



2.5.1.	Mechanism of internal/ external assessment is transparent and the grievance redressal system is time- bound and efficient
1.	Internal Exam – Schedule
2.	Internal Exam – Circular
3.	Internal Exam – Timetable,
4.	Internal Exam – Hall arrangement
5.	Internal Exam – Hall duty allocation,
6.	Internal Exam – question paper,
7.	For internal mark Transparency Subject wise answer script with student signature
8.	University Revaluation applied students list with result (Mark/grade changes or no change)



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Internal Assessment Schedule for Non Autonomous Affiliated Institutions

AUGUST - December 2021 - For all UG/PG - Programmes (ODD SEMESTER) - Except M.C.A 2 Years

Report No	Report Period	Test Period	Report Entry Period
I	18-08-2021 - 13-09-2021	---	13-09-2021 - 18-09-2021
II	14-09-2021 - 07-10-2021	01-10-2021 - 07-10-2021	07-10-2021 - 13-10-2021
III	08-10-2021 - 05-11-2021	29-10-2021 - 05-11-2021	05-11-2021 - 11-11-2021
IV	05-11-2021 - 30-11-2021	23-11-2021 - 30-11-2021	30-11-2021 - 02-12-2021

Saturdays may be included as working days to make good the Shortages, if any.

[Signature]
 CONTROLLER OF EXAMINATIONS

ANNA UNIVERSITY:: CHENNAI 600 025

Internal Assessment Schedule for Non Autonomous Affiliated Institutions

AUGUST 2022 - DECEMBER 2022 - For all UG - Programmes (ODD SEMESTER-EXCEPT III SEMESTER)

Report No	Report Period	Test Period	Report Entry Period
I	10-08-2022 - 23-08-2022	---	29-09-2022 - 06-10-2022
II	24-08-2022 - 21-09-2022	16-09-2022 - 21-09-2022	29-09-2022 - 06-10-2022
III	22-09-2022 - 21-10-2022	17-10-2022 - 21-10-2022	21-10-2022 - 29-10-2022
IV	22-10-2022 - 19-11-2022	14-11-2022 - 19-11-2022	19-11-2022 - 21-11-2022

Saturdays may be included as working days to make good the Shortages, if any.

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 CONTROLLER OF EXAMINATIONS

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EXAM CELL

CIRCULAR

2021-2022

Internal Assessment I for II,III,IV year students is scheduled from 4/10/2021 to 6/10/2021 The below list of faculty members has to present and collect the question Papers And answer sheet from the exam cell 15 minutes before the commencement Of the examination without fail.

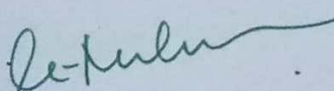
If any alternation needed, faculty members are advised to make alternate arrangement With other faculty members and inform to exam cell incharge on or before 1/10/2021.

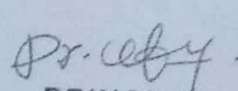
TEST TIMINGS:

Forenoon session: 11.00 am to 12.30 am

Afternoon session: 2.30 pm to 4.00 pm




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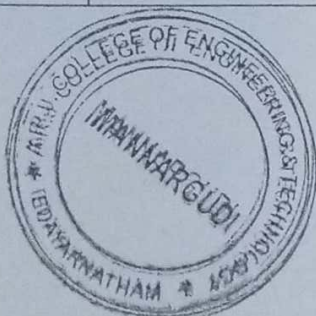


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INTERNAL ASSESSMENT I DUTY SCHEDULE-2021-2022

S.no	Name of the faculty	Designation	4/10/2021		5/10/2021		6/10/2021	
			FN	AN	FN	AN	FN	AN
1	MRS KAVITHA R	AP-CSE	LH-1	LH-10	LH-05	LH-1	LH-10	LH-1
2	MRS NANDHINI N	AP-CSE	LH-3		LH-08	LH-3	LH-6	LH-3
3	MR .VARUN K	AP-CIVIL	LH-6	LH-2		LH-6	LH-2	LH-6
4	MS.BHARATHI S	AP-ECE	LH-8	LH-7	LH-07	LH-8	LH-7	LH-11
5	MR NARESHKUMAR N	AP-ECE	LH-4	LH-3	LH-04	LH-11	LH-3	
6	MR RAMKUMAR G	AP-MECH		LH-11	LH-01	LH-9	LH-09	LH-9
7	MR.PERUMAL G	AP-MECH	LH-2	LH-04	LH-06		LH-04	LH-2
8	MR.SIVAJI T	AP-EEE	LH-10	LH-01	LH-03	LH-10	LH-11	LH-10
9	MR RAJESHKUMAR R	AP-EEE	LH-7	LH-05	LH-09	LH-7	LH-05	LH-7
10	MS DEEPA K	AP-CIVIL	LH-5	LH-08	LH-10	LH-5	LH-08	LH-5
11	MRS JANANI J	AP-CSE	LH-11	LH-6	LH-02	LH-2	LH-1	LH-4
12	MR FRANSIC R	AP-EEE	LH-9	LH-9	LH-11	LH-4		LH-8



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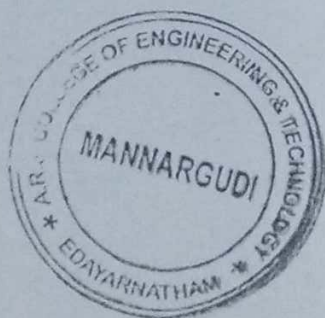
EXAM CELL
CIRCULAR 2021-2022

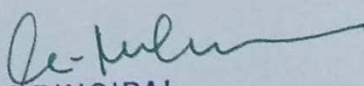
Internal assessment I for II,III,IV year UG students is scheduled from 4/10/2021 to 6/10/2021 .

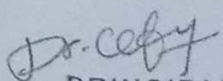
The following faculty members have been appointed as squad members and are asked attend the duty without fail.

All the squad members are requested to monitor all the exam hall for smooth conduct of examination.

S.No	Name Of The Faculty	Department	4/10/2021	5/10/2021	6/10/2021
01	DR PANDIYARAJ.P	Professor - MECH	AN	FN	AN
02	DR VENKATESAN S	Professor - ECE	FN	AN	FN




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SEATING PLAN

LHI					
INTERNAL ASSESSEMET TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120103303		
1	820120103001	10	820120104006	18	820120103308
2	820120104001	11	820120103304	19	820120104010
3	820120103002	12	820120104007	20	820120103309
4	820120104002	13	820120103305	21	820120104011
5	820120103301	14	820120104008	22	820120105001
6	820120104004	15	820120103306	23	820120104012
7	820120103302	16	820120104009	24	820120105002
8	820120104005	17	820120103307	25	820120104013
3rd SEM CIVIL -10,CSE - 13,		EEE-02		TOTAL - 25	
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					



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LH-2					
INTERNAL ASSESSEMET TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
S.N O	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120104019		
1	820120104014	10	820120105007	18	820120104025
2	820120105003	11	820120104020	19	820120105301
3	820120104016	12	820120105008	20	820120104026
4	820120105004	13	820120104021	21	820120105302
5	820120104017	14	820120105009	22	820120104301
6	820120105005	15	820120104022	23	820120105303
7	820120104018	16	820120105010	24	820120104302
8	820120105006	17	820120104024	25	820120105304
3 rd SEM EEE-12, CSE - 13,				TOTAL - 25	
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					



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LH-3					
INTERNAL ASSESSEMET TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120104307		
1	820120104303	10	820120105309	18	820120104312
2	820120105305	11	820120104308	19	820120105313
3	820120104304	12	820120105310	20	820120104313
4	820120105306	13	820120104309	21	820120105314
5	820120104305	14	820120105311	22	820120104314
6	820120105307	15	820120104310	23	820120105315
7	820120104306	16	820120105312	24	820120104315
8	820120105308	17	820120104311	25	820120105316
3 sem EEE-12, CSE - 13,				TOTAL - 25	
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					



Dr. C. S. S. S.
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LH-4

INTERNAL ASSESSEMET TEST YEAR 2021-2022

SEATING ARRANGEMENT-ODD SEMESTER

S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120104320		
1	820120104316	10	820120106001	18	820120104312
2	820120105318	11	820120104321	19	820120106303
3	820120104317	12	820120106002	20	820120104313
4	820120105319	13	820120104322	21	820120106304
5	820120104318	14	820120106301	22	820120104314
6	820120105320	15	820120104323	23	820120106305
7	820120104319	16	820120106302	24	820120104315
8	820120105321	17	820120104324	25	820120106306
3 rd SEM EEE-4, CSE - 8		ECE - 8		TOTAL - 25	
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					



