



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi / Affiliated to Anna University, Chennai / Accredited by NAAC)
Dindigul – Palani Highway, Dindigul – 624 002

Department of Computer Science and Engineering

LABORATORY COURSE FILE

SUBJECT CODE & NAME : CS3381& Object oriented Programming Laboratory
 YEAR / SEMESTER/SECTION :II / III
 BRANCH :CSE
 FACULTY IN-CHARGE : N ANU LAVANYA, AP/CSE
 ACADEMIC YEAR : 2022-2023

S. No.	INDEX	REMARKS
1.	Syllabus	✓
2.	Time Table	✓
3.	Academic Calendar	✓
4.	Class Student Name List – Batchwise	✓
5.	COs with justification, POs, PEOs, PSOs for the lab	
6.	List of experiments	✓
7.	Experiments other than syllabus	✓
8.	Lab Manual	✓
9.	Model Exam- QP, Consolidated mark sheet, sample answer sheets	✓
10.	Consolidated sheets - CO attainment, CES & Exit survey forms with justification	-
11.	Sample – Observation, Record Note books	✓

Faculty in-Charge

HoD/CSE

Principal

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Gullathupatti Village, Andalagundu (Po),
Palani Road, Dindigul - 624 002.



CS3381 OBJECT ORIENTED PROGRAMMING LABORATORY

L T P C

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COURSE OBJECTIVES:

- To build software development skills using java programming for real-world applications.
- To understand and apply the concepts of classes, packages, interfaces, inheritance, exception handling and file processing.
- To develop applications using generic programming and event handling

LIST OF EXPERIMENTS:

1. Solve problems by using sequential search, binary search, and quadratic sorting algorithms (selection, insertion)
2. Develop stack and queue data structures using classes and objects.
3. Develop a java application with an Employee class with Emp_name, Emp_id, Address, Mail_id, Mobile_no as members. Inherit the classes, Programmer, Assistant Professor, Associate Professor and Professor from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club funds. Generate pay slips for the employees with their gross and net salary.
4. Write a Java Program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea() that prints the area of the given shape.
5. Solve the above problem using an interface.
6. Implement exception handling and creation of user defined exceptions.
7. Write a java program that implements a multi-threaded application that has three threads. First thread generates a random integer every 1 second and if the value is even, the second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of the cube of the number.
8. Write a program to perform file operations.
9. Develop applications to demonstrate the features of generics classes.
10. Develop applications using JavaFX controls, layouts and menus.
11. Develop a mini project for any application using Java concepts.

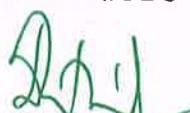
Lab Requirements: for a batch of 30 students

Operating Systems: Linux / Windows

Front End Tools: Eclipse IDE / Netbeans IDE

TOTAL: 45 PERIODS




Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (MUS),
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Time Table

Academic Year 2022-2023 (Odd Semester)

		Year/Semester: II/IV				Hall: A-202				w.e.f:26.08.2022	
Day/Hour		1	2	3	4	5	6	7	8		
Day/Hour	09.00 to 09.50	09.50 to 10.40	10.40 to 10.55	10.55 to 11.45	11.45 to 12.35	01.20 to 02.05	02.05 to 02.50	02.50 to 03.35	03.35 to 04.20		
Monday	CS3352	MA3354	CS3391	CS3351	CS3353	MA3354	CS3391	CS3351	CS3351		
Tuesday	CS3391 / CS3362		CS3381 / CS3362		CS3352	MA3354	GE3361				
Wednesday	CS3351	CS3353	MA3354 (T)		CS3391	CS3351	CS3353	CS3352			
Thursday	CS3362 / CS3361		CS3362 / CS3361		CS3391	CS3351	CS3352 (P)				
Friday	MA3354	CS3352	CS3353	CS3391	CS3361 / CS3361						
Saturday	CS3391	CS3353	CS3351	CS3352	MA3354	CS3362	Ment / Lib				

Details of Subjects and Faculty

Code	Subject Name	Faculty Name/ Design/Dept.	No. of hrs/ week	Sub. Code	Subject Name	Faculty Name/Design/Dept.	No. of hrs/ week
3354	Discrete Mathematics	Ms. S. Kavitha, AP / Mathematics	7	CS3361	Data Structures Laboratory	Ms. M. Moohambikai, AP / CSE	4
352	Digital Principles and Computer Organization	Ms. N. J. Divya, AP / CSE (L+P) Dr. V. Sivakumar, AP / EEE (P)	7	CS3381	Object Oriented Programming Laboratory	Ms. N. Anu Lavanya, AP / CSE	4
353	Foundations of Data Science	Ms. J. Dhanalakshmi, AP / CSE	5	CS3362	Data Science Laboratory	Ms. J. Dhanalakshmi, AP / CSE	5
351	Data Structures	Ms. M. Moohambikai, AP / CSE	6	GE3361	Professional Development	Ms. M. Moohambikai, AP / CSE	2
391	Object Oriented Programming	Ms. N. Anu Lavanya, AP / CSE	6	Ment / Lib.	Mentoring / Library	Ms. N. Anu Lavanya, AP / CSE Ms. J. Dhanalakshmi, AP / CSE	2
		Cumulative Hrs	29			Total Hrs / week	

24

Class In-charge
(Dr. V. Niveditha, ASP/CSE)

Ch-2022
Ms. M. Moohambikai, AP/CSE



24

Class In-charge
(Dr. V. Niveditha, ASP/CSE)

Ch-2022
Ms. M. Moohambikai, AP/CSE



CALENDAR FOR THE ACADEMIC YEAR 2022-2023 (ODD-SEMESTER REVISED)

JULY 2022			AUGUST 2022			SEPTEMBER 2022			OCTOBER 2022			NOVEMBER 2022			DECEMBER 2022		
DATE	DAY	SCHEDULE	DATE	DAY	SCHEDULE	DATE	DAY	SCHEDULE	DATE	DAY	SCHEDULE	DATE	DAY	SCHEDULE	DATE	DAY	SCHEDULE
1	TUE		1	MON		1	THU		1	TUE		1	THU		1	THU	TT-2
2	SAT		2	TUE		2	FRI		2	SUN	Ganesh Jayanthi	2	WED		2	FRI	TT-2
3	SUN		3	WED		3	SAT		3	SUN		3	THU		3	SAT	
4	MON		4	THU		4	SUN		4	TUE	Sai Ganeshwari pooja	4	FRI		4	SUN	
5	TUE		5	FRI		5	MON	CMS for Unit I	5	WED	Ayyappa pooja	5	SAT		5	MON	Sub. of TT-2; RAW 2
6	WED		6	SAT	DSM 1	6	TUE		6	THU		6	SUN		6	TUE	TT-2; PMS 2
7	THU		7	SUN		7	WED		7	FRI		7	MON	CMS for Unit V	7	WED	
8	FRI		8	MON		8	THU	Unit I Completion	8	SAT		8	TUE		8	THU	End working Day
9	SAT		9	TUE	Moharram	9	FRI	CCM 1	9	SUN	Muharram	9	WED		9	FRI	
10	SUN	Bakrid	10	WED		10	SAT	DSM 2	10	MON	IT-1	10	THU	Unit IV Completion	10	SAT	UPF Starts
11	MON		11	THU		11	SUN		11	TUE	IT-1	11	FRI	DSM 5	11	SUN	
12	TUE		12	FRI		12	MON		12	WED	IT-1	12	SAT	CCM 3	12	MON	
13	WED		13	SAT		13	TUE		13	THU		13	SUN		13	TUE	
14	THU		14	SUN		14	WED		14	FRI	Sub. of IT-1 Marks / RAW 1	14	MON		14	WED	
15	FRI		15	MON	Independence Day	15	THU		15	SAT	PM-1 / LTP-1	15	TUE		15	THU	
16	SAT		16	TUE	CMS for Unit I	16	FRI		16	SUN		16	WED		16	FRI	
17	SUN		17	WED		17	SAT		17	MON	CMS for Unit IV	17	THU		17	SAT	
18	MON		18	THU		18	SUN		18	TUE	DSM 4	18	FRI		18	SUN	
19	TUE		19	FRI	Sri Ganesh Jayanthi	19	MON		19	WED		19	SAT		19	MON	
20	WED		20	SAT		20	TUE		20	THU		20	SUN		20	TUE	
21	THU		21	SUN		21	WED	CMS for Unit III	21	FRI	Unit III Completion	21	MON		21	WED	Wkng Start
22	FRI		22	MON	Commencement of Classes	22	THU		22	SAT	CCM 2	22	TUE		22	THU	
23	SAT		23	TUE		23	FRI		23	SUN		23	WED		23	FRIDAY	
24	SUN		24	WED		24	SAT		24	SUN	Deepavali	24	THU		24	SAT	
25	MON		25	THU		25	SUN		25	TUE		25	FRI		25	SUN	Christmas
26	TUE		26	FRI		26	MON	Unit II Completion	26	WED		26	SAT		26	MON	
27	WED		27	SAT		27	TUE		27	THU		27	SUN		27	TUE	
28	THU		28	SUN		28	WED		28	FRI		28	MON		28	WED	
29	FRI		29	MON		29	THU		29	SAT		29	TUE	Unit V Completion	29	THU	
30	SAT		30	TUE		30	FRI		30	SUN		30	WED	TT-2	30	FRI	
31	SUN		31	WED	Sri Manganayakanthar	31	MON		31	MON		31	SAT		31	SAT	
Working Days			Working Days			Working Days			Working Days			Working Days			Working Days		
Non Working Days			Non Working Days			Non Working Days			Non Working Days			Non Working Days			Non Working Days		

TT-1 - Technical Theory Exams
 TT-2 - University Theory Exams
 PM - Parents Meeting
 UFE - University Practical Exams
 CME - Computerized Multiple Choice Exam
 CCW - Classmate Workshops
 CCM - Classmate Meetings
 NA - Not Applicable
 Total Number of working days: 90 days

DSM - Departmental Seminars
 LTP - Lab in Practice
 TFE - Technical Faculty Exams
 PMAE - Professional Action Workshops
 CME - Classmate Workshops
 CCM - Classmate Meetings

Changes in the Academic Calendar (if any) will be intimated to the students through circular.

