

2. 2 Catering to Student Diversity

2.2.1 The institution assesses the learning levels of the students and organizes special Programmes to cater to differential learning needs of the student

SUPPORTING DOCUMENTS

(as reflected in the administrative and academic activities of the Institution)



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2. 2 Catering to Student Diversity

2.2.1 The institution assesses the learning levels of the students and organises special Programmes to cater to differential learning needs of the student

At P.B.Siddhartha College of Arts & Science, we judge in outcome-based learning processes, where as the institution categorize students as Slow Learners and Advanced Learners based on the, *Class Interaction, Test Performances, Laboratory Performance* and their *Achievements in Various Events*.

Activities for Slow Learners	Activities for Advanced Learners
1.Remedial Classes	1.Research articles
2.Assignments	2.Conferences
3. Question Banks	3.Certificate Courses
4.Counselling	4. Projects and Internships
5.Mentor -Mentee System	5.Awards and Scholarships
	6.Student Innovations
	7.Higher Education
	8.Seminars

- A. <u>Slow Learners:</u> Faculty members at the institute, give emphasis on improving the performance of slow learners by providing *Remedial Coaching* and *Conducting Periodical Tests*, *Providing Additional Laboratory Hours* which are conducted outside *Regular Classes*. Specifically, for difficult subjects classes are taken for students who have failed in the exam where the faculty spares time to sit with those students individually to cope up with the subject.
- (i) <u>Remedial Classes Details</u>: 36 members were given remedial coaching from all the three groups; M.C.A, M.Sc(CS) & M.Sc(CDS).

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Proofs of Remedial Registers:

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(ii) <u>Assignments:</u> To bridge the gap between the student's study at college and home assignments are given to the students. It helps in understanding a topic which makes it easy to prepare for the future final examination. Nevertheless, assignment learning helps the student to develop essential skills such as analytical skills, time management skills, writing skills and research skills. Proof for list of assignments given :

-				Assignment	Name of the	Signature	Signature
Program	Academic Year	Sem ester	Course	Course Code	Faculty	of Faculty	of HoD
MCA	2022- 2023		Cryptography and Network Security	20CA3T5	R Jayamma	forjat	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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1	21MCA01	Comp	uter Security Con	cepts		Lik	othe
2	21MCA03	Securi	ty Attacks			3	N'S
3	21MCA04	Securi	ty Services	_		a.	g vi jay
4	21MCA05	A Mod	del for Network S	ecurity.	1	1	Twy-
5	21MCA06	Symm	etric Cipher Mod	lel		k	S Lokedik.
6	21MCA07	Substi	tution Technique	25		Br	delage
7	21MCA08	AES				Se	uson Joy.
8	21MCA09	Divisil	pility and the Divi	sion Algorith	m,	4	Same?
9	21MCA10	The E	uclidean Algorith	m	14. ·	X	Raffint
10	21MCA11	Ferma	at's and Euler's Tl	heorems	ы	K	- Davant.
11	21MCA12	The C	hinese Remainde	r Theorem		Ale	ethya.M.
12	21MCA13	Princi	ples of Public Key	/ Crypto Syste	ems	A	gayathri
13	21MCA14	The R	SA Algorithm wit	h two examp	les	4	Yoget
14	21MCA15	Key N	lanagement			sk	(Khoego Nd
15	21MCA16	Ellipti	c Curve Cryptogr	aphy		T.P	Tasanna
16	21MCA17	Mess	age Authenticatio	on Codes	0	ß	tiethane
17	21MCA18	HMA	C			m.	Sai. Jumos
18	21MCA19	Digita	I Signatures			d	. Vinaykan
19	21MCA20	Symn	netric Key Distrib	ution Using A	symmetric Encr	yption Sl	. Angle
20	21MCA21	Distri	bution of Public H	Keys		D	Harika Savan

	P.B.	Siddhartha Colle	ege of Arts & Scie	nce:: Departme ssignments	ent of Computer	r Science	e	
Program	Academic Year	Semester	Course	Course Code	Name of the Faculty	Signa of Fac		Signature of HoD
M.Sc.(M athemti cs)	2021- 2022	III	Problem Solving using Python Programming	200E07	Dr.T.S.Ravi kiran	1-51 1-51	weil	5 mm 78
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11	20411	2. Write a py inheritanc	and the second se	demonstrate n	nultilevel		6.4	Jana Jana
12	20412	1. Program inheritanc	to demonstrate	multipath inh	eritance (or) l	hybrid	K.10.	exapla

(iii) Question Banks:

Slow learners are assisted with question bank.