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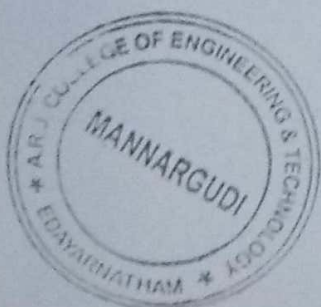
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LH-5					
INTERNAL ASSESSMENT TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120114006		
1	820120106307	10	820120114007	18	820120106316
2	820120114001	11	820120106312	19	820120114011
3	820120106308	12	820120114008	20	820120106317
4	820120114002	13	820120106313	21	820120114012
5	820120106309	14	820120114009	22	820120106318
6	820120114003	15	820120106314	23	820120114301
7	820120106310	16	820120114010	24	820120106311
8	820120114005	17	820120106315	25	820120114302
3rd SEM ECE - 12 MECH - 13			TOTAL - 25		
PRESENT -			PRINCIPAL		
ABSENT -					
SIGNATURE -					



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Dr. ceffy
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LH-6					
INTERNAL ASSESSEMET TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120114307		
1	820120114303	10	820119103006	18	820120114312
2	820119103002	11	820120114308	19	820119104003
3	820120114304	12	820119103301	20	820120114314
4	820119103003	13	820120114309	21	820119104004
5	820120114305	14	820119104001	22	820120114315
6	820119103004	15	820120114310	23	820119104005
7	820120114306	16	820119104002	24	820120114316
8	820119103005	17	820120114311	25	820119104006
3 rd SEM MECH - 13		5 th SEM CIVIL - 6 CSE - 6		TOTAL - 25	
PRESENT -			PRINCIPAL		
ABSENT -					
SIGNATURE -					



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LH-7					
INTERNAL ASSESSEMET TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820119104007		
1	820120114317	10	820119105006	18	820119104013
2	820119105001	11	820119104008	19	820119106001
3	820120114318	12	820119105301	20	820119104014
4	820119105002	13	820119104009	21	820119106002
5	820120114319	14	820119105302	22	820119104015
6	820119105003	15	820119104010	23	820119106004
7	820120114320	16	820119105303	24	820119104017
8	820119105004	17	820119104011	25	820119106005
3rd SEM MECH - 4		5th SEM CSE - 9 EEE - 8 ECE -4		TOTAL - 25	
ESSENT -					
SENT -					
NATURE -					PRINCIPAL



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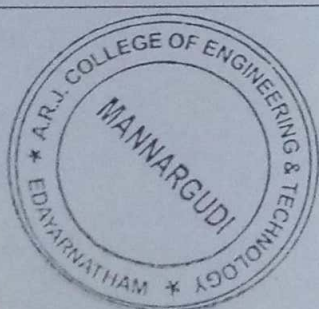


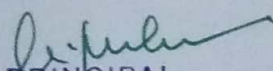
LH-8

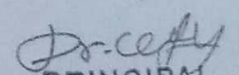
INTERNAL ASSESSEMET TEST YEAR 2021-2022

SEATING ARRANGEMENT-ODD SEMESTER

S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820119104019		
1	820119106006	10	820119114010	18	820119104301
2	820119114005	11	820119104020	19	820119114301
3	820119106007	12	820119114011	20	820119114001
4	820119114006	13	820119104021	21	820119114302
5	820119106301	14	820119114013	22	820119114002
6	820119114007	15	820119104022	23	820119114303
7	820119104018	16	820119114014	24	820119114004
8	820119114009	17	820119104023	25	820119114304
5 th SEM MECH - 15		CSE - 7 ECE - 3		TOTAL - 25	
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					




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LH-9					
INTERNAL ASSESSEMET TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820118103004		
1	820119114305	10	820118104006	18	820118103012
2	820118104002	11	820118103006	19	820118104011
3	820119114306	12	820118104007	20	820118103301
4	820118104003	13	820118103007	21	820118104012
5	820119114307	14	820118104008	22	820118105301
6	820118104004	15	820118103009	23	820118104014
7	820118103002	16	820118104009	24	820118106001
8	820118104005	17	820118103010	25	820118104015
5 th SEM MECH - 3		7 th SEM CIVIL - 8 EEE -1 CSE - 12 ECE - 1		TOTAL - 25	
PRESENT -					
ABSENT -					
SIGNATURE -					
				PRINCIPAL	



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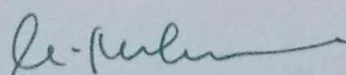
LH-10

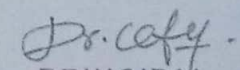
INTERNAL ASSESSEMET TEST YEAR 2021-2022

SEATING ARRANGEMENT-ODD SEMESTER

COL 1	S.NO	COL 2	S.NO	COL 3
	9	820118104022		
820118104016	10	820118106007	18	820118114008
820118106002	11	820118104023	19	820118114004
820118104018	12	820118106701	20	820118114009
820118106003	13	820118104024	21	820118114005
820118104020	14	820118114001	22	820118114010
820118106004	15	820118104501	23	820118114006
820118104021	16	820118114002	24	820118114011
820118106006	17	820118104701	25	820118114007
7th SEM CSE - 9	7th SEM ECE - 6 MECH - 10	TOTAL -25		
ENT -		PRINCIPAL		
IT -				
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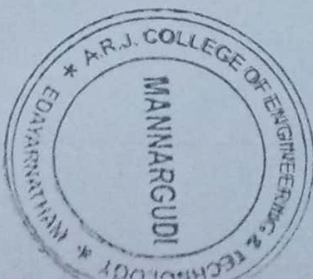

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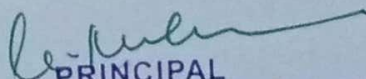


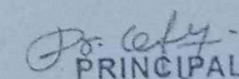
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LH-11					
INTERNAL ASSESSEMET TEST YEAR 2021-2022					
SEATING ARRANGEMENT-ODD SEMESTER					
S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820118114019		
1	820118114011	10	820118114020	18	
2	820118114012	11	820118114020	19	
3	820118114013	12	820118114021	20	
4	820118114014	13	820118114022	21	
5	820118114015	14	820118114023	22	
6	820118114016	15	820118114024	23	
7	820118114017	16	820118114025	24	
8	820118114018	17	820118114301	25	
		7 th SEM MECH - 17		TOTAL - 25	
PRESENT -			PRINCIPAL		
ABSENT -					
SIGNATURE -					




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A.R.J College of Engg. & Technology
Edayarnatham, Mannargudi-614 001

Department of Artificial Intelligence & Data Science

CYCLE TEST-I

Year / Semester II/III
& Regulation: R2021

Date: 06-10-2021
Max.marks: 50
Duration: 1 ½ Hour

Subject Code CS3391-OBJECT ORIENTED
& Title: PROGRAMMING

PART- A

5 x 02 =10

Answers all the questions

1. Define encapsulation with an example.
2. What is the difference between method overloading and method overriding?
3. List any two advantages of using templates in C++.
4. What is the role of a constructor in a class?
5. Explain the use of try-catch blocks in exception handling.

PART -B

04 x 10 = 40

Answers all the questions

6. (a) Explain the fundamental principles of Object-Oriented Programming with examples. (6)

(Or)

- (b) Differentiate between procedural and object-oriented programming paradigms. (4)

7. (a) Define inheritance. Explain types of inheritance supported in C++ with appropriate examples. (6)

(Or)

- (b) (i) Given a graph and a source vertex in the graph, find the shortest paths from the source vertex 0 to all vertices in the given graph 12 (b) (i). (8)

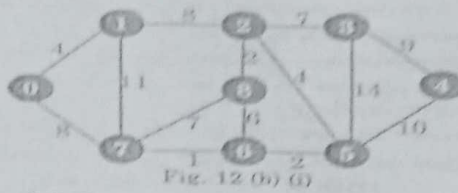


Fig. 12 (b) (i)

- (ii) Using Ford-Fulkerson algorithm find the maximum possible flow in the network given below Fig 12 (b) (ii). (5)

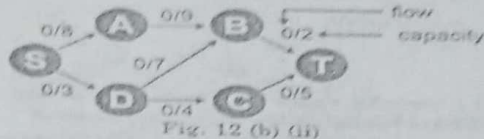


Fig. 12 (b) (ii)

8. (a) Explain polymorphism in detail. Write a C++ program to demonstrate runtime polymorphism using virtual functions. (6)

(or)

- (b) What is pure virtual function? How is it used in abstract classes? (4)

9. (a) Discuss the concept of templates in C++. Write a function template for finding the maximum of two values. (5)

(or)

- (b) Explain how exception handling works in C++. Write a program to handle divide-by-zero exception. (5)



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Name : S. Nithishkumar

Sub : Object Oriented Programming

Sub Code : CS2391

Date : 06.10.2021

Year : II - Year

Student Signature : S. Nithishkumar

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V. V. V. V.