Principal

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Luttathupatti Village, Sindalagundu (P.O),
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Dr.D.SENTHIL KUMARAN, M.Tech, Ph.D, IIMUS,



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, Dindigul-624002

Department of Computer Science and Engineering

Name List- (2021-25 Batch)

Year/Sem: II / III

Sl. No.	Register No.	Name of the student
1	922121104001	AARTHI N
2	922121104002	AMIRTHA SHREE
3	922121104003	ANAND CHARUKESAN K
4	922121104004	ANDRIUES K
5	922121104005	ANISHA J
6	922121104006	ARUN PRAKASH P
7	922121104007	BAVANI K
8	922121104008	DEVAKI R
9	922121104009	DHANUSH PRAVEEN T
10	922121104010	DHARSHINI S
11	922121104011	DHIYANESH S
12	922121104012	HABIB RAHUMAN K
13	922121104013	HARINI S
14	922121104014	INDHU RARAJ S
15	922121104015	JEEVA G
16	922121104016	JEYARAMAN S
17	922121104017	JEYA SHREE S
18	922121104018	KAJALAKSHMI M
19	922121104019	KARPAGAM S
20	922121104020	KARTHEKEYAN M
21	922121104021	KAVI KANNAN S
22	922121104022	KAVIN P
23	922121104023	KAVIYA J
24	922121104024	KIRUTHIKA G
25	922121104025	KISHOR KUMAR S
26	922121104027	MADHAVARAJ C
27	922121104028	MAHIMA R
28	922121104030	MANIKANDAN B
29	922121104031	MANOJ KUMAR V
30	922121104032	MANTIIRA SRI D
31	922121104033	MATHAVAN S
32	922121104034	MEENA S
33	922121104035	MOHAMAD RILA M

Sl. No.	Register No.	Name of the student
34	922121104036	NAVEEN KUMAR S
35	922121104037	NITHYABALA M
36	922121104038	NIVETHITHA M
37	922121104039	PANOJ KUMAR C
38	922121104040	PAVITHRA HARINI S
39	922121104041	PRADEEP M
40	922121104042	PRASANNA N
41	922121104043	RAKSHITHA VP
42	922121104044	SAKTHIPRIYA S
43	922121104045	SANTHANAKALEESWARI S
44	922121104046	SANTHOSH.K
45	922121104047	SATHIYA PRIYA N
46	922121104048	SHERIN SITHARA M
47	922121104049	SHIVANI K
48	922121104050	SHURUTHI LAYA S
49	922121104051	SRINIVASAN T
50	922121104052	SWARNAMBIKA V
51	922121104053	THAMEEM RAJA K
52	922121104054	TURIN PETCI J
53	922121104055	UMAR FAROOK J
54	922121104056	VAISHNAVI C
55	922121104057	VIDHYA SAGAR P
56	922121104058	VIJAYALAKSHMI T
57	922121104059	VIJAYKARTHIK S
58	922121104060	VIJAY SUBRAMANIYAM S
59	922121104061	VISHWADHARSHINI V
60	922121104062	YOGESHWARAN B
61	922121104063	YUVARAJ V
62	LE01	SYED MUSHARAF M
63	LE02	P MEENDRAN -
64	LE03	KANNAN D B
65	LE04	DANIEL RAJ L
66	LE05	ALAGU SURYA S

Class In Charge /II CSE

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS),

Principal

SSM Institute of Engineering and Technology

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Palani Road, Dindigul - 624 092.

Academic Coordinator/CSE

Principal





SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
Dindigul - Palani Highway, Dindigul - 624 002.

NOMINAL LIST

Subject Code & Name: CS3381 & Object Oriented Programming

BRANCH : 1

YEAR/SEM: II/III

BATCH: 2021-2025

S. No.	Register Number	Name
1	922121104001	AARTHI N
2	922121104002	AMIRTHA SHREE N.
3	922121104003	ANAND CHARUKESAN K
4	922121104004	ANDRUES K
5	922121104005	ANISHA J
6	922121104006	ARUN PRAKASH P
7	922121104007	BAVANI K
8	922121104008	DEVAKI R
9	922121104009	DHANUSH PRAVEEN T
10	922121104010	DIARSUINI S
11	922121104011	DIIYANESI S
12	922121104012	HABIB RAHUMAN K
13	922121104013	HARINI S
14	922121104014	INDHIRARAJ S
15	922121104015	JEEVA G
16	922121104016	JEYARAMAN S
17	922121104017	JEYA SHREE S
18	922121104018	KAJALAKSHMI M
19	922121104019	KARPAGAM S
20	922121104020	KARTHIKEYAN M
21	922121104021	CAVI KANNAN S
22	922121104022	KAVIN P
23	922121104023	KAVIYA J
24	922121104024	KIRUTHIKA G
25	922121104025	KISHOR KUMAR S
26	922121104027	MADHAVARAJ C
27	922121104028	MAHIMA R
28	922121104030	MANIKANDAN B
29	922121104031	MANOJ KUMAR V
30	922121104032	MANTHRA SRI D
31	922121104033	MATHAVAN S

Faculty Incharge



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Dindigul - Palani Highway, Dindigul - 624 002.

NOMINAL LIST

Subject Code & Name: CS3381 & Object Oriented Programming

BRANCH : 2 YEAR/SEM: II/III BATCH: 2021-2025

S. No.	Register Number	Name
1	922121104034	MEENA S
2	922121104035	MOHAMMED RILA M
3	922121104036	NAVEEN KUMAR S
4	922121104037	NITHYA BALA M
5	922121104038	NIVETHITHA M
6	922121104039	PANOJKUMAR C
7	922121104040	PAVITHRAHARINI S
8	922121104041	PRADEEP M
9	922121104042	PRASANNA N
10	922121104043	RAKSHITHA V P
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13	922121104046	SANTHOSH K
14	922121104047	SATHIYA PRIYA N
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26	922121104059	VIJAYKARTHIK S
27	922121104060	VIJAY SUBRAMANIYAM S
28	922121104061	VISHWADHARSHINI V
29	922121104062	YOGESHWARAN B
30	922121104063	YUVARAJ V
31	922121104301	ALAGU SURIYA.S
32	922121104302	DANIEL RAJ.L
33	922121104303	KANNAN.D.B
34	922121104304	MAHENDRAN. P
35	922121104305	SYED MUSHARAF.M

Faculty Incharge

HOD/CSE

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS),

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Department of Computer Science and Engineering

LIST OF EXPERIMENTS

CS3381 – Object Oriented Programming Laboratory

Ex. No.	Name of the Experiment
1.	Solve problems by using sequential search, binary search, and quadratic sorting algorithms (selection, insertion)
2.	Develop stack and queue data structures using classes and objects.
3.	Develop a java application with an Employee class with Emp_name, Emp_id, Address, Mail_id, Mobile_no as members. Inherit the classes, Programmer, Assistant Professor, Associate Professor and Professor from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club funds. Generate pay slips for the employees with their gross and net salary.
4.	Write a Java Program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea() that prints the area of the given shape.
5.	Solve the above problem using an interface.
6.	Implement exception handling and creation of user defined exceptions.
7.	Write a java program that implements a multi-threaded application that has three threads. First thread generates a random integer every 1 second and if the value is even, the second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of the cube of the number.
8.	Write a program to perform file operations.
9.	Develop applications to demonstrate the features of generics classes.
10.	Develop applications using JavaFX controls, layouts and menus.
11.	Develop a mini project for any application using Java concepts.

Faculty Incharge



6.24.2
HOD/CSE

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Department of Computer Science and Engineering

Experiments other than Syllabus

CS3381 – Object Oriented Programming Laboratory

Write the JAVA program for the following basic concepts:

- [1] Write a Java program to print your name.
- [2] Write a Java program to add two numbers.
- [3] Write a Java program to find biggest of three numbers.
- [4] Write a Java program to find average to 5 numbers.
- [5] Write a Java program to find total and average of 3 subject.
- [6] Write a Java program to calculate simple interest and compound interest.
- [7] Write a Java program to find area of circle.
- [8] Write a Java program to find area of triangle.
- [9] Write a Java program to find area of rectangle.
- [10] Write a Java program to swap two numbers

Faculty Incharge

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G.27/2
HOD/CSE





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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

LAB MANUAL

LAB CODE	CS3381
LAB NAME	OBJECT ORIENTED PROGRAMMING LABORATORY



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Dindigul- Palani Highway, Dindigul – 624 002.

Tamilnadu, India. 0451 - 2448800 – 2448899

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION

To grow as an eminent department with international standards of excellence in computing and research by integrating computer and information technology to develop products and services for the benefit of the society with ethical values.

MISSION

- ❖ To instill the students with the finest quality education
- ❖ To impart good attitude and thereby casting them with creativity and research orientation
- ❖ To initiate interest and equip students to design and develop intelligent products.
- ❖ To inculcate the desire to serve the society with ethical values.

PROGRAM EDUCATIONAL OBJECTIVES

PEO1: Technical Proficiency

Advance professionally to roles of greater computer engineering responsibilities in government and private organizations, through providing solutions to challenging problems in their profession by applying computer engineering theory and principles.

PEO2: Continuous educational growth

Engage in life-long learning through successful completion of post graduate programs in engineering and interdisciplinary areas to emerge as researchers, experts, and educators.

PEO3: Managerial Skills

Develop and refine their knowledge to provide exposure to emerging cutting edge technologies, adequate training and opportunities to work as teams on multidisciplinary projects with effective communication skills and leadership qualities.

PEO4: Service to the society

Establish a commitment to the society by applying technical skills and knowledge to support various service activities.