Question banks are an important resource for students and educators. Students can use question banks to identify areas where they need to focus their efforts. They can help students gauge their readiness for exams by exposing them to a wide range of topics. Question banks can help improve the teaching, learning, and evaluation processes by providing a pool of quality pre-made questions. A sample proof of Question bank:

P.B.Siddhartha College of Arts & Science Question Bank, Academic Year 2019-2020 CA1T3: Computer Organization Program: MCA Faculty: Dr.T.S.Ravi Kir

- 1. Simplify the Boolean function F together with the don't care condition d in
 - (i) Sum of products form
 - (ii) Products of sums form
 - (iii) $F(A, B, C, D) = \sum (0,1,2,3,7,8,10)$
 - (iv) d (A, B, C, D)=∑ (5,6,11,15)
- 2. Explain the operation of JK flip flop with logic diagram
- 3. Explain different types of flip flops.
- 4. Define register and explain about shift registers.
- 5. Explain 1's & 2's complement with examples
- Explain the operation of 3-to-8 line decoder with logic diagram and truth table.
- 7. Explain the error detection with odd parity bit with logic diagram
- 8. Explain bus transfer system for four registers with a block diagram
- 9. Explain fixed point & floating point with example
- 10. Explain instruction cycle with a flow chart
- 11. Explain arithmetic micro operations and draw a circuit to implement
- 12. Explain memory reference instructions.
- 13. Explain register reference instructions
- 14. Explain I/O reference instructions
- 15. Describe block diagram of ALU
- 16. Explain address sequencing in micro programmed control unit
- 17. Explain various addressing modes
- 18. Define interrupt and explain different types of interrupts
- 19. Explain priority interrupt with example
- 20. Explain about control memory
- 21. Explain various instruction formats
- 22. Explain the addition and subtraction with signed-magnitude data with a flow chart
- 23. Explain Booth's multiplication algorithm
- 24. Draw and explain BCD adder
- 25. Explain about floating point arithmetic operations
- 26. Explain asynchronous data transfer methods
- 27. Explain memory hierarchy

- 28. Explain various modes of data transfer
- 29. Explain associative memory in detail
- 30. Explain hardware algorithm with flow chart and explain decimal division.
- 31. Explain multiplication algorithm with example.
- 32. Explain associative memory
- 33. Perform (-56) (-13) in binary using 2's complement method.
- 34. Design a two bit binary down counter with JK flipflops and one input x. When x= 0, the state of the flip-flops does not change and when x =1 the state sequence is 11, 10, 01, 00, 11 and so on?
- 35. Discuss the operation of master-slave flip-flop with logic diagram and timing relationship diagram?
- 36. What is an encoder? Construct a 5 × 32 line decoder with four 3 × 8 line decoders with enable and one 2 × 4 line decoder?
- 37. What is a shift register? Draw and explain bi-directional shift register with parallel load
- 38. Discuss the logic micro-operations in Register transfer language?
- 39. What is an interrupt? Explain the interrupt cycle with diagram and necessary microoperations?
- 40. Explain the operation of common bus system with a diagram?
- 41. Draw and explain the block diagram of control unit of a basic computer?
- 42. What are the advantages of micro-programmed control unit over hardwired control unit?
- 43. Explain different addressing modes with an example?
- Explain different instruction formats
- 45. Explain X = (A + B) (C + D) with different instruction formats?
- 46. Explain daisy chain priority interrupt?
- 47. Explain parallel priority interrupts?
- 48. What is locality of reference? Discuss different organizations of Cache Memory
- 49. Design a 4 bit synchronous counter using J-K flipflop?
- 50. Discuss the operation of SR flipflop with logic diagram? Or
- 51. Construct a 16 to 1 line MUX with two 8 to 1 line MUX and one 2 to 1 line MUX?
- 52. What is the difference between serial and parallel transfer? Explain bi-directional shift register?

