME: C. Harinathreddy

Roll No: 17941A0523

S.No	Feedback Item	Excellent	Very Good	Good	Average	Below Average
1	Organization of certificate course and session planning by instructor.		✓			
2	Clarity in content delivery.		✓			
3	Content is relevant and useful.	✓				
4	Adequate opportunity to interact with trainer.	✓				
5	Judicious mix of concepts. Principles and practices.		✓			
6	Assignments and tasks are interesting and challenging.	✓				
7	Overall rating	✓				

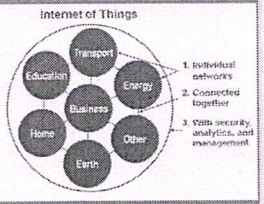
Any suggestions for improvement.

C. Harinathreddy
Signature

Internet of Things

Mr.N.J. Pramod Dhinakar, Dept of CSE,, KSRMCE, KADAPA

Contents



Internet vs Web

1. Internet :
   - Internet is the physical layer or network made up of switches, routers, and other equipment.
   - Its primary function is to transport information from one point to another quickly, reliably, and securely.
1. Web :
   - Web is an application layer that operates on top of the Internet.
   - Its primary role is to provide an interface that makes the information flowing across the Internet usable.

Evolution of the Web Vs the Internet

Web:

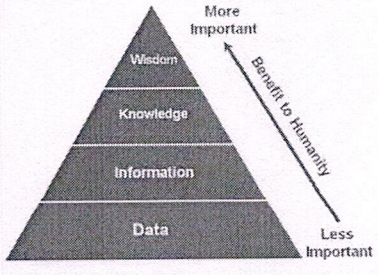
Stage 1. The web was primarily used by academia for research purposes.
Stage 2. Every company to share information on the Internet so that people could learn about products and services.
Stage 3. During this phase, companies like eBay and Amazon.com exploded on the scene.
Stage 4. The fourth stage, where we are now, is the "social" or "experience" web, where companies like Facebook, Twitter, and Groupon have become immensely popular and profitable

Internet:

IoT is the first real evolution of the Internet—a leap that will lead to revolutionary applications that have the potential to dramatically improve the way people live, learn, work, and entertain themselves.

We evolve because we communicate

Data is the raw material that is processed into information. Individual data by itself is not very useful, but volumes of it can identify trends and patterns. This and other sources of information come together to form knowledge. In the simplest sense, knowledge is information of which someone is aware. Wisdom is then born from knowledge plus experience.



What is IoT?

The Internet of Things(IoT) can be defined as a network of physical objects or people called "things" that are embedded with software, electronics, network, and sensors which allows these objects to collect and exchange data.

IoT stands for Internet of Things, which means accessing and controlling daily usable equipments and devices using Internet.

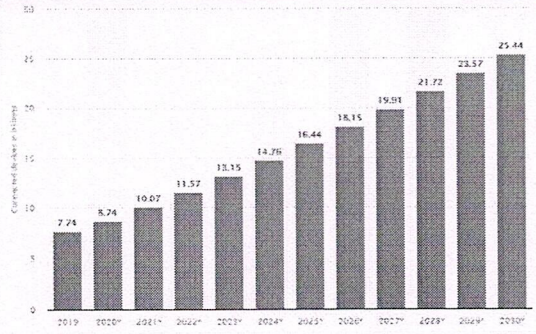
Contd

IoT is simply the point in time when more "things or objects" were connected to the Internet than people

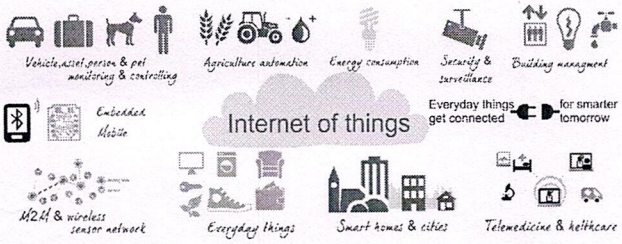
"By 2025, it is expected that there will be more than 30 billion IoT connections, almost 4 IoT devices per person on average," said Knud Lasse Lueth, Founder and CEO of IoT Analytics.

In 2020, for the first time, there are more IoT connections (connected cars, smart home devices, connected industrial equipment) than there are non-IoT connections (smartphones, laptops, and computers), from IoT Analytics.

Number of Internet of Things (IoT) connected devices worldwide from 2019 to 2030 *(in billions)*



Internet of Things applications



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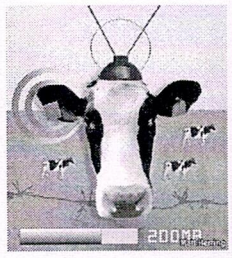
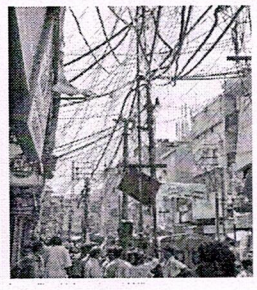


Cow have a sensor for monitoring



Electricity utility inefficiency in India

Better Quality of Life for the Elderly

Major verticals and use cases

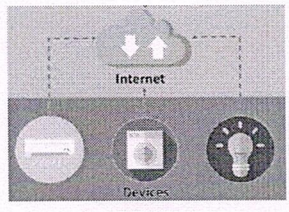
Major industry verticals are electricity, gas, steam & A/C, water supply & waste management, retail & wholesale, transportation & storage, and government.