PROGRAMME SPECIFIC OUTCOMES

PSO 1:Understand the principles of basic engineering and acquire the hardware and software aspects of computer science and engineering.

PSO 2:Design and develop applications or products using various programming language.

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Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

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Dindigul – Palani Highway, Dindigul – 624 002

Department of Computer Science and Engineering

Dos and Don'ts

Laboratory Rules & Regulation:

- Students are instructed to maintain **silence** inside the Lab.
- Students have to sign the **log-book**, while entering and leaving the Lab and also they have to mention the **time in** and **time out**.
- Students have to **enter** and **leave** the Lab in their scheduled time otherwise they will be marked **absent**.
- Students should come with proper Lab uniform and with **shoes**.
- The students should **properly shut down** the Computer Systems before they leave the Lab.
- Students are **not allowed** to use **CD's & DVD's, USB DRIVE** etc. If required prior permission of Laboratory in-charge is needed.
- All students will be responsible for keeping the **Lab clean**.
- Students should **refrain from dislocating, shifting and damaging** with any parts of the computer or any other device in the Lab.
- The students **should not load or delete** any software from the computer.
- The students should not use computers in the lab for any **personal work**.
- Browsing of **Internet will not be allowed in the lab** beyond the stipulated hour as per time table.
- The **Instructor/Lecturer** will be the sole authority to **judge the disciplinary behavior inside the laboratory**. For violation of any of the above rules, the department reserves the right to take appropriate disciplinary action.
- Browsing of **non-academic Internet sites** will not be allowed in the Lab.
- **Before downloading any materials please consult your instructor** and save the downloaded files as per instruction given by the laboratory in-charge.
- Because of **security problems, downloading software and music etc.** from the Internet is **strictly prohibited**. Any such file found in the hard disk will be **deleted without warning**.
- Students should **arrange the chairs** properly while leaving the LAB hours.
- Students should not allow to work inside the LAB other than LAB hours. If required prior permission of Laboratory in-charge and Department in charge is needed.

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JAVA BASIC PROGRAMS

1. Java Program to print your Name

```
public class MyFirstJavaProgram {  
    public static void main(String []args) {  
        System.out.println("atnyla.com"); // prints atnyla.com  
    }  
}
```

2. Java program to Add two Numbers

```
import java.util.*;  
  
public class Main {  
    public static void main(String[] args) {  
        Scanner scn=new Scanner(System.in);  
        System.out.println("Enter the first number:");  
        int x=scn.nextInt();  
        System.out.println("Enter the second number:");  
        int y=scn.nextInt();  
        int sum=x+y;//add the two numbers  
        System.out.println("Sum is "+sum);  
    }  
}
```



3. Java program to find biggest of three Numbers

```
import java.util.Scanner;  
  
public class LargestNumberExample1  
{  
    public static void main(String[] args)  
    {  
        int a, b, c, largest, temp;  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter the first number:");  
        a = sc.nextInt();  
        System.out.println("Enter the second number:");  
        b = sc.nextInt();  
        System.out.println("Enter the third number:");  
        c = sc.nextInt();  
        if(a>b){temp=a;a=b;b=temp;}  
        if(a>c){temp=a;a=c;c=temp;}  
        if(b>c){temp=b;b=c;c=temp;}  
        largest=c>temp?c:temp;  
        System.out.println("The largest number is: "+largest);  
    }  
}
```




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4. Java program to find Area of Circle

```
import java.util.Scanner;  
  
public class AreaOfCircle  
{  
    public static void main(String args[])  
    {  
        int radius;  
        double area;  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter the radius of the circle ::");  
        radius = sc.nextInt();  
        area = (radius*radius)*Math.PI;  
        System.out.println("Area of the circle is ::"+area);  
    }  
}
```


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5.Java program to find Area of Rectangle

```
import java.util.Scanner;  
  
class AreaOfRectangle  
{  
    public static void main (String[] args)  
    {  
        Scanner scanner = new Scanner(System.in);  
        System.out.println("Enter the length of Rectangle:");  
        double length = scanner.nextDouble();  
        System.out.println("Enter the width of Rectangle:");  
        double width = scanner.nextDouble();  
        double area = length*width;  
        System.out.println("Area of Rectangle is:"+area);  
    }  
}
```




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6. Java program to find Area of Triangle

```
import java.util.Scanner;  
  
class AreaTriangleDemo  
{  
  
    public static void main(String args[])  
    {  
  
        Scanner scanner = new Scanner(System.in);  
  
        System.out.println("Enter the width of the Triangle:");  
  
        double base = scanner.nextDouble();  
  
        System.out.println("Enter the height of the Triangle:");  
  
        double height = scanner.nextDouble();  
  
        double area = (base * height) / 2;  
  
        System.out.println("Area of Triangle is: " + area);  
    }  
}
```



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7. Java Program to find Average of two Numbers

```
import java.util.Scanner;  
  
public class Average  
{  
    public static void main(String[] args)  
    {  
        Scanner scan = new Scanner(System.in);  
  
        double num1 = 0;  
        double num2 = 0;  
        double sum = 0.0;  
        double avg = 0.0;  
  
        System.out.print("Enter two numbers: ");  
  
        num1 = scan.nextDouble();  
        num2 = scan.nextDouble();  
  
        sum = num1 + num2;  
  
        avg = sum/2;  
  
        System.out.println("Average: " + avg );  
    }  
}
```



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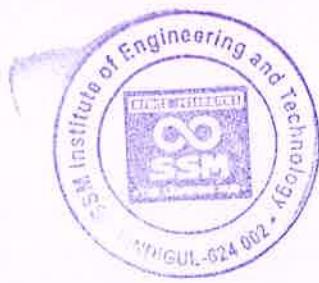
CS53301

OOPS

MAMMAL



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ASSESSMENT RECORD

(LAB)

Name of the Faculty N. Anu Lavanya
Designation AP Department: CSE
Year and Branch II CSE Section: I
Subject Code and Title CS3381- Object Oriented Programming Lab
Semester Commences on 06.08.2021 Last Working Day 8.12.2021



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Name of the	
Designation	
Branch	
Semester	
Subject Code	
No. of Experit Completed	
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Cycle - I

S. No.	Date	List of Experiments	Initials
1.	30/8/22	About Java, Installation, setting path	
2.	1/9/22	Basic Java Program	
3.	13/8/22	solve problems by using sequential, binary search & quadratic sorting algorithm (selection & insertion)	
4.	21/9/22	Develop Stack & Queue DS using classes & object	
5.	11/10/22	Java Application – Employee class	
6.	18/10/22	Java App – Shapes using abstract & interface	
7.	15/11/22	Exception handling, synchronized, multithread	
8.	22/11/22	File operation	
9.	29/11/22	Generic classes	



22-11-2022

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9/9/22/11/22/6

CS53381

OOPS

MANUAL

D.S.K

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EX NO : 1(a)

PROGRAM TO IMPLEMENT LINEAR SEARCH IN JAVA

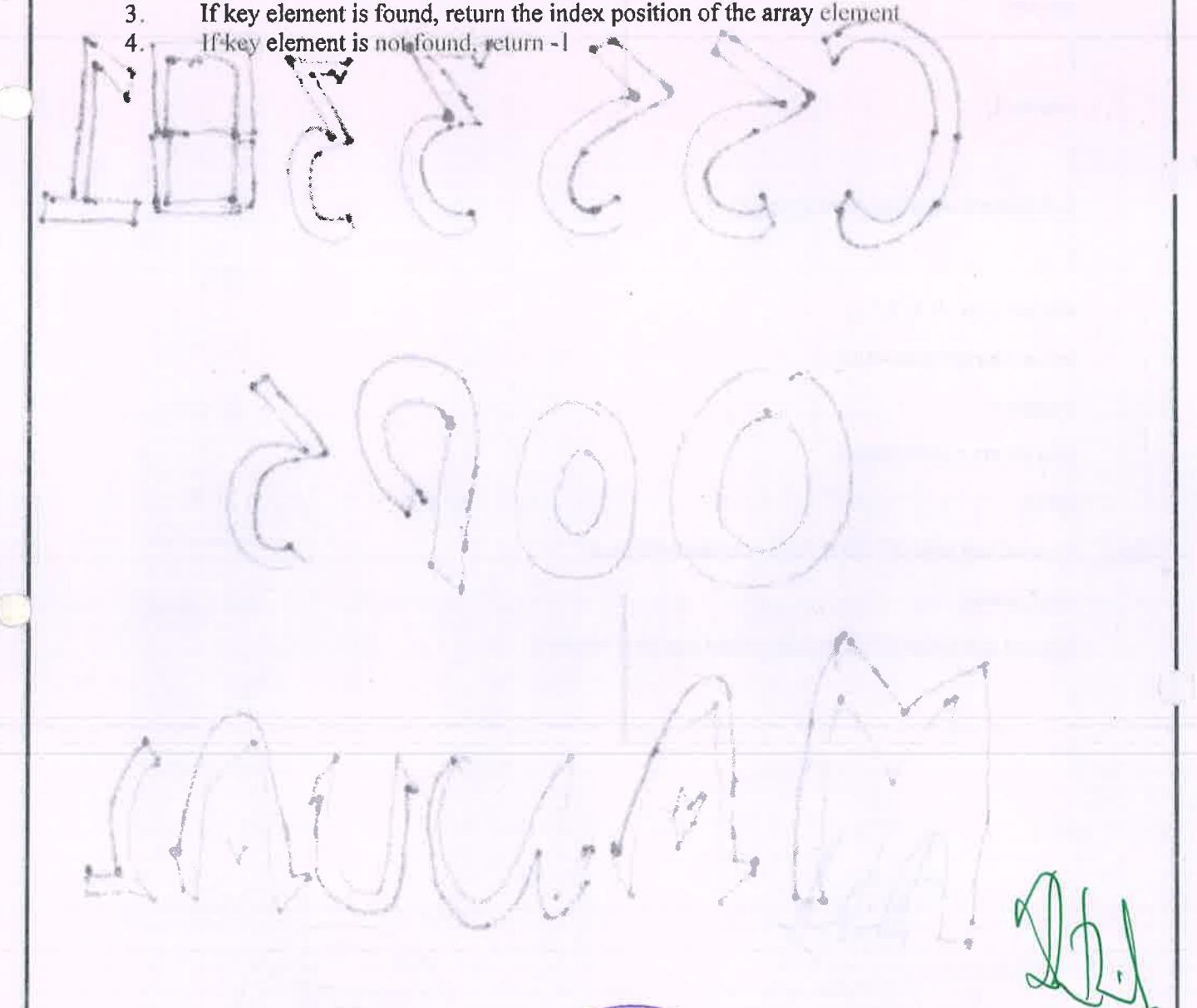
Date:

AIM

To develop a Java program to search an element using Linear Search.