P.B SIDDHARTHA COLLEGE OF ARTS AND SCIENCE :: VIJAYAWADA-10 DEPARATMENT OF COMPUTER SCIENCE PROGRAM: M.C.A SEMESTER: IV ACADEMIC YEAR: 2020-2021 4T4i SUBJECT: Big Data Analytics

COURSE CODE: CS4T4i

QUESTION BANK

Faculty: V. Venkata Ramana

HOD: Dr. T.S.Ravi Kiran

Signature of the Faculty with Date:

Signature of HOD with Date:

UNIT I

Each question - 14 Marks

1. Explain classification of digital data with examples in terms of Big data

- 2. What is Big data? Explain the characterstics & evoluation of Big Data
- a. Explain V's in Big data
 - b. What is changing in realms of big data?
- 4. a. Distinguish between BI vs BIG data
- b. Who is Data Scientist? Illustrate the skills required for data scientist
- 5. Explain the challenges faced by BIG Data, How these challenges are handled?
- Explain CAP Theorem with illustrations

UNIT II

- 1. Explain architecture of HDFS
- 2. Explain Anatomy of file Write in HDFS
- Explain Anatomy of file read in HDFS
- Illustrate Hadoop eco-system with neat diagram
- 5. Explain the following with neat diagram
- 6. a. In-memory analytics
 - b. In-database processing
 - c. Symmetric multiprocessing

UNIT III

- How Map Reduce works with example?
- 2. a. What is NoSQL? Explain type of Nosql Data Bases with examples
 - b. What are advantages and disadvantages of NoSQL
- 3. a. How to create a collection in mongoDB?
 - b. Explain Mongo DB query language with examples
- a.Expalin CRUD operation into mongoDB with examples
 - b. Write short notes on exporting and importing of files into mongoDB with example
- 5. Explain Map-Reduce in mongoDB with suitable example
- What is MongoDB? Explain MongoDB Query Language with examples

7. a. Distinguish between SQL and NoSQL

UNIT IV

- 1. Explain Hive architecture with neat diagram
- 2. Explain Creation and deletion of table in Hbase
- 3. a. Distinguish between Hbase and RDBMS
- b. Write shortnotes on Anatomy of apache PIG
- 4. a. Explain Mapreduce with PIG with examples
- b. What is role of User defined functions in PIG?
- 5. Execute the hive command for the following
 - a. Display the employee records who are working in dept 5
 - b. Add new column to the employee table
- 6. Explain Hbase architecture with neat diagram

UNIT V

- 1. Explain various visualization design methods with examples in Tableau
- 2. Explain creating the word cloud and text table/Crosstab with examples in Tableau
- Explain the process of data blending with example in Tableau
- a.Define dimesion and measure with examples
 b. Explain shelves tableau with neat diagrams
- a.Explain role of Measure Values and Measure Names in tableau and how they are used?b. How we connect data in tableau?
- 6. Explain the process of creating any four charts in Tableau with examples
- 7. Explain process of connecting various data sources to Tableau Worksheets with examples

(iv) Counselling:

Slow Learners are generally are the ones who are not regular to the college. Student at P.B.Siddhartha College are given counseling to address issues like low attendance lower grades in Continous Assessments, and behavioral problems. Parents will be informed about the students performance and behaviour, the concerned mentor organizes a meeting to discuss with the respective students and parents to resolve the issues. This kind of action can help student in becoming more serious in his studies.