Part - A

47
50

1. Define encapsulation :-

The practice of bundling data variables and the methods functions that operate on the data into single self contained unit typically a class.

2. Method Overloading Method Overriding

Compile time

Polymorphism

Method overriding is a run time Polymorphism

Method Overloading is helps increase the readability of the program

Method Overriding Occurs in two Class.

in method Overloading Parameter difference. in Method Overriding Parameter must be same.



3. Advantages of using templates in c++
Templates in c++ are a powerful feature that allows you to write generic and reusable code.

2. This field saving time ensuring consistency and improving efficiency.

4. Role of Constructor in a class.

A Constructor purpose of initialize an object's attributes instance variables when its created.

5. try-catch blocks in Exception handling.

It allows you to gracefully handle errors or unexpected situations that might occur during Program execution.

1. try block

2. catch block

2. This block contains the code that you want to protect from exceptions.

6. (a).

Fundamental Principle:-

The four fundamental principle of object oriented programming are abstraction, encapsulation, inheritance and polymorphism.

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These Principle of Enable to creation of robust, maintainable and resable Code by Organizing Programs.

The Creation of robust organizing Program into objects and allowing them to inter act effectively.

Four Pillars of object oriented Programming

i) Encapsulation

ii) Abstraction

iii) Inheritance

iv) Polymorphism

i) Encapsulation :-

This Principle of bundles an objects data (Attributes) and code the manipulates

The methods of together into a single unit a class protect data from external modification and promotes Code Organization by marking manages understand

ii) Abstraction, in

The Principle focuses on Presenting the essential features of an object to the user while hiding complex.

It Simplifies interaction by allowing user to work with objects without needing to understanding in internal working.

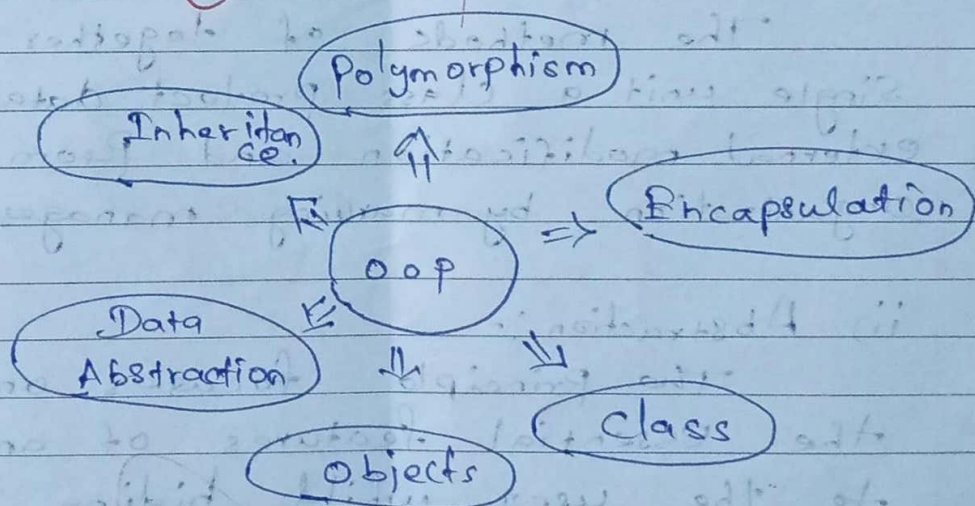
iii) Inheritance :-

This Principle allows a new class subclass to inherit Properties and method from a existing class.

This Promotes Code reusability and allows for inheritance relationships between classes creating a more then organized and difference Codobase.

4. Polymorphism.

This Principle allows objects of difference classes to response differently to the same method call it enables of single interface for a variety of action.



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Inheritance :-

This promotes code reusability and allows for inheritance relationship between class creating and more than organized and difference codebase.

Type of inheritance in java

- i) Single inheritance
- ii) Multilevel inheritance
- iii) Hierarchical inheritance
- iv) Multiple inheritance
- v) Hybrid inheritance.

1) A subclass inherits from only one superclass. This is the most basic form of inheritance. Only one superclass.

2) Multilevel inheritance: A class of inherits from another class, which in turn inherits from forming a chain inheritance.

3) Hierarchical inheritance: multiple subclass inherits from a single superclass. This creates a tree-like structure.

4) Multiple inheritance: a class inherits from multiple classes. Java does not directly support multiple inheritance using class, but it can be achieved through interface.

5) Hybrid inheritance: a combination of more than one type of inheritance. This can be achieved using a mix of and interface.



A class inherits from another class which in turn inherits from another class, forming a chain.

Java

```
class Vehicle {  
    void start ()  
    {  
        System.out.println("Veh
```

```
class car extends Vehicle {  
    public class main {
```

8. A Virtual function in C++ (and languages like Java) is a member function declared within a base class that can be overridden in derived classes.

Polymorphism where is they are appropriate functions to be called is determined based on the declaration type of point.

1. Runtime Polymorphism
2. Dynamic Binding
3. Derived Class overriding
4. Benefits

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Base class Declaration :-

A virtual function is declared using the virtual keyword in the base class.

Derived class Overriding :-

Derived class can then re-define override this function with their own implementation.

Runtime Polymorphism :-

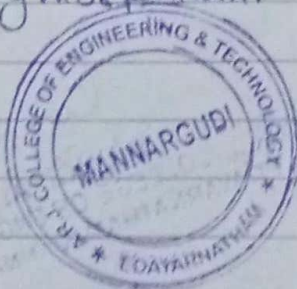
When call made is a virtual function through a pointer or reference of the base class, the correct function to execute is determined at runtime based on the actual objects type.

Dynamic Binding :-

Process of determining the function of call time runtime is called dynamic binding are late binding.

Benefit :-

Virtual function enable flexible and extensible code structures allowing for object behaviour to be determined at runtime type are key part of object oriented program enable Polymorphism.



9. Templates is a powerful feature in C++ that enable generic programming. It allow you to write code that can work with different data types without having to rewrite the code for each type. Templates are essentially blueprints for creating.

Key Concepts:-

Generic Programming: Templates facilitate writing a code that is independent of specific data types.

Type Parameters:

Templates use placeholder type parameters to represent data type of can be specified later.

Template Instruction: When a template is used with a specific data type of compiler creates a new version.

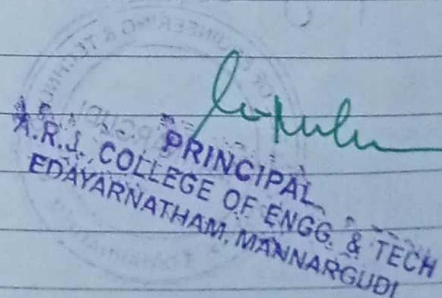
1. Function templates

2. Templates

3. Class templates

4. Compile time Polymorphism.

The type parameter can be used as a placeholder data type.





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EXAM CELL

CIRCULAR 2021-2022

Internal Assessment II for II,III,IV year students is scheduled from 1/11/2021 to 3/11/2021.

The below list of faculty members has to present and collect the question papers and answer sheet from the exam cell 15 minutes before the commencement of the examination without fail.

If any alternation needed, faculty members are advised to make alternate arrangement with other faculty members and inform to exam cell incharge on or before 30/10/2021

TEST TIMINGS:

Forenoon session:11.00 am to 12.30 am

Afternoon session:2.30 pm to 4.00 pm



Dr. C. S. S. S.
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EXAM CELL

CIRCULAR 2021-2022

Internal Assessment I for II,III,IV year students is scheduled from 25-04-2022 to 27-04-2022. The below list of faculty members has to present and collect the question Papers And answer sheet from the exam cell 15 minutes before the commencement Of the examination without fail.