ALGORITHM

1. Traverse the array
2. Match the key element with array element
3. If key element is found, return the index position of the array element
4. If key element is not found, return -1



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PROGRAM

```
classLinearSearch
{
    staticintsearch(intarr[],intn,intx)
    {
        for(inti=0;i<n;i++){if
            (arr[i] == x)
            returni;
        }
        return-1;
    }
    publicstaticvoidmain(String[]args)
    {
        int[]arr = {3, 4, 1, 7,5 };
        int=n;intx=4;in
        t index =
        search(arr,n,x);if (index
        ==-1)
            System.out.println("Elementisnotpresentinthea
                    ray");else
            System.out.println("Elementfoundatposition"+index);
    }
}
```

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OUTPUT

Element found at position 1

RESULT

Thus the java program to search an element using Linear Search implemented and executed successfully.



A handwritten signature in black ink, appearing to read "D. Senthil Kumaran".

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EX NO: 1(b) PROGRAMTOIMPLEMENTBINARYSEARCHINJAVA

Date:

AIM

To develop a Java program to search an element using Binary Search.

ALGORITHM

1. Calculate the mid element of the collection.
2. Compare the key items with the mid element.
3. If key = middle element, then we return the mid index position for the key found.
4. Else If key > mid element, then the key lies in the right half of the collection.
5. Thus repeat steps 1 to 3 on the lower (right) half of the collection.
6. Else key < mid element, then the key is in the upper half of the collection. Hence you need to repeat the binary search in the upper half.



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PROGRAM

```
classBinarySearch
{
    intbinarySearch(intarr[],intl,intr,intx)
    {
        if (r>=l)
        {
            intmid = l +(r - l)/2;

            if(arr[mid]==x) returnm
            id; if (arr[mid] > x)
                returnbinarySearch(arr,l,mid-
                1,x);returnbinarySearch(arr,mid+1,r
                ,x);
        }
        return-1;
    }
    publicstaticvoidmain(Stringargs[])
    {
        BinarySearchob=newBinarySearch();

        intarr[]={2,3,4,10,40};
        intn=arr.length;l
        ntx=10;

        intresult=ob.binarySearch(arr,0,n-
        1,x);if(result== -1)
```



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OUTPUT

Element is at found at index

RESULT

Thus the java application to search an element using Binary Search implemented and executed successfully.



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EX NO: 1(c)

PROGRAMTOIMPLEMENTSELECTIONSORTIN JAVA

Date:

AIM

To develop a Java program to sort the array using Selection Sort.

ALGORITHM

1. Set Min_Index to 0
2. Search for the smallest element in the array
3. Swap with value with the element at the Min_Index
4. Increment Min_Index to point to next element
5. Repeat until the complete array is sorted

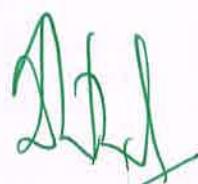
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PROGRAM

```
class SelectionSort
{
    void sort(int arr[])
    {
        int n=arr.length;
        for(int i=0;i<n-1;i++)
        {
            int min_idx=i;
            for(int j=i+1;j<n;j++)
            {
                if (arr[j] < arr[min_idx]) min_idx = j;
            }
            int temp =
                arr[min_idx];arr[min_idx]=arr[i];a
                rr[i]=temp;
            }
        }
    void printArray(int arr[])
    {
        int n=arr.length;
        for(int i=0;i<n;
            ++i)
        System.out.print(arr[i]+"");
    }
}
```



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```
System.out.println();
}
public static void main(String args[])
{SelectionSort ob = new SelectionSort();
int arr[] = {64, 25, 12, 22, 11};
ob.sort(arr); System.out.println("Sorted array"); ob.printArray(arr);
}
```



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OUTPUT

Sortedarray

11122225

64

RESULT

Thus the java application to generate pay slip for different category of employees was implemented using inheritance and the program was executed successfully.



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EX NO: 1(d)

PROGRAMTOIMPLEMENTINSERTIONSORTINJAVA

Date:

AIM

To develop a Java program to sort the array using Selection Sort.

ALGORITHM

1. Iterate from arr[1] to arr[N] over the array.
2. Compare the current element (key) to its predecessor.
3. If the key element is smaller than its predecessor, compare it to the elements before.
4. Move the greater elements one position up to make space for the swapped element.



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PROGRAM

```
class InsertionSort
{
    void sort(int arr[])
    {
        int n = arr.length;
        for (int i = 1; i < n; ++i)
        {
            int key = arr[i];
            int j = i - 1;
            while (j >= 0 && arr[j] > key)
            {
                arr[j + 1] = arr[j];
                j = j - 1;
            }
            arr[j + 1] = key;
        }
    }

    static void printArray(int arr[])
    {
        int n = arr.length;
        for (int i = 0; i < n;
             ++i) System.out.print(arr[i]
                + " ");
        System.out.println();
    }
}
```



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```
public static void main(String args[])
{
    int arr[] = {12, 11, 13, 5, 6};
    InsertionSort ob =
        new InsertionSort();
    ob.sort(arr); printArray(arr);
}
```


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OUTPUT

56111213

RESULT

Thus the java application for stack operations has been implemented and executed successfully.



A handwritten signature in black ink, appearing to read "Dr. D. Senthil Kumaran".

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EX NO: 2(a)

PROGRAMFORSTACKADTINJAVA

Date:

AIM

To design a java application to implement array implementation of stack.

ALGORITHM

1. Check stack is full
2. If the stack is full, produces an error and exit
3. If stack is not full increments top point not empty space
4. Adds data limits to stack location were top is pointing
5. Returns, success



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PROGRAM

```
class Stack  
{  
private  
int arr[]; private int  
top; private  
int capacity;  
Stack(int size)  
{  
arr = new int[size];  
capacity = size; top  
= -1;  
}  
public void push(int x)  
{  
if (isFull())  
{  
System.out.println("Overflow\nProgram  
Terminated\n"); System.exit(-1);  
}  
System.out.println("Inserting"+  
x); arr[++top] = x;
```



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```
}

public int pop()
{
    if(isEmpty())
    {
        System.out.println("Underflow\nProgram
Terminated");System.exit(-1);

    }
    System.out.println("Removing "
+peek());return arr[top--];

}

public int peek()
{
    if(!isEmpty())
    {
        return arr[top];
    }
    else
    {
        System.exit(-1);
    }
    return -1;
}

public int size()
{
```

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```

        returntop+1;
    }

    public boolean isEmpty()
    {
        returntop== -1;
    }

    public boolean isFull()
    {
        returntop==capacity-1;
    }
}

class Main
{
    public static void main(String[] args)
    {
        Stack stack=new Stack(3);
        stack.push(1);stack.push(2);
        stack.pop();stack.pop();
        stack.push(3);
    }
;

        System.out.println("The top element is "
+stack.peek());System.out.println("The stack size is "+stack.size());stack.pop();

        if(stack.isEmpty())
    }

```




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```
{  
    System.out.println("The stack is empty"); } else  
{  
    System.out.println("The stack is not empty");}  
}  
}
```



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OUTPUT

```
Inserting 1
Inserting 2
Removing2
Removing1
Inserting 3
The top element
is3The stack size is1
Removing3
The stack is empty
```

RESULT

Thus the java application for stack operations has been implemented and executed successfully




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EX NO : 2(b)

PROGRAMFORQUEUEADTINJAVA

Date:

AIM

To design a java application to implement array implementation of queue.

ALGORITHM

1. Create an abstract class named shape that contains two integers and an empty method named printarea().
2. Provide three classes named rectangle, triangle and circle such that each one of the classes extends the class Shape.
3. Each of the inherited class from shape class should provide the implementation for the method printarea().
4. Get the input and calculate the area of rectangle, circle and triangle .
5. In the shape class , create the objects for the three inherited classes and invoke the methods and display the area values of the different shapes.

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PROGRAM

```
class Queue
{
private int[] arr;
private int front;
private int rear;
private int capacity; private
int count; Queue
(int size)
{
arr = new int[s
ize]; capacity
= size
;
front = 0; rear
= -1
;
count =
0;
}
public int dequeue()
{
if (isEmpty())
{
```



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```

int
x=arr[front];System.out.println("Re
moving
"+x);front=(front+1)%capacity;
count--;
;
return
nx;
}
public void enqueue(int item)
{
if(isFull())
{
System.out.println("Overflow\nProgramT
erminated");System.exit(-1);
}
System.out.println("Inserting"+ite
m);
rear=(rear+1)%capacity;arr[rear]=it
em;
count++;
}
public int peek()
{
ifisEmpty())
{
System.out.println("Underflow\nProgra
mTerminated");System.exit(-1);
}

```



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```

        returnarr[front];
    }

    publicintsize()
    {
        returncount;
    }

    publicbooleanisEmpty()
    {
        return(size()==0);
    }

    publicbooleanisFull()
    {
        return(size()==capacity);
    }
}

classMain
{
    publicstaticvoidmain(String[]args)
    {
        Queueq=new
        Queue(5);
        q.enqueue(1);

        q.enqueue(2);
        q.enqueue(3);
        System.out.println("Thefrontelementis"+
        q.peek());q.dequeue();
    }
}

```


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```
System.out.println("The front element  
is"+q.peek());System.out.println("The queue size is"  
+q.size());q.dequeue();  
if(q.isEmpty())  
{  
System.out.println("The queue is empty");  
}  
else  
{  
System.out.println("The queue is not empty");}  
}  
}
```




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OUTPUT

```
Inserting1
Inserting2
Inserting3
The front element is 1
Removing1
The front element
is 2 The queue size is 2
Removing2
Removing3
The queue is empty
```

RESULT

Thus the java application for queue operations has been implemented and executed successfully.