The most important use case for IoT devices in the consumer segment are consumer internet & media devices such as smartphones, connected (autonomous) vehicles, IT infrastructure, asset tracking & monitoring, and smart grid.

Patients are ingesting Internet devices into their own bodies to help doctors diagnose and determine the causes of certain diseases. Extremely small sensors can be placed on plants, animals, and geologic features, and connected to the Internet.

Hot it works?

The entire IOT process starts with the devices themselves like smartphones, smartwatches, electronic appliances like TV, Washing Machine which helps you to communicate with the IOT platform.



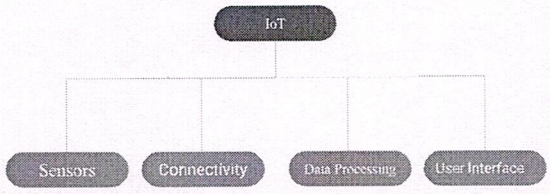
Hardware required

Arduino, raspberry pi, NodeMCU, ESP32 MCU Devices

Various sensors- Temperature,pressure, humidity, motion sensor, proximity sensors, etc

IoT platform: Microsoft Azure IoT suite, ThingSpeak, OpenHab, OpenIoT, etc.

Fundamental components of IoT



Sensors/Devices

- Sensors or devices are a key component that helps you to collect live data from the surrounding environment.
- All this data may have various levels of complexities. It could be a simple temperature monitoring sensor, or it may be in the form of the video feed.
- A device may have various types of sensors which performs multiple tasks **apart** from sensing.
- Example, A mobile phone is a device which has multiple sensors like GPS, camera but your smartphone is not able to sense these things.

Connectivity

- All the collected data is sent to a cloud infrastructure.
- The sensors should be connected to the cloud using various mediums of communications.
- These communication mediums include mobile or satellite networks, Bluetooth, WI-FI, WAN, etc.

Data Processing

- Once that data is collected, and it gets to the cloud, the software performs processing on the gathered data.
- This process can be just checking the temperature, reading on devices like AC or heaters.
- However, it can sometimes also be very complex like identifying objects, using computer vision on video.

User Interface

The information needs to be available to the end-user in some way which can be achieved by triggering alarms on their phones or sending them notification through email or text message.

For example, the user has a camera installed in his home. He wants to access video recording and all the feeds with the help of a web server.

However, it's not always one-way communication. Depending on the IoT application and complexity of the system, the user may also be able to perform an action which may create cascading effects.

For example, if a user detects any changes in the temperature of the refrigerator, with the help of IOT technology the user should able to adjust the temperature with the help of their mobile phone.

Challenges of IoT

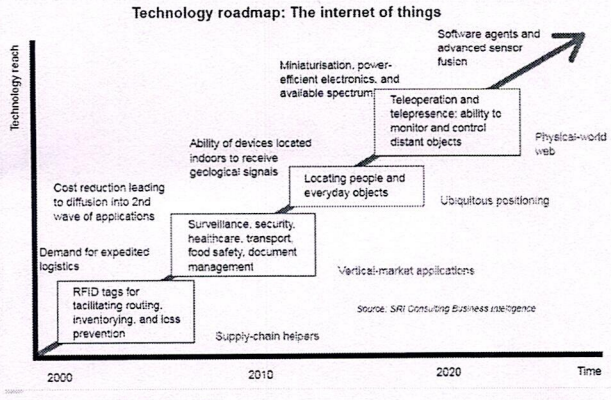
At present IoT is faced with many challenges, such as:

- Insufficient testing and updating
- Concern regarding data security and privacy
- Software complexity
- Data volumes and interpretation
- Integration with AI and automation
- Devices require a constant power supply which is difficult
- Interaction and short-range communication

Advantages of IoT

Key benefits of IoT technology are as follows:

- **Technical Optimization:** IoT technology helps a lot in improving technologies and making them better. Example, with IoT, a manufacturer is able to collect data from various car sensors. The manufacturer analyzes them to improve its design and make them more efficient.
- **Improved Data Collection:** Traditional data collection has its limitations and its design for passive use. IoT facilitates immediate action on data.
- **Reduced Waste:** IoT offers real-time information leading to effective decision making & management of resources. For example, if a manufacturer finds an issue in multiple car engines, he can track the manufacturing plan of those engines and solves this issue with the manufacturing belt.
- **Improved Customer Engagement:** IoT allows you to improve customer experience by detecting problems and improving the process.



Summary

- The Internet of Things (IoT) is a network of physical objects or people called "things" that are embedded with software, electronics, network, and sensors which allows these objects to collect and exchange data.
- The actual idea of connected devices was proposed in 1970
- Four Key components of IoT framework are 1) Sensors/Devices, 2) Connectivity, 3) Data Processing, 4) User Interface
- Various applications of IoT are Smart Thermostats, Connected Cars, Activity Trackers, Smart Outlets, Connect Health, etc
- Technical Optimization, Improve Data Collection, Reduced Waste, Improved Customer Engagement are key benefits of IoT
- Security, Privacy, Complexity, Compliance, are key challenges of IoT

References

1. https://www.cisco.com/c/dam/en_us/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf
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5. https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT

Thank you