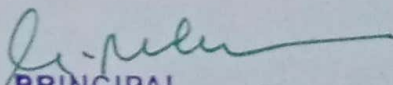
If any alternation needed, faculty members are advised to make alternate arrangement With other faculty members and inform to exam cell incharge on or before 22-04-22.

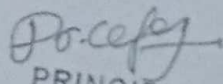
TEST TIMINGS:

Forenoon session: 11.00 am to 12.30 am

Afternoon session: 2.30 pm to 4.00 pm




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Internal assessment I duty schedule-2021-2022

S.no	Name of the faculty	Designation	25-04-22		26-04-22		27-04-22	
			FN	AN	FN	AN	FN	AN
1.	MR.ELAKIYAKUMAR .D	AP-CIVIL	LH-1	LH-3	LH-05	LH-1	LH-5	LH-1
2.	MRS.DEEPA.K	AP-CIVIL	LH-3	LH-5	LH-08	LH-3	LH-6	LH-3
3.	MR.RANJITHKUMAR. D	AP-CIVIL	LH-6	LH-1	LH-02	LH-6	LH-2	LH-6
4.	MRS. NANDHINI .N	AP-CSE	LH-8	LH-7	LH-07	LH-8	LH-7	LH-8
5.	MR.JAYAKKUMAR. R	AP-CSE	LH-4	LH-2	LH-04	LH-4	LH-3	LH-4
6.	MS.ELANKATHIR.E	AP-CSE	LH-7	LH-4	LH-01	LH-5	LH-8	LH-5
7.	MR.TAMIL SELVAN. R	AP-EEE	LH-2	LH-6	LH-06	LH-2	LH-4	LH-2
8.	MS.TIMPLE.V	AP-ECE	LH-5	LH-8	LH-03	LH-7	LH-1	LH-7



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Exam cell

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Internal assessment I for II, III, IV year UG students is scheduled from
25/04/22 to 27/04/22

The following faculty members have been appointed as squad members
and are asked to attend the duty without fail.

All the squad members are requested to monitor all the exam hall for
smooth conduct of examination.

S. No	Name Of The Faculty	Department	25-04-22	26-04-22	27-04-22
01	MRS. RAJASRI S	Associate Professor-Ece	AN	FN	AN
02	MR. RAJASEKARAN P	Associate Professor-Civil	FN	AN	FN



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EXAM CELL

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Internal Assessment II for II,III,IV year students is scheduled from 20/05/22 TO 23/05/22The below list of faculty members has to present and collect the question papers And answer sheet from the exam cell 15 minutes before the commencement of the examination without fail.

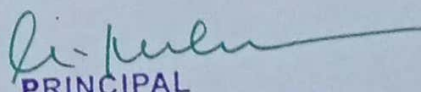
If any alternation needed, faculty members are advised to make alternate arrangement With other faculty members and inform to exam cell incharge on or before 17/05/22.

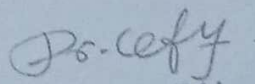
TEST TIMINGS:

Forenoon session: 11.00 am to 12.30 am

Afternoon session: 2.30 pm to 4.00 pm




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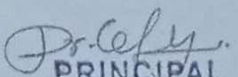


Internal assessment II duty schedule 2021-2022

S. No	Name of the faculty	Designation	20-05-22		21-05-22		23-05-22	
			FN	AN	FN	AN	FN	AN
1	MS. ILAKKIYA.T.S	AP-CIVIL	LH-1	LH-5	LH-05	LH-1	LH-5	LH-1
2	MR. VARUN.K	AP-CIVIL	LH-3	LH-6	LH-08	LH-3	LH-6	LH-3
3	MS.KASTHURI S	AP-CIVIL	LH-6	LH-2	LH-02	LH-6	LH-2	LH-6
4	MRS.AJITHA. J	AP-CSE	LH-8	LH-7	LH-07	LH-8	LH-7	LH-8
5	MS.ABINAYA.G	AP-CSE	LH-4	LH-3	LH-04	LH-4	LH-3	LH-4
6	MR.KARTHIKA.A	AP-CSE	LH-7	LH-8	LH-01	LH-5	LH-8	LH-7
7	MS.PRABHA.M	AP-EEE	LH-2	LH-4	LH-06	LH-2	LH-4	LH-2
8	MR.BALAKUMAR.K	AP-EEE	LH-5	LH-1	LH-03	LH-7	LH-1	LH-5




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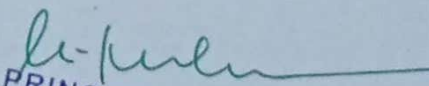
Internal assessment II for II, III, IV year UG students is scheduled from 20-05-2022 TO 23-05-2022.

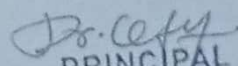
The following faculty members have been appointed as squad members and are asked to attend the duty without fail.

All the squad members are requested to monitor all the exam hall for smooth conduct of examination.

S. No	Name Of The Faculty	Department	20-05-22	21-05-22	23-05-22
01	MS. KANIMOZHILK	Associate Professor-Civil	AN	FN	AN
02	MS. VINITHA.G	Associate Professor-Cse	FN	AN	FN




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EXAM CELL

CIRCULAR 2021-2022

Internal Assessment III for II, III year students is scheduled from 13-06-22 TO 15-06-22.

The below list of faculty members has to present and collect the question papers And answer sheet from the exam cell 15 minutes before the commencement of the examination without fail.

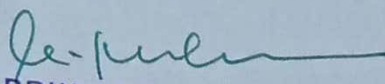
If any alternation needed, faculty members are advised to make alternate arrangement With other faculty members and inform to exam cell incharge on or before 09-06-22

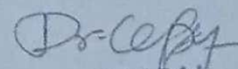
TEST TIMINGS:

Forenoon session: 11.00 am to 12.30 am

Afternoon session: 2.45 pm to 4.00 pm




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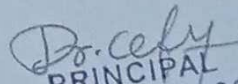


Internal assessment III duty schedule-2021-2022

S. No	Name of the faculty	Designation	13-06-22		14-06-22		15-06-22	
			FN	AN	FN	AN	FN	AN
1	MR.VIJAYA MOHAN.R	AP-EEE	LH-1	LH-1	LH-5	LH-1	LH-5	LH-1
2	MR.FRANCIS. R	AP-EEE	LH-3	LH-6	LH-8	LH-3	LH-6	LH-3
3	MRS.INIYAVAL .N	AP-ECE	LH-6	LH-2	LH-2	LH-6	LH-2	LH6
4	MS. BHARATHI.S	AP-ECE	LH-8	LH-7	LH-7	LH-8	LH-7	LH-8
5	MR. SUBASH.M	AP-MECH	LH-4	LH-3	LH-4	LH-4	LH-3	LH-4
6	MR. MURUGAN.P	AP-MECH	LH-7	LH-5	LH-1	LH-5	LH-8	LH-7
7	MR. SATHIYARAJ. D	AP-MECH	LH-2	LH-4	LH-6	LH-2	LH-4	LH-2
8	MRS. AISWARIYA .V	AP-CSE	LH-5	LH-8	LH-3	LH-7	LH-1	LH-5




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EXAM CELL

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Internal assessment III for II, III year UG students is scheduled from
13-06-22 .TO 15-06-22

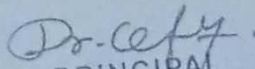
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and are asked to attend the duty without fail.

All the squad members are requested to monitor all the exam hall for
smooth conduct of examination.