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EX NO : 3 PROGRAM TO GENERATE PAYSLIP USING INHERITANCE

Date:

AIM

To develop a Java application to generate payslip for different category of employees using the concept of inheritance.

ALGORITHM

1. Create the class employee with name, Empid, address, mailid, mobile no as members.
2. Inherit the classes programmer, asstprofessor, associateprofessor and professor from employee class.
3. AddBasicPay(BP) as the member of all the inherited classes.
4. Calculate DA as 97% of BP, HRA as 10% of BP, PF as 12% of BP, Staff club fund as 0.1% of BP.
5. Calculate gross salary and net salary.
6. Generate payslip for all categories of employees.
7. Create the objects for the inherited classes and invoke the necessary methods to display the Payslip



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PROGRAM

```
importjava.util.*;  
classemployee  
{  
intempid;l  
ongmobil  
e;  
String name, address,  
mailid;Scanner get =  
newScanner(System.in);voidgetda  
ta()  
{  
System.out.println("EnterNameoftheE  
mployee"); name =  
get.nextLine();System.out.println("Ent  
er Mail id");mailid= get.nextLine();  
address =  
get.nextLine();System.out.println("Enter  
employee id");empid =  
get.nextInt();System.out.println("Enter  
MobileNumber");mobile=  
get.nextLong();  
}  
voiddisplay()  
{  
System.out.println("EmployeeName:  
"+name);System.out.println("Employeeid  
:"+empid);System.out.println("Mailid:  
"+mailid);  
System.out.println("Address:"+address);System.out.println("MobileNumber"+mobile);  
}  
}  
classprogrammerextendsemployee  
{  
double  
salary,bp,da,hra,pf,club,net,gross;voidget  
programmer()  
{  
System.out.println("basicpay  
");bp=get.nextDouble();  
}  
voidcalculateprog()  
{  
da=(0.97*bp);  
  
hra=(0.10*bp);pf=(  
0.12*bp);club=(0.1  
*bp);gross=(bp+da  
+hra);net=(gross-  
}
```



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```

        System.out.println("HRA:Rs"+hra);System.out.println("CLUB:Rs"+club);S
        ystem.out.println("GROSSPAY:Rs"+gross);System.out.println("NETPAY:R
        s"+net);
    }
}
class asstprofessorextendsemployee
{
    double
    salary,bp,da,hra,pf,club,net,gross;void get
    asst()
    {
        System.out.println("Enter basic
        pay");bp= get.nextDouble();
    }
    void calculateasst()
    {
        da=(0.97*bp);
        hra=(0.10*bp);

        pf=(0.12*bp);club=
        (0.1*bp);gross=(bp
        +da+hra);net=(gros
        s-pf-club)
        ;
        System.out.println("*****");System.out.print
        ln("PAYSPLITFORASSISTANTPROFESSOR");
        System.out.println("*****");System.out.print
        ln("BasicPay:Rs"+bp);
        System.out.println("DA:Rs"+da);
        System.out.println("HRA:Rs"+hra)
        ;
        System.out.println("PF:Rs"+pf);System.out.println("CLUB:Rs"+club);Syst
        em.out.println("GROSSPAY:Rs"+gross);
        System.out.println("NETPAY:Rs"+net);
    }
}
class associateprofessorextendsemployee
{
    double
    salary,bp,da,hra,pf,club,net,gross;void get
    associate()
    {
        System.out.println("Enter basic
        pay");bp= get.nextDouble();
    }
    void calculateassociate()
    {
        da=(0.97*bp);
        hra=(0.10*bp);
        pf=(0.12*bp);
    }
}

```




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OUTPUT

PAYROLL

1.PROGRAMMER 2.ASSISTANTPROFESSOR 3.ASSOCIATEPROFESSOR 4.PROFESSOR

2

EnterNameoftheEmployee

RiyaEnter Mail

idriya@gmail.com

Enter

employeeid 11

EnterMobileNumber

1234567890Enterba

sic

pay

20,000Employee

Name:

RiyaEmployeeid:11

Mail id :

riya@gmail.com

Address:

Mobile Number1234567890

PAYSLIPFORASSISTANTPROFESSOR

BasicPay:Rs20000.0

DA:Rs19400.0HRA:

Rs2000.0PF:Rs240

0.0CLUB:Rs2000.0

GROSSPAY:Rs4140

0.0

NETPAY:Rs37000.0

Do you want to continue 0 to quit and 1 to continue
0

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RESULT

Thus the java application to generate payslip for different category of employees was implemented using inheritance and the program was executed successfully.



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EX NO :4

PROGRAM TO CALCULATE AREA USING ABSTRACT CLASS

Date:

AIM

To write a java program to calculate the area of rectangle, circle and triangle using the concept of abstract class.

ALGORITHM

1. Create an abstract class named shape that contains two integers and an empty method named printarea().
2. Provide three classes named rectangle, triangle and circle such that each one of the classes extends the class Shape.
3. Each of the inherited class from shape class should provide the implementation for the method printarea().
4. Get the input and calculate the area of rectangle, circle and triangle.
5. In the shape class, create the objects for the three inherited classes and invoke the methods and display the area values of the different shapes.



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PROGRAM

```
import  
java.util.*;abstrac  
t classshape  
{  
inta,b;  
abstractpublicvoidprintarea();  
}  
classrectangleextendsshape  
{  
publicintarea_rect;  
public  
voidprintarea()  
{  
Scanner s=new  
Scanner(System.in);System.out.println("enterthele  
ngthandbreadthofrectangle");a=s.nextInt();  
b=s.nextInt();a  
rea_rect=a*b;  
System.out.println("Lengthofrectangle"+a+"breadthofrectangle"+  
b);System.out.println("Theareaofrectangleis:"+area_rect);  
}  
}  
classtriangleextendsshape  
{
```

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```

double
area_tri;public void pri
ntarea()
{
Scanners=new Scanner(System.in);System.out.println("enter
hebase and heightof triangle"); a=s.nextInt();
b=s.nextInt();

System.out.println("Baseoftriangle"+a+"heightoftriangle"+b);
area_tri=(0.5*a*b);

System.out.println("Theareaoftriangleis:"+area_tri);
}
}

class circle extends shape
{
double
area_circle;public
void printarea()
{
Scanner s=new
Scanner(System.in);System.out.println
("entertheradiusofcircle");
a=s.nextInt();area_circle=(3.14*a*a);S
ystem.out.println("Radius ofcircle"+a);
System.out.println("Theareaofcircleis:"+area_circle);
}
}

```

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```
public class shapeclass
{
    public static void main(String[] args)
    {
        rectangle
        r=newrectangle();
        r.printarea();triangle=t
        ew

        triangle();
        t.printarea();circle=r1
        ew

        circle();
        r1.printarea();
    }
}
```



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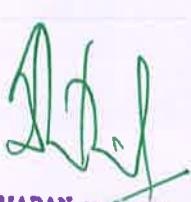
OUTPUT

```
enter the length and breadth of rectangle10  
20  
Length of rectangle 10 breadth of rectangle 20  
The area of rectangle is: 200  
enter the base and height of triangle 15  
25  
Base of triangle 15 height of triangle 25 The  
area of triangle is: 187.5 Enter the  
radius of circle 12  
Radius of circle 12  
The area of circle is: 452.15999999999997
```

RESULT

Thus a java program for calculate the area of rectangle, circle and triangle was implemented and executed successfully




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EX NO :5

PROGRAM TO CALCULATE AREA USING INTERFACE

Date:

AIM

To write a java program to calculate the area of rectangle, circle and triangle using the concept of interface.

ALGORITHM

1. Create an interface class named shape that contains two integers and a empty method named printarea().
2. Provide three classes named rectangle, triangle and circle such that a one of the classes implements the class Shape.
3. Each of the inherited class from shape class should provide the implementation for the method printarea().
4. Get the input and calculate the area of rectangle, circle and triangle.
5. In the shape class , create the objects for the three inherited classes and invoke the methods and display the area values of different shapes.


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PROGRAM

```
importjava.util.*;  
interfaceShape  
{  
    int  
    a=10,b=5;voidp  
    rintarea()  
}  
  
classrectangleimplementsShape  
{  
    intarea_rect();  
    publicvoidprintarea()  
    {  
        System.out.println("LengthofRectangle:"+a+"BreadthofR  
        ectangle:"+b);area_rect=a*b;  
        System.out.println("AreaofRectangle:"+area_rect);  
    }  
}  
  
classtriangleimplementsShape  
{  
    double  
    area_tri;publicvoidpri  
    ntarea()  
    {  
        System.out.println("BaseofTriangle:"+a+"HeightofT  
        riangle:"+b);area_tri=0.5*a*b;  
    }  
}
```



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```

        System.out.println("AreaofTriangle:"+area_tri);
    }
}

class Circle implements Shape
{
    double area_circle; public void
    printarea()
    {
        System.out.println("Radius
ofCircle:"+a); area_circle=3.14*a*
a;
        System.out.println("AreaofCircle:"+area_circle);
    }
}
class ShapeMain
{
    public static void main(String[] args)
    {
        Shape
        A=new Rectangle();
        A.printarea();

        Shape
        B=new Triangle();
        B.printarea();

        Shape
        C=new Circle();
        C.printarea();
    }
}

```



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OUTPUT

```
Command Prompt  
E:\PROGRAMS>javac multithreadprog.java  
E:\PROGRAMS>java multithreadprog  
Main Thread and Generated Number is 37  
New Thread 37 is ODD and Cube of 37 is: 50653  
Main Thread and Generated Number is 4  
New Thread 4 is EVEN and Square of 4 is: 16  
Main Thread and Generated Number is 69  
New Thread 69 is ODD and Cube of 69 is: 328509  
Main Thread and Generated Number is 32  
New Thread 32 is EVEN and Square of 32 is: 1024  
Main Thread and Generated Number is 26  
New Thread 26 is EVEN and Square of 26 is: 676  
E:\PROGRAMS>
```

RESULT

Thus a java program for calculate the area of rectangle,circle and triangle using interface was implemented and executed successfully




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EX NO: 6 PROGRAM TO IMPLEMENT USER DEFINED EXCEPTION HANDLING
Date:

AIM

To write a java program to implement user defined exception handling.