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(v) Mentor-Mentee System:

Through Mentor-Mentee System faculty members also supports slow learners. The mentor also identifies other *skills* and *strengths* and encourages them to hone them which helps build self-confidence resulting in improvement in *Academic Performance* also. Students are assigned a mentor who is one of their subject teachers. Each mentor is assigned the responsibility of 20-25 students. Mentor books are allotted to the mentors where mentor maintains the data of the mentees like attendance and marks. Mentor is always available for the students in case of any concerns. Especially mentor tracks the performance of their mentees and gives required counseling and assistance for slow learners. More details are discussed in criteria 2.3.2

Sample data evidence of mentoring books:

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B. Advanced Learners:

To strike a perfect balance between academics and extra & co-curricular activities students are given the opportunity to participate in Student Meets, Writing Research Articles, Conferences, *Hackathons, Paper Presentations, and Project Competitions*. We also encourage advanced learners to conduct *Workshops* and *Seminars* to share their knowledge.

(i) **Research Articles:** Research allows people to learn about new ideas, points of view, theories, and facts, which can help them develop critical thinking, analytical, and communication

skills. The advanced learners are encouraged to write Research articles along with faculty members on the latest technologies. The faculty also facilitates students to publish their articles in Renowned Peer Reviewed Journals. A sample research articles given below:

RESEARCH PAPERS

SECURITY CHALLENGES AND MEASURES OF IOT DEVICES AND ITS NETWORKS

Bv

SRINIVASA RAVI KIRAN T. * SHANTHI PRIYA DASARI **

*-*** Department of Computer Science, P. B. Sidahartha College of Arts & Science, Vijayawada, Andhra Pradesh, India, Date Received: 11/01/2023 Date Revised: 04/04/2023

Date Accepted: 17/04/2023

SALMA BEGUM ***

ABSTRACT

The Internet of Things (IoT) illustrates physical objects with sensors, processing capabilities, software, and other technologies that attach and swap data with other devices and systems over the Internet or other communication networks. The use of IoT devices is widespread across all domains. In this article, various types of attacks on IoT devices by intruders or hackers to aain access to IoT devices were discussed. In addition, various measures have been formulated to minimize attacks on IoT Devices. In-depth analysis of the likelihood of security threats and various possibilities to minimize security threat hacking were analyzed in detail, and possible measures are stated to overcome security threats. Keywords: Security, Threat, Protocol, Attacks, Fuzzy Loaic, Network,

INTRODUCTION

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part of the Internet. The IoT has a global network infrastructure with an identity for every object that is physically connected to the Internet and can communicate with other devices on the Internet. There are a few devices such as computers, cell phones, tabs, and washing machines. The IoT is a vast network of interconnected "things." The device contains a microchip that connects all devices. These microchips track the environment and report this information to both networks and humans (Husamuddin & Qayyum, 2017).

There are a few devices, such as computers, cell phones, tabs, and washing machines. IoT is a large network of interconnected devices, and its devices contain microchips that interconnect all devices. These microchips track the surroundings and report the same in the network, as well as in humans. The best part of IoT is



that each and every physical entity can be The movement of IoT is significant in the present era and is communicated and accessible through the Internet (Husamuddin & Qayyum, 2017). As a result of the low-cost Internet, a large number of devices are connected to the Internet. According to a research company, there were 4.48 billion devices connected to the Internet, and the growth in 2016 was expected to be 30%. By 2020, it is expected to reach 50 billion. These devices provide a surface for attackers (Husamuddin & Qayyum, 2017).

1. Features of IoT

Vianesh and Samvdurai (2017) illustrated some important IoT features from four aspects: description, threat, challenges, opportunities, and solutions, as depicted in Figure 1.

- · Description: This describes the vulnerabilities in IoT security across networks or in the cloud and describes the distinct security measures to safeguard the resources (Zhou et al., 2018).
- · Threat: It discusses the latent threats and vulnerabilities of IoT devices as well as the major consequences of these threats (Siddiqui et al., 2020).
- · Challenges: It outlines the possible difficulties in accessing IoT devices and addresses the threats to

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Enhanced Security in IOT

S.P.D.N.D Suneetha¹, A.Kavitha², A. Sai Prasanna³, ^{1,2,3}Assistant Professor, Department of Computer Science, PB Siddhartha Arts & Science, Vijayawada, AP, India.

ABSTRACT

Internet of things (IoT) is an enormous dissipated system in which billion of gadgets are interconnected. It is viewed as the best immersion of destinations as it doesn't envision that human should machine correspondence. Notwithstanding, with the lively improvement of IoT, challenges concerning security have advanced also. Since IoT includes three layers affirmation layer, create layer and application layer, this paper will give an examination to different security issues at each layer including the cross-layer heterogeneous mix security issues and propose some encouraging courses of action.