S. No	Name Of The Faculty	Department	13-06-22	14-06-22	15-06-22
01	MR.SRILAKSHMIKANTH P	Associate Professor- Civil	AN	FN	AN
02	MRS. SARASWATHI J	Associate Professor- Cse	FN	AN	FN




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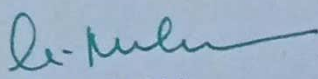
INTERNAL ASSESSEMET TEST-1

YEAR 2021-2022

SEMESTER: 04

IA -1	TIME	MECH	ECE	EEE	CSE	CIVIL
25/04/2022 (FN)	11.00 AM TO 12.30 PM	Theory of Machines (ME3491)	Electroma gnetic Fields (EC3452)	Environme ntal Sciences and Sustainabili ty (GE3451)	Theory of Computation (CS3452)	Applied Hydraulics Engineerin g(CE3401)
25/04/2022 (AN)	2.30PM TO 4.00PM	Thermal Engineering (ME3451)	Networks and Security (EC3401)	Transmissio n and Distribution (EE3401)	Artificial Intelligence and Machine Learning (CS3491)	Strength of Materials (CE3402)
26/04/2022 (FN)	11.00AM TO 12.30PM	Hydraulics and Pneumatics (ME3492)	Linear Integrated Circuits(E C3451)	Linear Integrated Circuits (EE3402)	Database Management Systems (CS3492)	Concrete Technolog y (CE3403)
26/04/2022 (AN)	2.30PM TO 4.00PM	Manufacturing Technology (ME3493)	Digital Signal Processing (EC3492)	Measureme nts and Instrumenta tion (EE3403)	Algorithms (CS3401)	Soil Mechanics (CE3404)




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27/04/2022 (FN)	11.00AM TO 12.30PM	Strength of Materials (CE3491)	Communi cation Systems (EC3491)	Microproce ssor and Micro controller (IC 8491)	Introduction to Operating Systems (CS3451)	Highway and Railway Engineerin g(CE3405)
27/04/2022 (AN)	2.30PM TO 4.00PM	Environmental Sciences and Sustainability (GE3451)	Environm ental Sciences and Sustainabi lity (GE3451)	Electrical Machines - II (EE3405)	Environme ntal Sciences and Sustainabil ity(GE3451)	Environme ntal Sciences and Sustainabil ity (GE3451)



Dr. P. K. S.
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Dr. C. M.
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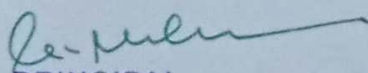
INTERNAL ASSESSEMET TEST-1

YEAR 2021-2022

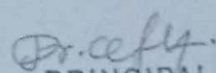
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IA -1	TIME	MECH	ECE	EEE	CSE	CIVIL
25/04/2022 (FN)	11.00 AM TO 12.30 PM	Heat and Mass Transfer (ME369)1	Embedded Systems and IOT Design(ET3 491)	Protection and Switchgear (EE3601)	Object Oriented Software Engineeri ng (CCS356)	Design of Steel Structural Elements (CE3601)
25/04/2022 (AN)	2.30PM TO 4.00PM	Professional Elective IV	Artificial Intelligence and Machine Learning (CS3491)	Power System Operation and Control (EE3602)	Embedded Systems and IoT (CS3691)	Structural Analysis II (CE3602)
26/04/2022 (FN)	11.00AM TO 12.30PM	Professional Elective V	Open Elective- I*	Open Elective – I*	Open Elective – I*	Engineerin g Geology (AG3601)
26/04/2022 (AN)	2.30PM TO 4.00PM	Professional Elective VI	Professional Elective IV	Professiona l Elective IV	Professiona l Elective III	Professiona l Elective IV




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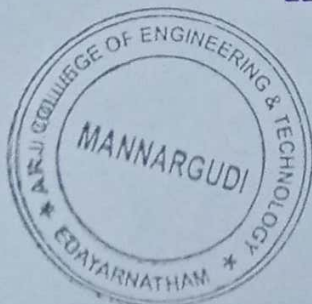
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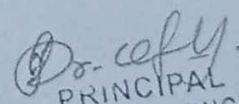


27/04/2022 (FN)	11.00AM TO 12.30PM	Professional Elective VII	Professional Elective V	Professional Elective V	Professional Elective IV	Professional Elective V
27/04/2022 (AN)	2.30PM TO 4.00PM	Open Elective – I*	Professional Elective VI	Professional Elective VI	Professional Elective V	Open Elective – I*


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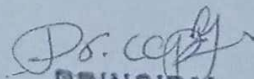
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LH-1					
SEATING ARRANGEMENT-EVEN SEMESTER					
INTERNAL ASSESSEMET TEST 21-22 & F.N/A.N					
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1	820120103001	10	820120104006	18	820120103308
2	820120104001	11	820120103304	19	820120104010
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4	820120104002	13	820120103305	21	820120104011
5	820120103301	14	820120104008	22	820120105001
6	820120104004	15	820120103306	23	820120104012
7	820120103302	16	820120104009	24	820120105002
8	820120104005	17	820120103307	25	820120104013
3 SEM CIVIL -10,CSE - 13,		EEE-02			
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					




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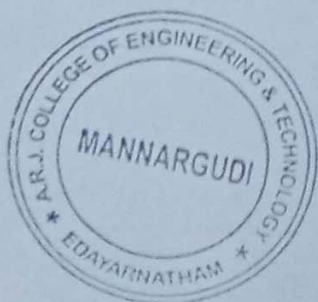

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LH-2					
SEATING ARRANGEMENT-EVEN SEMESTER					
INTERNAL ASSESSEMET TEST 21-22 & F.N/A.N					
S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120104019		
1	820120104014	10	820120105007	18	820120104025
2	820120105003	11	820120104020	19	820120105301
3	820120104016	12	820120105008	20	820120104026
4	820120105004	13	820120104021	21	820120105302
5	820120104017	14	820120105009	22	820120104301
6	820120105005	15	820120104022	23	820120105303
7	820120104018	16	820120105010	24	820120104302
8	820120105006	17	820120104024	25	820120105304
3 SEM EEE-12, CSE - 13,					
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					



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LH-3

SEATING ARRANGEMENT- EVEN SEMESTER

INTERNAL ASSESSEMET TEST 21-22 & F.N/A.N

S.NO	COL 1	S.NO	COL 2	S.NO	COL 3
		9	820120104307		
1	820120104303	10	820120105309	18	820120104312
2	820120105305	11	820120104308	19	820120105313
3	820120104304	12	820120105310	20	820120104313
4	820120105306	13	820120104309	21	820120105314
5	820120104305	14	820120105311	22	820120104314
6	820120105307	15	820120104310	23	820120105315
7	820120104306	16	820120105312	24	820120104315
8	820120105308	17	820120104311	25	820120105316
3 SEM EEE-12, CSE - 13,					
PRESENT -					
ABSENT -					
SIGNATURE -					PRINCIPAL



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LH-4					
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INTERNAL ASSESSEMET TEST 21-22 & F.N/A.N					
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2	820120105318	11	820120104321	19	820120106303
3	820120104317	12	820120106002	20	820120104313
4	820120105319	13	820120104322	21	820120106304
5	820120104318	14	820120106301	22	820120104314
6	820120105320	15	820120104323	23	820120106305
7	820120104319	16	820120106302	24	820120104315
8	820120105321	17	820120104324	25	820120106306
3 SEM EEE-4, CSE - 8		ECE - 8			
PRESENT -					
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SIGNATURE -					
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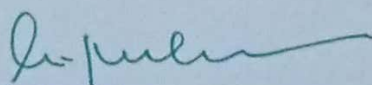


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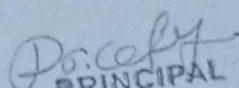


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2	820120114001	11	820120106312	19	820120114011
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4	820120114002	13	820120106313	21	820120114012
5	820120106309	14	820120114009	22	820120106318
6	820120114003	15	820120106314	23	820120114301
7	820120106310	16	820120114010	24	820120106311
8	820120114005	17	820120106315	25	820120114302
3 SEM ECE - 12 MECH - 13					
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ABSENT -					
SIGNATURE -					




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LH-6					
SEATING ARRANGEMENT-EVEN SEMESTER					
INTERNAL ASSESSEMET TEST 21-22 & F.N/A.N					
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6	820119103004	15	820120114310	23	820119104005
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3 SEM MECH -		5 SEM CIVIL - 6 CSE - 6			
PRESENT -		PRINCIPAL			
ABSENT -					
SIGNATURE -					



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LH-7					
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4	820119105002	13	820119104009	21	820119106002
5	820120114319	14	820119105302	22	820119104015
6	820119105003	15	820119104010	23	820119106004
7	820120114320	16	820119105303	24	820119104017
8	820119105004	17	820119104011	25	820119106005
3 SEM MECH - 4		5 SEM CSE - 9 EEE - 8 ECE -4			
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ABSENT -					
SIGNATURE -					



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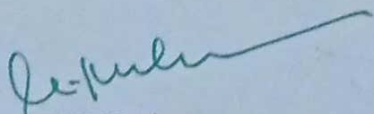
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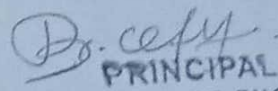
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INTERNAL ASSESSEMET TEST 21-22 & F.N/A.N

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5	820119106301	14	820119114013	22	820119114002
6	820119114007	15	820119104022	23	820119114303
7	820119104018	16	820119114014	24	820119114004
8	820119114009	17	820119104023	25	820119114304
5 SEM MECH - 15		5 SEM CSE - 7 ECE - 3			
PRESENT -					
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Department of Artificial Intelligence & Data Science

CYCLE TEST-I

Year / Semester **II/IV**
& Regulation: **R2021**

Date:26-04-2022
Max.marks:50
Duration:1 ½ Hour

Subject Code **CS3401-ALGORITHM**
& Title:

PART- A

05 x 02 =10

Answers all the questions

1. Define time complexity and explain its significance in algorithm analysis.
2. What is a recurrence relation? Provide an example.
3. Briefly describe the Rabin-Karp algorithm for string matching.
4. What is biconnectivity in graphs? Define articulation point and cut vertex.
5. Define the transitive closure of a directed graph.