ALGORITHM

1. Create a class which extends Exception class.
2. Create a constructor which receives the string as argument
3. Get the Amount as input from the user.
4. If the amount is negative, the exception will be generated.
5. Using the exception handling mechanism, the thrown exception is handled by the catch construct.
6. After the exception is handled, the string "invalid amount" will be displayed.
7. If the amount is greater than 0, the message "Amount Deposited" will be displayed



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PROGRAM

```
importjava.util.Scanner;  
  
class  
NegativeAmtExceptionextendsExcep  
tion{  
  
String  
msg;NegativeAmtException(String  
msg)  
{  
this.msg=msg;  
}  
  
publicStringtoString()  
{  
returnmsg;  
}  
}  
  
publicclassuserdefined  
{  
  
publicstaticvoidmain(String[]args)  
{  
  
Scanners=newScanner(System.in);Syst  
em.out.print("EnterAmount:");inta=s.  
nextInt();  
  
try  
{  
if(a<0)  
{  
thrownewNegativeAmtException("InvalidAmount");  
}  
  
System.out.println("AmountDeposited");  
}
```



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OUTPUT

```
Starting of
tryblockCatchBlo
ck
MyExceptionOccurred:ThisisMyerrorMessage
```

RESULT

Thus a java program to implement user defined exception handling has been implemented and executed successfully.



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EX NO: 7 PROGRAM TO IMPLEMENT MULTITHREADED APPLICATION
Date:

AIM

To write a java program that implements a multi-threaded application.

ALGORITHM

1. Create a class even which implements first thread that computes .the square of the number .
2. run() method implements the code to be executed when thread gets executed.
3. Create a class odd which implements second thread that computes the cube of the number.
4. Create a third thread that generates random number. If the random number is even , it displays the square of the number. If the random number generated is odd, it displays the cube of the given number .
5. The Multithreading is performed and the task switched between multiple threads.
6. The sleep () method makes the thread to suspend for the specified time.

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PROGRAM

```
import  
java.util.Random;import  
java.util.logging.Level;import  
java.util.logging.Logger;classSq  
uareextendsThread  
{  
int  
x;Square(i  
ntn)  
{  
x = n;  
}  
publicvoidrun()  
{  
int sqr = x * x;  
System.out.println("Squareof" + x + " = " + sqr);  
}  
}  
  
classCubeextendsThread  
{  
int  
x;Cube(i  
ntn)  
{  
x = n;  
}  
publicvoidrun()  
{  
int cub = x * x * x;  
System.out.println("Cubeof" + x + " = " + cub);  
}  
}  
  
classNumberextendsThread  
{  
publicvoidrun()  
{  
Random random =  
new Random();for(int i=0;i<  
10;i++)  
{  
int randomInteger =  
random.nextInt(100);System.out.println("Randominteger  
generated:" + randomInteger); Square s = new
```



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```

Cube c =
newCube(randomInteger);c.sta
rt();

try {
Thread.sleep(1000);
} catch (InterruptedException ex)
{Logger.getLogger(Number.class.getName()).log(Level.SEVERE,
null,ex);
}
}
catch(InterruptedExceptionex)
{
System.out.println(ex);
}
}
}
}
}
}

public class LAB3B {
public static void main(String args[])
{
Number n =
new Number();n.sta
rt();
}
}

```




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OUTPUT

run:
RandomIntegergenerated:5
6Square of 56= 3136
Cube of 56 =
175616RandomIntegergene
rated:83Square of 83= 6889
Cube of 83 =
571787RandomIntegergene
rated:47Square of 47= 2209
Cube of 47 =
103823RandomIntegergene
rated:71Square of 71= 5041
Cube of 71 =
357911RandomIntegergene
rated:44Square of 44= 1936
Cubeof44=85184RandomIn
tegergenerated:36Square
of 36= 1296
Cubeof36=46656RandomIn
tegergenerated:62Square
of 62= 3844
Cube of 62 =
238328RandomIntegergene
rated:23Square of 23 -529
Cubeof23=12167RandomIn
tegergenerated:9Square of
9 = 81
Cube of 9 = 729
RandomIntegergenerated:7
1Square of 71= 5041
Cube of 71 = 357911



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RESULT

Thus the program to implement the multithreaded application is verified successfully.




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EX NO :8

PROGRAMFORDISPLAYINGFILEINFORMATION

Date:

AIM

To write a java program that reads a file name from the user, displays information about whether the file exists, whether the file is readable, or writable, the type of file and the length of the file in bytes.

ALGORITHM

1. Create a class Fileoperation. Get the file name from the user .
2. Use the file functions and display the information about the file.
3. getName() displays the name of the file.
4. getPath() displays the path name of the file.
5. getParent () -This method returns the pathname string of this abstract pathname's parent, or null if this pathname does not name a parent directory.
6. exists() – Checks whether the file exists or not.
7. canRead()-This method is basically a check if the file can be read.
8. canWrite()-verifies whether the application can write to the file.
9. isDirectory() -- displays whether it is a directory or not.
10. isFile() – displays whether it is a file or not.
11. lastmodified() – displays the lastmodified information.
12. length()- displays the size of the file.
13. delete() : deletes the file.
14. Invoke the predefined functions and display the information about the file.

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PROGRAM

```
import  
java.io.FileReader;import  
java.io.FileWriter;import ja  
va.io.IOException;  
public class Fileoperation  
{  
    public static void main(String args[])  
    {  
        try  
        {  
            FileWriter fw = new FileWriter("Data.txt");  
            System.out.println("Writing to a file      ");  
            String  
            str = "File Handling= File Reading and Writing";  
            fw.write(str);  
            fw.close();  
            FileReader fr = new  
            FileReader("Data.txt");  
            String s = "";  
            int i;  
            System.out.println("Reading Content from the file")  
            ;  
            while ((i = fr.read()) != -1)  
            {
```



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```
charst=(char)i;
}
System.out.print(s)
;fr.close();
System.out.println(
    ");System.
out.println("FileReadingandWritingBothDone");
}catch(IOExceptione)
{
System.out.println("TherearesomeIOexception");
}
}
}
```



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OUTPUT

Writingtoafile----

ReadingContentfromthefile-----

FileReadingandWritingBothDone

RESULT

Thus the java programs for File Operation Systems has been implemented and executed successfully.




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EXNO:9 DEVELOP APPLICATION TO DEMONSTRATE THE FEATURES OF GENERICS

Date:

AIM

To design a calculator using event driven programming paradigm of Java with the following options

- a) Decimal Manipulations
- b) Scientific Manipulations

ALGORITHM

1. Import the swing packages and awt packages.
2. Create the class scientificcalculator that implements actionlistener.
3. Create the container and add controls for digits, scientificcalculations and decimal Manipulations.
4. The different layouts can be used to lay the controls.
5. When the user presses the control, the event is generated and handled.

6. The corresponding decimal , numeric and scientific calculations are performed.

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PROGRAM

```
Class MyClass<TextendsComparable<T>>
{
    T[] vals;
    MyClass(T[] o)
    {
        vals=o;
    }
    public T min()
    {
        T v=vals[0];
        for(int i=1; i<vals.length;i++)
            if(vals[i].compareTo(v) <0)
                v
                =vals[i];
        return
        v;
    }
    public T max()
    {
        T v =
        vals[0];for(int i=
        1;
        i<vals.length;i+
        +)
            if(vals[i].compareTo(v)>0)v
            =
            vals[i];
        return
        v;
    }
}
```

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```

}
}

classgendemo

{
    public static void main(String args[])
    {
        int i;
        Integer
        inums[]={10,2,5,4,6,1};Character
        erchs={'v','p','s','a','n','h'};
        Double d[]={20.2,45.4,71.6,88.3,54.6,10.4};

        MyClass<Integer>iob=new MyClass<Integer>(inums);My
        MyClass<Character> cob =
        new MyClass<Character>(erchs);MyClass<Double> dob=n
        ew MyClass<Double>(d);

        System.out.println("Max value in inums: "
        +iob.max());System.out.println("Min value in inums:" +io
        b.min());

        System.out.println("Max value in erchs:" +cob.max());System.out
        .println("Min value in erchs:" +cob.min());System.out.println(""
        Max value in erchs:" +dob.max());System.out.println("Min value i
        n erchs:" +dob.min());
    }
}

```


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OUTPUT

```
MaxValueininums:10
MinValueininums:1
Max Value in chs:
vMin Value in chs:
aMax Value in chs:
88.3MInValueinchs:10
.4
```

RESULT

Thus the java programs for Generic programming has been implemented and executed successfully.




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EX NO: 11

MINI PROJECT FOR BUS RESERVATION SYSTEM

Date:

Aim

To write a java program to create a bus reservations system

Algorithm

1. Import the required java packages.
2. Create a class call booking.
3. Class booking consists of the function booking which gets the passenger name, date and the bus number as the input for checking.
4. Class booking also consists of a try block to get the current date and a catch block for any autogenerated blocks.
5. Then checks whether there is any vacancy in the bus which the user wants to travel if there is no vacancy then it displays no vacancy in the bus.
6. If the bus has some vacant seats then it conforms the user to book a ticket in the following bus.
7. If yes then the application asks the user to enter the capacity of members who want to travel if the capacity of the member exceeds the vacant seats then the application displays there is not enough space for all the passengers.
8. If the capacity of the member is less than the vacant seat in the bus then the application takes the user for the further booking process.



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Program:

```
import java.util.*;
import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.util.Scanner;//nestedpackage/hierarchical package
import java.util.ArrayList;
class Booking {
    String passengerName; int
    busNo; Date
    date;Booking(){
        Scanner scanner = new
        Scanner(System.in);System.out.println("Enter name of passenger:");
        passengerName=scanner.next();System.out.println("Enter bus no:")
        ;
        busNo = scanner.nextInt();
        System.out.println("Enter date dd-mm-
        yyyy");String dateInput=scanner.next();
        SimpleDateFormat dateFormat=new SimpleDateFormat("dd-MM-yyyy");
        try {
            date=dateFormat.parse(dateInput);
        }catch(ParseException e){
            //TODO Auto-generated catch block
            e.printStackTrace();
        }
    }
}
```



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```

intcapacity=0;
for(Busbus:buses){

if(bus.getBusNo()==busNo)capacity=bus.getCapacity();

}

intbooked=0;for(Bookingb:bookings){

if(b.busNo==busNo&&b.date.equals(date)){booked++;

}

}

returnbooked<capacity?true:false;
}

}

class Bus {

privateintbusNo;privateb
oolean ac;
privateintcapacity;//getandset

Bus(intno,booleanac,intcap){this.busNo :
=no; this.ac= ac;this.capacity =cap;
}

publicintgetBusNo()//accessorsreturnbusNo;
}

public
booleanisAc(){re
turnac;
}

publicintgetCapacity()//accessormethods
turncapacity;
}

```




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```

public void setAc(boolean val){//mutators ac=val;
}

public void setCapacity(int cap)
{//mutator capacity=cap;
}

public void displayBusInfo(){
    System.out.println("BusNo:"+busNo+"Ac:"+ac+"TotalCapacity:"+capacity);
}

}

class BusDemo
{
    public static void main(String[] args){
        ArrayList<Bus> buses = new ArrayList<Bus>(); ArrayList<Booking> bookings
        = new ArrayList<Booking>();
        buses.add(newBus(1,true,2));buses.add(new
        Bus(2,false,50));
        buses.add(newBus(3,true,48));
        int userOpt= 1;
        Scanner scanner =
        new Scanner(System.in);
        for(Bus b:buses
        es){b.displayBusInfo();}
    }
    while(userOpt==1){
        System.out.println("Enter 1 to Book and 2 to exit");userOpt
        =
        scanner.nextInt();if
        (userOpt== 1) {
            Booking booking=new Booking();if(booking.isAvailable(bookings,buses))
}

```



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```
{bookings.add(booking);System.out.println("Your booking is confirmed");
}

else

System.out.println("Sorry. Bus is full. Try another bus or date.");
}

}

}

}

}
```



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OUTPUT

```
Bus No:1 AC:true Total Capacity:  
2Bus No:2 AC:false Total  
Capacity:50BusNo:3AC:trueTotalCa  
pacity:48 1  
EnterNameof  
Passenger:  
Sudarsan  
Enterdatedd-mm-yy:  
19-08-03  
Your booking is confirmed Enter 1 to Book and 2  
to exit 2  
BUILD SUCCESSFUL(TOTAL 20 SECONDS)
```

RESULT

Thus the java programs to create a bus reservation system has been implemented and executed successfully.




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EXNO:10

JAVAFXCONTROLSPROGRAM

Date:

Aim

To write a java program to perform JavaFX controls.

Algorithm

1. Import the required java package.
2. Create Circle and setting the color and stroke in the circle
3. Create play button and setting coordinates for the button
4. Create pause button and setting coordinate for the pause button
5. Instantise Translate Transition class to create the animation
6. Set attributes for the Translate Transition
7. Add Handler for the play and pause button
8. Create a group and Scene

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PROGRAM

```
package  
application;import  
javafx.animation.TranslateTransition;im  
portjavafx.application.Application;imp  
rt javafx.event.EventHandler;import  
javafx.scene.Group;import  
javafx.scene.Scene;  
import  
javafx.scene.control.Button;importj  
avafx.scene.input.MouseEvent;imp  
ort javafx.scene.paint.Color;import  
javafx.scene.shape.Circle;importjav  
afx.stage.Stage;  
importjavafx.util.Duration;  
public class JavaFX_EventHandler extends A  
pplication{@Override  
public void start(Stage primaryStage) throws Exception{  
    // TODO Auto-generated method stub  
    //Creating Circle and setting the color and stroke in the circ  
    e Circle c = new  
    Circle(100,100,50);c.setFill(Color.GREEN);  
    c.setStroke(Color.BLACK)  
;  
    //creating play button and setting coordinates for the button  
    Button btn =new Button("Play");  
    btn.setTranslateX(125)  
;  
    btn.setTranslateY(200);  
    //creating pause button and setting coordinate for the pause button  
    Button btn1 =new Button("Pause");  
    btn1.setTranslateX(175)  
;  
    btn1.setTranslateY(200);  
  
    //Instantiating TranslateTransition class to create the a  
    nimation  
    TranslateTransition trans =  
    new TranslateTransition();  
  
    //setting attributes for  
    the TranslateTransition  
    trans.setAutoReverse(true);trans  
    .setByX(200);trans.setCycle  
    Count(100);
```



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```

trans.setDuration(Duration.millis(500));trans.s
etNode(c);

//CreatingEventHandler
EventHandler<MouseEvent>handler=newEventHandler<MouseEvent>(){

    @Override
    public void handle(MouseEvent event){
        //TODOAuto-generatedmethodstub
        if(event.getSource()==btn)
        {
            trans.play(); //animationwillbeplayedwhentheplaybuttonisclicked
        }
        if(event.getSource()==btn1)
        {
            trans.pause(); //animationwillbepausedwhenthepausebuttonisclicked
        }
        event.consume();
    }

};

//Adding Handler for the play and
pausebuttonbtn.setOnMouseClicked(handler);
btn1.setOnMouseClicked(handler);

//Creating Group
and sceneGroup root=ne
wGroup();
root.getChildren().addAll(c,btn,btn1);Sc
ene scene =
new Scene(root,420,300,Color.WHEAT)
;primaryStage.setScene(scene);
primaryStage.setTitle("EventHandlerexample");
primaryStage.show();
}