Keywords

Internet of Things, Wireless Technology, Security issues, Intelligent System

INTRODUCTION

The term Internet of Things (IOT), for the most part called Internet of Objects suggests the planned interconnection of normal things, which is commonly seen as a self-organizing remote course of action of sensors whose reason is interconnect all things [1].

Today the world is totally subject to the data gave on web, which is gotten by taking pictures or through substance. This undeniably shows the basic duty of an individual for hoarding of the data. In any case, the issue with human joining is that, individuals have kept time and less exactness, which prompts shameful and conflicting information. In this manner, such a framework is required which can regularly get the information and exchange it to the web with no human to machine correspondence.

Web of things is a condition in which everything is connected with the web through the data distinguishing gadgets with the genuine goal of attentive ID and the managers [2]. These things are equipped with the novel identifiers which can be examined utilizing RFID names with the assistance of sensors (data recognizing contraptions). The thing in the snare of thing can be an individual with a heart screen introduce, a property creature with a biochip transponder, a vehicle that has worked in sensors to alarm the driver when the weight is low or some other designed article that has a fascinating IP address with the capacity to be connected with the structure for the exchanging of the information [3]. There is a basic endeavor of remote headway, Microelectromechanical Systems (MEMS) and the web really happening as intended of IOT. One of the foremost things expected to recognize the article in the earth is RFID. Recognizing can be conceivable by assigning each article an amazing identifier and sometime later associated with the web, for shrewd dealing with by

(i) <u>Conferences:</u>

Students are also encouraged present the research articles in the national and International conferences. A sample of presentations is provided below.

Dr. T.S.Ravi Kiran, HoD, Department of Computer Science, S.Nagasai Nishmitha from II MCA,G.Priyanka from II MCA presented a research article "Security Threats and Measures to overcome from Security Threats in Superior Cloud" in Two Day National Seminar on "Recent Trends in Information Communication Technologies 2023" at Krishna University, Machilipatnam on 03rd and 04th January 2023.



(ii) <u>Compettitions:</u>

Ch.Hemalatha (21MCA64) of M.C.A Third Semester has secured Third Prize in INSIGNIA (Logo Design) in a State Level Technical event Tech Sparks-2K22, Sri Durga Malleswara Siddhartha Mahila Kalasala, Vijayawada, on 1st December 2022 organized by Department of Computer Science.

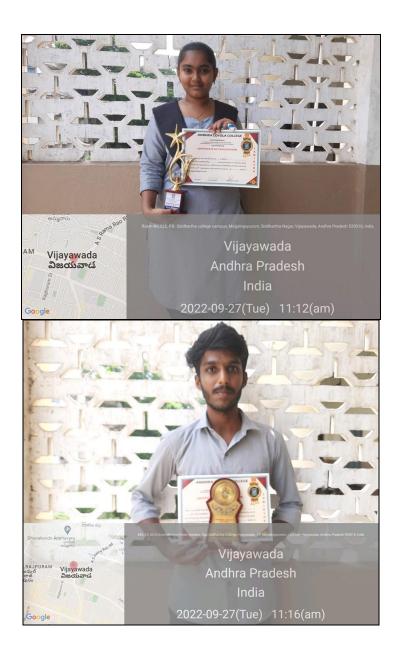


Tadiparti Venkata Ramana Sai Phanindra from M.C.A with Register Number 20259 has secured Second Prize in the event "Be the 1 in 3" a personality development contest in **ARVUTI-2K22**, a State Level Techno Cultural Meet organized by AG & SG Siddhartha Degree College of Arts & Science, Vuyyuru on 12th April 2022.