PART -B

02 × 13 = 26

Answers all the questions

6. (a)(i) Explain asymptotic notations (Big O, Big Ω , and Big Θ) and their properties. (8)

(ii) Use the substitution method to solve the recurrence relation $T(n) = 2T(n/2) + n$. Determine its time complexity. (5)

(Or)

(b) Describe the Knuth-Morris-Pratt (KMP) algorithm for pattern matching. Provide an example to illustrate its working. (13)

7. (a) Outline the Breadth-First Search (BFS) and Depth-First Search (DFS) algorithms. Provide examples to demonstrate their traversal order. (13)

(Or)

(b) Explain Dijkstra's algorithm for finding the shortest path in a graph. Illustrate with an example. (13)

PART C

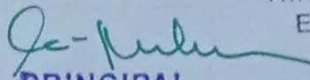
1 × 14 = 14

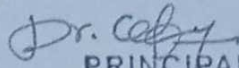
8. (a) Explain Floyd-Warshall's algorithm for finding all pairs shortest paths in a weighted graph. Provide an example to demonstrate its application. (14)

(Or)

(b) Discuss the concept of maximum bipartite matching in graphs. Explain the algorithm used to find such a matching and its applications. (14)




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Name: K. Karan

Reg: 820120104005

Dept: BE (CSE)

Subject: Algorithm

Date: 26.04.2022

K. Karan

Student Signature:

Part: A

K.M.T

V. Good

h. h. h.

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1. This complexity in the context of algorithm analysis, describe how the execution time of an algorithm.

The grows as the input size increases. essentially it quantifies the number of operation.

2. Recurrence relation define a sequence where each term is a function of one or more preceding terms.

1. Sequence

2. Recurrence relation

3. Initial values

4. Function

3. The Rabin karp algorithm is a string matching algorithm. that use a function of efficiently find patterns within a text.



1. Calculate hash values
2. Slide and Re-calculate
3. Compare hash values
4. Character Comparison

4. A biconnected graph also called a biconnectivity graph.

A Special type of Connected undirected graphs. which removing any single vertex.

The graph stays Connected no matter which single vertex you remove

Biconnected graph.

A — B — C

↓ ↓ ↓

E — D — F

5. An articulation point also known as a cut vertex in a graph is a vertex that when removed along with all incident edges.

Increases the number of Connected Components of the graph.

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$G = (V, E)$ be a Connected undirected graph. $U \in V$ is an articulation point or cut vertex.

if remove U and its edges disconnected the graph that is Components increase.

Part - B

b, ii) Time Complexity

To determine the time complexity of finding articulation points in a graph, typically use tarjan's algorithm based on depth first search

i) Tarjan's algorithm :-

- * Discovery time vertex a first visited.

- * Low values lowest discovery time reachable from subtree rooted that vertex.

Time Complexity.

- * V is the number of vertices.

- * E is the number of edges.

every edge is explored once twice undirected graph but counted $O(E) \rightarrow$

total operation are proportional $O(V + E)$



This is the most efficient possible for the problem. Since you must at least look every vertex and edges. A step by step walkthrough of how algorithm finds articulation points.

Recursion relation $T(n) = 2T(n/2) + n$ divide and conquer algorithm merge sort complexity the master theorem.

$$T(n) = a \cdot T\left(\frac{n}{b}\right) + f(n)$$

$$a = 2 \quad b = 2 \quad f(n) = n$$

$$f(n) \text{ to } N^{\log_b a} = N^{\log_2 2} = N^1$$

$$f(n) = \Theta(N)$$

$$N^{\log_b a} = \Theta(N)$$

$$\text{Since } f(n) = \Theta(N^{\log_b a})$$

$$T(n) = \Theta(N \log N)$$

7.

Dijkstra's algorithm is a graph algorithm used to find the shortest path from a source node to all nodes in a graph. It works with weighted directed or undirected graph.

It only works correctly with non-negative weights.

It uses a priority queue (min heap) to always expand the shortest path first.

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i, Initialize :-

- * Set distance to the Source node
- * Set distance all other node
- * Mark all node as unvisited

ii) Loop:-

- * Select the unvisited node with the Smallest distance.
- * for each neighbor of that node.
- * Calculate the tentative distance through the current node.

Pseudocode :-

function dijkstra (graph, source)

dist[source] = 0

for each vertex V in graph

if $V \neq \text{source}$

dist[V] = ∞

prev[V] = undefined

Example :-

graph = {

'A' : [(B, 1), (C, 4)],

'B' : [(C, 2), (D, 5)],

'C' : [(D, 1)],

'D' : []

Dijkstra (graph, 'A')

output : { 'A' : 0, 'B' : 1, 'C' : 3, 'D' : 4 }

8.

Maximum bipartite matching in graph
Bipartite graph :-

A Bipartite graph is a graph where its vertices can be divided into disjoint sets U and V such that every edge connects a vertex from U to a vertex in V .

Bipartite Matching :-

A matching is a set of edges where no two edges share a common vertex.

A maximum bipartite matching is the matching that contains the largest possible number of edges.

Algorithm to find maximum bipartite matching :-

Ford - fulkerson Method

The bipartite matching problem can be transformed into a flow network. Ford fulkerson algorithm.

Hopcroft - karp algorithm:

The hopcroft karp algorithm is the most efficient algorithm for weighted bipartite graphs.

This complexity : $O(\sqrt{V} \cdot E)$



Then use DFS to augment along these paths.

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2. Repeat until no augmenting path is found.

Application of Maximum Bipartite Matching.

1. Job Assignment
2. College admission
3. Task Scheduling
4. Stable Marriage Problem
5. Network Switching
6. Image Segmentation in this Computer vision.

Maximum bipartite Matching seeks the largest subset of edges that match each vertex.

Efficient algorithms include Ford Fulkerson max flow and Hopcroft Karp. Human resource planning to machine learning and operation research.



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Edayarnatham, Mannargudi-614 001

Department of Artificial Intelligence & Data Science
MODEL TEST

Year / Semester: III/IV

Date: 25.04.22
Max. 100
marks: 03:00 hrs
Duration

SubjCode
& Title: CS3491- ARTIFICIAL INTELLIGENCE AND
MACHINE LEARNING

PART- A

10 x 02 = 20

Answers all the questions

1. Define rational agent.
2. What is the difference between supervised and unsupervised learning?
3. Mention any two application of artificial intelligence.
4. What is heuristic function in A* algorithm?
5. Define overfitting in machine learning.
6. What is entropy in decision tree learning?
7. List any two differences between model-based and model-free reinforcement learning.
8. What is the significance of activation function in neural networks?
9. Define Q-learning.
10. What is Turing Test?

PART-B

5 x 13 = 65

Answers all the questions

11. (a) Explain the characteristics and types of intelligent agents with neat diagram.
(OR)
(b) Describe the structure of a problem-solving agent and explain how it solves a toy problem using search.
12. (a) Explain uninformed search strategies: BFS, DFS, UCS, and compare their performance.
(OR)
(b) Describe the A* algorithm with an example. What are admissible and consistent heuristics?
13. (a) Explain the ID3 decision tree learning algorithm with an example dataset.
(OR)
(b) Describe the working of Naive Bayes classifier. What are its assumptions and limitations?
14. (a) Explain the architecture of a multilayer perceptron (MLP). Discuss forward and backward propagation in detail.
(OR)

(b) Describe any two optimization algorithms used for training neural networks. Compare their advantages.

15. (a) Explain the basic elements of reinforcement learning. Describe Q-learning algorithm with an example.

(OR)

(b) Discuss the Markov Decision Process. How does it relate to reinforcement learning?

PART- C

1 × 15 = 15

16. (a) Design an AI system for a self-driving car. Explain the use of perception, planning, and learning components in your design.

(OR)

(b) Consider a dataset of student marks to classify them as "pass" or "fail". Apply a decision tree or logistic regression method and explain each step with hypothetical values.



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Name: A. Swetha

Reg: 820120104020

Dept: BE (SE)

Subject: Artificial Intelligence and machine learning

Part-A

Student Signature: A. Swetha

1. Rational Agent:

A rational agent is an agent that acts to achieve the best outcome or the best expected outcome based on its knowledge and percepts.

2. What is the difference between Supervised and Unsupervised learning?

i) Supervised: Uses labeled data for training (eg., classification).

ii) Unsupervised: Uses unlabeled data to discover hidden patterns (eg., clustering).

3. Application of Artificial Intelligence:

* Chatbots and Virtual Assistants (like Siri, Alexa)

* Autonomous vehicles (self-driving cars)



4. Heuristic function:

A Heuristic function helps estimate the cost from node n to the goal. It helps A* choose the most promising path efficiently.

5. Overfitting in Machine Learning:

Overfitting occurs when a model learns the training data too well, including noise and outliers, resulting in poor performance on new, unseen data.

6. Entropy in Decision Tree Learning:

Entropy is a measure of impurity or randomness in a dataset. It helps in deciding the best attribute to split the data.

7. Model-Based
Learns a model
of the environment

Model-Free
Learns policy or
value function directly
without modeling
the environment.

8. Activation function in Neural Network:

Activation functions introduce non-linearity in the network, allowing it to learn complex patterns.

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9. Q-learning:

Q-learning is a model-free of reinforcement learning algorithm that learn the value of taking a certain action in a given state to maximize future rewards.

10. Turing Test:

Turing test is a method to determine a machine's intelligence. If a machine can mimic human responses well enough to fool a human evaluator, it passes the test.

Part-B

11. a)

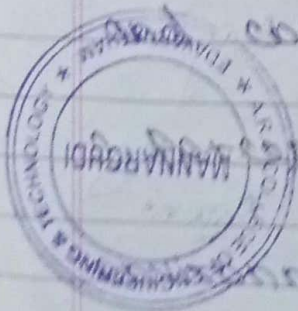
Intelligent Agent:

An intelligent agent is an autonomous entity that perceives its environment through sensors and acts upon it through actuators to achieve specific goals.

Characteristics of Intelligent Agents:

1. Autonomy:

operates without human intervention controls its own actions.



Perception:

uses sensors to perceive the environment.

3. Reactivity:

Responds in real-time to changes in the environment.

4. Pro-activeness:

Takes initiative to achieve goals (goal-directed behavior).

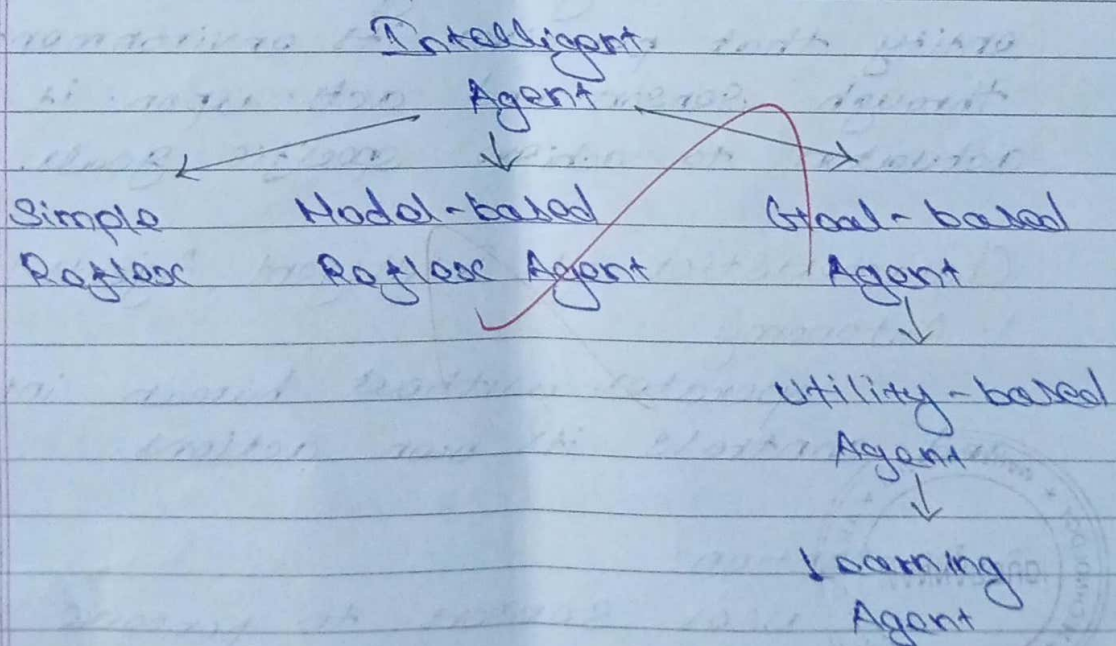
5. Social Ability:

Interacts with other agents or humans using some form of communication.

6. Learning:

Improves performance through past experiences (optional in some agents).

Intelligent Agent Types:



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1. Simple Reflex Agent:

Acts only on the current percept, ignoring history.

eg: vacuum cleaner turns if it hits a wall.

2. Model based Reflex Agent:

Maintains internal state based on percept history.

eg: Robotic that remembers its location.

3. Goal-based Agent:

chooses actions to achieve a specific goal.

eg: Path-finding robot

4. Utility-based Agent:

chooses the best action based on a utility function (preference).

eg: Self-driving car optimizing for safety and time.

5. Learning Agent:

Learns from experiences and improves over time.

eg: game player that learns strategies



12. a)

Uninformed Search:

Uninformed Search is a category of search algorithms that do not have any domain-specific knowledge about the problem. They only use the problem definition.

Strategies:

1. BFS: (Breadth-First Search):

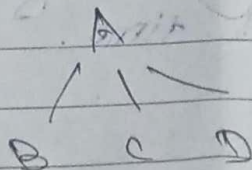
Approach: Explores all nodes at the current depth level before going deeper.

Data Structure: Queue (FIFO)
used

Use case: When the solution is close to the root

Example:

If the start node is A and we want to find goal G:



BFS explores: $A \rightarrow B, C, D \rightarrow E, F$

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DFS : (Depth - First Search)

→ Approach : Explores as far as possible along one branch before backtracking

→ Data structure used : Stack (LIFO) or Recursion.

→ use case : When memory is limited and the solution may be deep.

Example :

Same tree :

DFS explores : $A \rightarrow B \rightarrow F \rightarrow$ (backtrack) $\rightarrow E \rightarrow$ (backtrack) $\rightarrow C$

UCS : (Uniform Cost Search)

Approach : Expands the least-cost node first (cost = path cost so far)

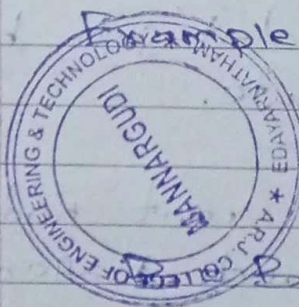
Data structure : Priority Queue.

used

use case : When path cost varies and you need the cheapest path.

Example :

If $A \rightarrow B$ costs 1, $A \rightarrow C$ costs 5,
UCS will pick B first



Branching factor (avg number of children per node)

d = depth of shallowest solution
 m = Maximum depth of the search tree
 c^* = cost of the optimal solution path

13. (a) :-

LD3 decision tree learning
This is a decision tree learning algorithm used in machine learning for classification tasks.

It builds a decision tree by iteratively selecting the attribute a_i that provides the most information.

This process is repeated until all data is classified or no more splitting can improve the tree's accuracy.

1. Entropy

2. Information gain

3. Top-down approach

4. Greedy algorithm

1) Measure the impurity or randomness within a dataset.