AG & SG Siddhartha Degree College of Arts & S Vuyyuru, Krishna(Dt), A.P - 521165 Autonomous College, Accredited with Grade 'A' by NAAC ISO 9001 : 2015	Science 🍰
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<u>PB</u> Stadhartha College participated in <u>Be the I to 3</u> event in State Level "ARVUTI-2K22" organized by Department of Computer Scienc Siddhartha Degree College of Arts and Science (Autonomous), Vuyyu 2022.He/She secured <u>2rd</u> place in <u>Be the I in 3</u>	e, A.G & S.G
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 Reddy Anupuma of M.Sc.(Computer Science) with Register Number 20326 has secured First Prize in the event "Tech Tambola" a coding contest in Techno Banquest-2021, a State Level Techno Cultural Meet organized by K.B.N College, Vijayawada on 15th December 2021 organized by

ISO 9001 : 2015	KBN COO Kothapeta, Vijayawada (Autonoma (Sponsored by SKPVV Hindu High	- 520001, A.P. US) Schools Committee)
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Department of C		tions on 15th December 2021.
V.T. Ram Pavan Kuma Conve Department	ner	Dr. V. Narayana Rao, M.Corn., Ph.D., Principal



(iii) Certificate Courses: New subjects not included in the curriculum are covered through certificate courses offered by trusted educational platforms.





(iv) Projects & Internships: Projects and Internships in academics promote hands-on learning, allowing students to apply theoretical knowledge to real-world problems. Advanced learners

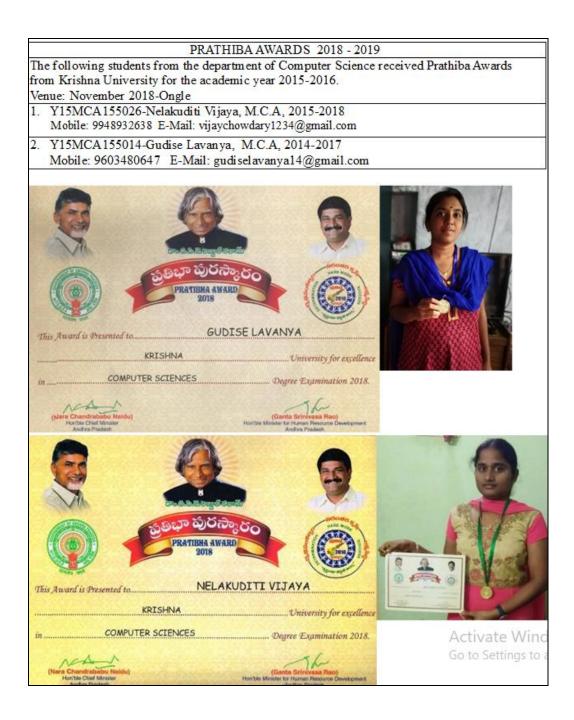
are encouraged to undertake virtual internships to improve their knowledge domain. A sample certificate given below:



(v) Awards and Scholarships:

Pratibha Awards and Gold Medals are awarded to the toppers in the various departments of the institution. Also scholarships are given to motivate and encourage the students.

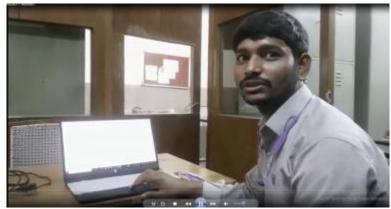
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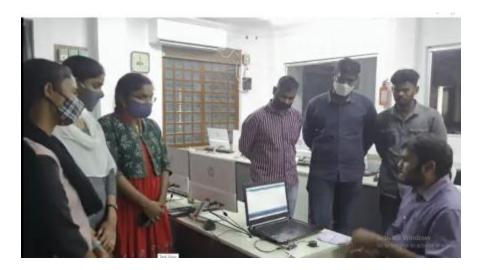
(vi) Student Innovations:

Embracing innovation in education promotes critical thinking and a sense of adventure for the students in the classroom. As educators, we leverage innovation to improve student outcomes as to develop those skills that students need to succeed in life. In P.B.Siddhartha College of Arts and Science, advanced learners are supported by the faculty and management to come up with innovations and are facilitated in all means. Sample evidence of innovations of our students:

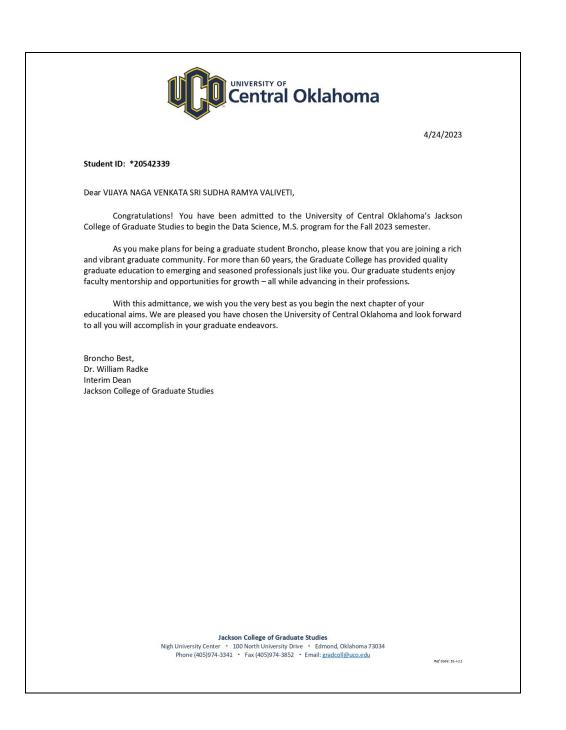
Mr. A.Mani Kanta with register number 20201 of Second Year M.C.A has Developed a prototype on "QR Code Based Attendance System" using *OpenCV* and *Python* on 11th February 2022 and using this Project Student Attendance can be Recorded and Monitored by scanning the QR Code available on their ID Cards.



 Mr. V.Surya Kumar with register number 20336 of Second Year M.Sc.(Computer Science) has Developed a Proto Type "Contactless Door Bell" on 02/03/2022 where he has made use of *Aurduino UNO* and *IS Sensor* for Detecting and Buzzer when a person wants to ring the Bell. The user is required to just place their hand in front of the IR Sensor and Bell rings Automatically thus this avoids contact to switch.



(vii) Higher Education: There is a great significance of higher education. It equips learners with advanced knowledge, critical thinking, and analytical skills that enable them to pursue fulfilling career. Moreover, it fosters a culture of continuous learning, promotes adaptability in an ever-evolving world. People who have higher education, they can contribute significantly for the development of the nation. In our college we encourage Advanced Learners to do higher education to shape their bright future. A sample of admission letter is given below.



(viii) Seminars: Advanced Learners are also encouraged to take subject topics and give seminars to build their Proficiency in Verbal Communication and presentation skills.

_			List of Semin	ar Presentati	artha College of on Topics		7.5	
Program	Academic Year	Se me ster	Course	Course Code	Name of the Faculty	Signature of Faculty	Signature of HoD	
MCA 2022-2023		п	Data structures	22CA2T2	K. Gayathri	Q	**	
S.No.	Roll. No	Seminar Presentation Topic					Signature of Student	
1	22MCA01	Queues and its Operations					Dixail	
2	22MCA02	Stack and its Operations					No. of Street,	
3	22MCA03	Deque and its Operations					2- Geplake	
4	22MCA04	Intoduction to Data Structures and Its Operations					10-Madk	
5	22MCA05	AVL Trees in Data Structures					B.V.Bhow	
6	22MCA06	Stacks using Linked List					BNIBUL	
7	22MCA07	Linear search and Binary Search						
8	22MCA09	Representation of Linear Array					W.Jugaan	
9	22MCA10	Heap Sort					I-Horsha er	
10	22MCA11	Introduction to Linear Data Structures					B. Gayathr	
11	22MCA12						audhya	
- 52		Recursive Implementation of traversing Binary Tree					Tanushu	
12	22MCA13	Priority Queues					Swathi	
13	22MCA14	Data Structures					· d	
14	22MCA15	Towers Of Hanoi					P. Hemanth	
15	22MCA16	Stacks using array reprsentation					Moonita	
16	22MCA17	Complexity and its Types						
17	22MCA18	Parallel Arrays					Rama	
18	22MCA19	Sequential Representation of Graphs					- Delpin	