2) Quantifies the reduction in entropy after splitting that dataset based on a particular attribute.

3) LD3 starts with the root node and recursively creates branches based on attributes.

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2. At each step. Do attribute but provide the highest information gain at the point. Without considering future implication.

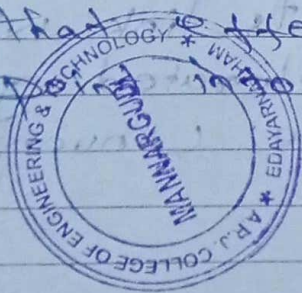
1. Create a root node
2. Select the best attribute
3. Create branches
4. Apply recursively
5. Termination

Application :-

1. Classification data into different categories based on attributes.
2. Data mining: patterns and relationship within dataset.
3. Natural language processing analyzing and understanding text data.
4. Foundational algorithm and variations and improvements have been developed such as cart, these algorithm.

offer enhancements such as the ability handle condious data or missing values.

Information gain, it identifies the resulting in a decision tree that effectively classifies data into predefined categories.



Q.14 b) Describe any two optimization algorithms used for training neural network.

Stochastic gradient descent and adam moment estimation.

SGD is a basic but widely used method that updates parameters based on the gradient of the loss function.

Mechanism:

The algorithm calculates the gradient of the loss function with respect to each parameter for a mini-batch of data.

Variants:

SGD with momentum adds an accelerator to convergence by considering the history of gradients.

Improve momentum by looking ahead into future gradient.

Advantages:-

Generally converges faster and more reliable than SGD.

Can be slow to converge and may get stuck in local minima or saddle points, especially with high data.

Include variants like with momentum and nesterov accelerated gradient that help accelerate convergence and overcome limitation.

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Adam (Adaptive Moment Estimation).
Mechanism:-

Adam Combines the advantage of momentum and adaptive learning rates.

The path the first and second moment, learning rates for each parameter.

15. Explain the basic elements of reinforcement learning, describe Q-learning algorithm.

Q-learning is a reinforcement learning algorithm that trains an agent to assign value to its current state.

The device without requirement model of the environment.

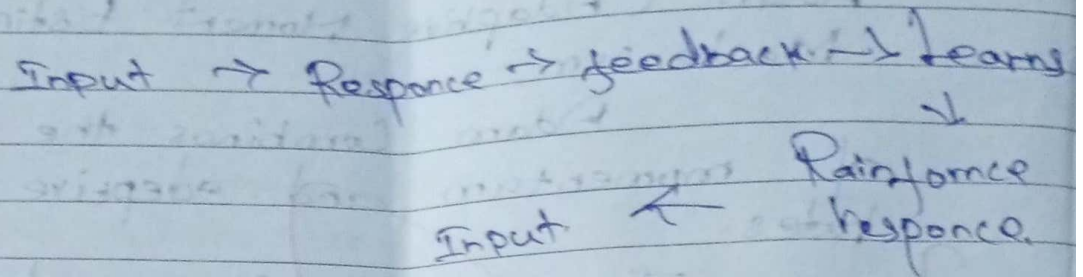
Q-learning in Reinforcement learning:

Q-learning is a popular model-free reinforcement learning algorithm.

that helps an agent learn how to make best decision.

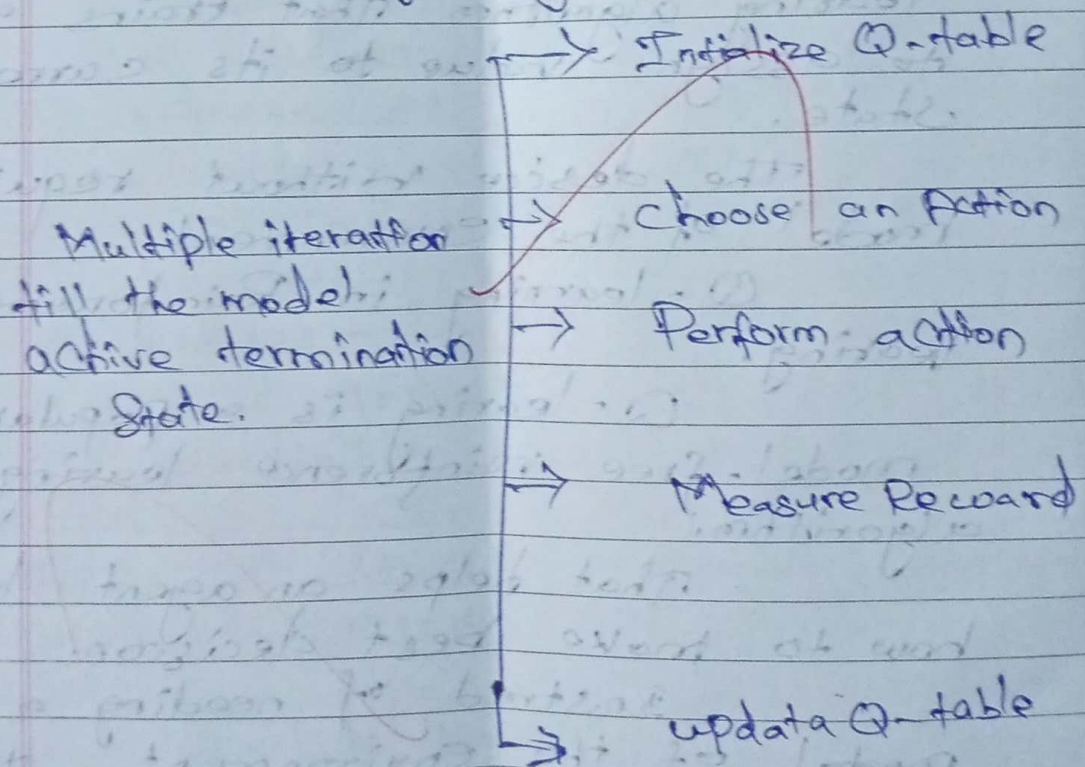
Instead of needing a model of the environment, that learns purely from by trying different decisions in them.





1. Q. values or Action values
2. Rewards and episode
3. Temporal difference or TD update
4. ϵ -greedy policy exploration

Q-learning Algorithm:-



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State at a state

1. The environment provide the agent with a starting state which describe the current situation.

2. Agent selects an action.

Based on the current state and the agent choose this action using this policy.

3. It something explores new actions random choice statement.

4. A new state (s) - the result of the action.

5. A reward (R) - feedback on actions effectiveness.

Policy is Refined and the cycle repeats

1. impose its policy the to make better future decision

2. Continues this loop - observing states taking actions receiving rewards and updating Q values across many episode

3. Temporal Difference.

4. Bellmans Equation

5. Recursive formula used to calculate the values of a given state and determine the optimal action.

6. State of immediate for taking action a in



Structure of a Q-table:-

1. Rows represent the States
2. Columns represent that possible action
3. Each cell of the table corresponds to the values for state action pair
4. Implementation of Q learning
5. Action selection strategy to reach a goal state in a grid like environment.

Q-Learning

- 1b. Design an AI system for a self-driving car. Explain the use of Perception, planning and learning components you design.

A vehicle's drivetrain works with the engine to deliver power to the wheels the most common.

front wheels drive, rear wheel drive, four wheel drive, and all wheel drive.

Radar sensors monitor the position of nearby vehicle video camera detect traffic.

Lidar light detection and ranging sensors bounce pulses

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They use various Sensors like Cameras, radar and lidar to create a detailed map of their surrounding and react accordingly.

Artificial. Car use algorithm to plan the safest and most efficient route to its destination. Taking into account traffic conditions, road rules, potential obstacles.



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Branch Code / Name : 104 : B.E. Computer Science and Engineering
 Semester : 02

University : AUC

Register No.	Name of the Student	Subjects	Attend hr 1	Total hr 1	Attend hr 2	Total hr 2	IM 2	Attend hr 3	Total hr 3	IM 3	Attend hr 4	Total hr 4	IM 4
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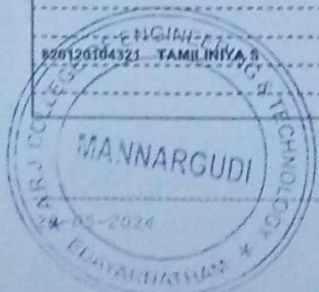




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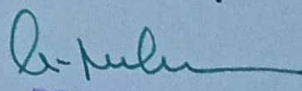
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