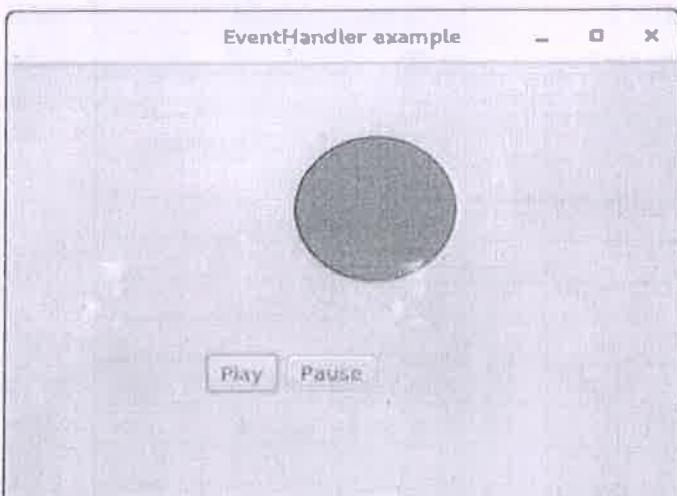
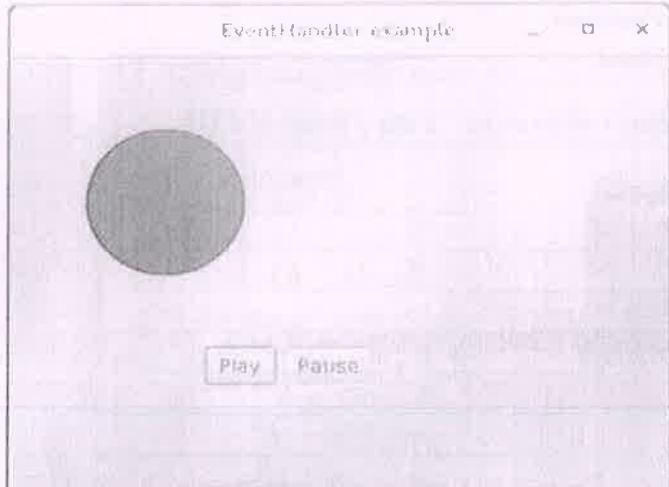
public static void main(String[] args){
    launch(args);
}
}

```


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OUTPUT



RESULT

Thus the java programs to perform Java FX controls have been implemented and executed successfully.



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624002**

**Department of Computer Science and Engineering
Model Lab Practical
Attendance Sheet**

Date : 1.12.2022

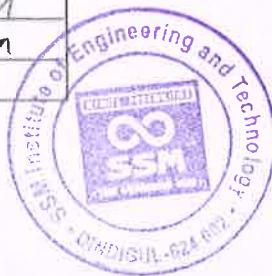
CS3381: Object Oriented Programming Laboratory Year / Sem: II / III

Sl. No	Reg.NO	Name of the student	Signature
1	922121104001	AARTHI N	Aarthi. N
2	922121104002	AMIRTHA SHREE N.B	Amirtha Shree N.B.
3	922121104003	ANAND CHARUKESAN K	K. Anand charukesan
4	922121104004	ANDRUES K	12. Andrues K
5	922121104005	ANISHA J	Anisha - J
6	922121104006	ARUN PRAKASH P	AB
7	922121104007	BAVANI K	K. Bawani
8	922121104008	DEVAKI R	R. Devaki
9	922121104009	DIHANUSH PRAVEEN T	T. Dhanush
10	922121104010	DHARSHINI S	S. Dharsini
11	922121104011	DHYANESH S.	S. Dhyanesh
12	922121104012	HABIB RAHUMAN K	K. Habib Rahuman
13	922121104013	HARINI S	S. Harini
14	922121104014	INDHIRARAJ S	Indhiraraj S
15	922121104015	JEEVA G	Jeeva G
16	922121104016	JEYARAMAN S	S. Jayaraman
17	922121104017	JEYA SHREE S	S. Jeyashree
18	922121104018	KAJALAKSHMI M	M. kajalakshmi
19	922121104019	KARPAGAM S	S. Karpagam
20	922121104020	KARTHEKEYAN M	M. Karthekeyan
21	922121104021	KAVI KANNAN S	AB
22	922121104022	KAVIN P	Kavin -
23	922121104023	CAVIYA J	Jay - I
24	922121104024	KIRUTHIKA G	G. Kiruthika
25	922121104025	KISHOR KUMAR S	S. Kishor Kumar
26	922121104027	MADHAVARAJ C	Madhavaraj C
27	922121104028	MAHIMA R	Mahima . R
28	922121104030	MANIKANDAN B	M. Manikandan R
29	922121104031	MANOJ KUMAR V	Manoj Kumar V
30	922121104032	MANTHRA SRI D	Manthra Sri D
31	922121104033	MATHAVAN S	Mathavan . S
32	922121104034	MEENA S	Meena . S
33	922121104035	MOHAMMED RILA M	Mohammed Rila M
34	922121104036	NAVEEN KUMAR S	S. Naveen Kumar
35	922121104037	NITHYABALA M	M. Nithya Balaji

36 922121104038 NIVETHITHA M
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37	922121104039	PANOJ KUMAR C	c. Panoj Kumar
38	922121104040	PAVITHRAHARINI S	s. Pavithraharini
39	922121104041	PRADEEP M	M. Pradeep
40	922121104042	PRASANNA N	N. Prasanna
41	922121104043	RAKSHITHA VP	Rakshitha
42	922121104044	SAKTHI PRIYA S	Sathya s
43	922121104045	SANTHANAKALEESWARI S	Santhana kaleswari s
44	922121104046	SANTHOSH.K	k. Sandhosh
45	922121104047	SATHIYA PRIYA N	Sathiya .N
46	922121104048	SHERIN SITHARA M	M. Sherin
47	922121104049	SHIVANI K	K. Shivanie
48	922121104050	SHRUTHI LAYA S	S. Shruthilaya.
49	922121104051	SRINIVASAN T	T. Srinivasan
50	922121104052	SWARNAMBIKA V	V. Swarnamukhi
51	922121104053	THAMEEM RAJA K	K. Dhahirfut
52	922121104054	TURIN PETCI J	J. Turin
53	922121104055	UMAR FAROOK J	J. Urf. far
54	922121104056	VAISHNAVI C	C. Vaishnavi
55	922121104057	VIDHYA SAGAR P	P. Vidhya sagar
56	922121104058	VIJAYALAKSHMI T	T. Vijayalakshmi
57	922121104059	VIJAYKARTHIK S	S. VijayKarthik
58	922121104060	VIJAY SUBRAMANIYAM S S	S. Vye
59	922121104061	VISHWADHARSHINI V	Vishwadharshini
60	922121104062	YOGESHWARAN B	B. Yogesh
61	922121104063	YUVARAJ V	V. Yuvraj
62	922121104301	ALAGU SURIYA S	S. Alagury
63	922121104302	DANIEL RAJ.L	L. Daniel
64	922121104303	KANNAN.D.B	D. Kannan
65	922121104304	MAHENDRAN. P	P. Mahender
66	922121104305	SYED MUSHARAF.M	M. Syed

112
Faculty In-Charge

6-LFB

HOD/CSE



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**SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY, Dindigul-
624002**

Department of Computer Science and Engineering

Model Practical

Mark Sheet

CS3381: Object Oriented Programming Laboratory Year / Sem: II / III

Sl. No	Reg.NO	Name of the student	Model Mark (50)	Model Mark (25)
1	922121104001	AARTHI N	48	24
2	922121104002	AMIRTHA SHREE N.B	48	24
3	922121104003	ANAND CHARUKESAN K	50	25
4	922121104004	ANDRUES K	46	23
5	922121104005	ANISHA J	50	25
6	922121104006	ARUN PRAKASH P	50	25
7	922121104007	BAVANI K	48	24
8	922121104008	DEVAKI R	50	25
9	922121104009	DHANUSH PRAVEEN T	46	23
10	922121104010	DHARSHINI S	50	25
11	922121104011	DHIYANESH S	50	25
12	922121104012	HABIB RAHUMAN K	46	23
13	922121104013	HARINI S	46	23
14	922121104014	INDHIRARAJ S	50	25
15	922121104015	JEEVA G	44	22
16	922121104016	JEYARAMAN S	50	25
17	922121104017	JEYA SHREE S	48	24
18	922121104018	KAJALAKSHMI M	46	23
19	922121104019	KARPAGAM S	44	22
20	922121104020	KARTHEKEYAN M	50	25
21	922121104021	KAVI KANNAN S	0	0
22	922121104022	KAVIN P	50	25
23	922121104023	CAVIYA J	48	24
24	922121104024	KIRUTHIKA G	50	25
25	922121104025	KISIIOR KUMAR S	50	25
26	922121104027	MADHAVARAJ C	48	24
27	922121104028	MAHIMA R	50	25
28	922121104030	MANIKANDAN B	48	24
29	922121104031	MANOJ KUMAR V	48	24
30	922121104032	MANTHRA SRI D	50	25
31	922121104033	MATHAVAN S	46	23
32	922121104034	MEENA S	44	22
33	922121104035	MOHAMMED RILA M	48	
34	922121104036	NAVEEN KUMAR S	44	
35	922121104037	NITHYABALA M	46	
36	922121104038	NIVETHITHA M	48	

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37	922121104039	PANOJ KUMAR C	44	22
38	922121104040	PAVITHRAHARINI S	50	25
39	922121104041	PRADEEP M	42	21
40	922121104042	PRASANNA N	48	24
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42	922121104044	SAKTHI PRIYA S	48	24
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46	922121104048	SHERIN SITHARA M	50	25
47	922121104049	SHIVANI K	50	25
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50	922121104052	SWARNAMBIKA V	50	25
51	922121104053	THAMEEM RAJA K	50	25
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53	922121104055	UMAR FAROOK J	50	25
54	922121104056	VAISHNAVI C	50	25
55	922121104057	VIDHYA SAGAR P	50	25
56	922121104058	VIJAYALAKSHMI T	48	24
57	922121104059	VIJAYKARTHIK S	50	25
58	922121104060	VIJAY SUBRAMANIYAM S S	50	25
59	922121104061	VISHWADHARSHINI V	48	24
60	922121104062	YOGESHWARAN B	48	24
61	922121104063	YUVARAJ V	48	24
62	922121104301	ALAGU SURIYA.S	42	21
63	922121104302	DANIEL RAJ.L	42	21
64	922121104303	KANNAN.D.B	44	22
65	922121104304	MAHENDRAN. P	46	23
66	922121104305	SYED MUSHARAF.M	50	25

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Set - 1

Third Semester
Computer Science and Engineering
CS3391 - Object Oriented Programming Laboratory

1. Develop a Java application to generate Electricity bill. Create a class with the following members: Consumer no., consumer name, previous month reading, current month reading, type of EB connection (i.e domestic or commercial). Compute the bill amount using the following tariff,

If the type of the EB connection is domestic, calculate the amount to be paid as follows:

- First 100 units-Rs.1 per unit
- 101-200 units - Rs. 2.50 per unit
- 201 -500 units - Rs. 4 per unit
- 501 units - Rs. 6 per unit

If the type of the EB connection is commercial, calculate the amount to be paid as follows:

- First 100 units - Rs. 2 per unit
- 101-200 units - Rs. 4.50 per unit
- 201-500 units-Rs.6 per unit
- 501 units - Rs. 7 per unit

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

2. Develop a java application to implement currency converter (Dollar to INR, EURO to INR, Yen to INR and vice versa), distance converter (meter to KM, miles to KM and vice versa), time converter (hours to minutes, seconds and vice versa) using packages.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

3. Develop a java application with Employee class with Emp_name, Emp_id, Address, Mail_id, Mobile_no as members. Inherit the classes, Programmer, Assistant Professor, Associate Professor and Professor from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club fund. Generate pay slips for the employees with their gross and net salary.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50



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4. Design a Java interface for ADT Stack. Implement this interface using array. Provide necessary exception handling in both the implementations.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

5. Write a program to perform string operations using ArrayList. Write functions for the following
- Append - add at end
 - Insert – add at particular index
 - Search
 - List all string starts with given letter

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

6. Write a Java Program to create an abstract class named Shape that contains two integers and an empty method named print Area(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

7. Write a Java program to implement user defined exception handling.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

8. Write a java program that implements a multi-threaded application that has three threads. First thread generates a random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

9. Write a java program to find the maximum value from the given type of elements using a generic function.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

10. Develop a mini project for Mark sheet Preparation system using Java concepts.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50



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11. a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that Integer.
 b) Write a Java program that checks whether a given string is a palindrome or not.
 Ex: MADAM is a palindrome.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

12. a) Write a Java program for sorting a given list of names in ascending order.
 b) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (use StringTokenizer class).

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

13. Develop a mini project for Healthcare system using Java concepts.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

14. Write a Java program that illustrates how run time polymorphism is achieved.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

15. Write a java program that illustrates the following

- a) Handling predefined exceptions.
 b) Handling user defined exceptions

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

~~Faculty-Incharge~~

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6.2.18
 HOD/CSE



Third Semester
Computer Science and Engineering
CS3991 - Object Oriented Programming Laboratory

1. Develop a Java application to generate Electricity bill. Create a class with the following members Consumer no., consumer name, previous month reading, current month reading, type of EB connection (i.e domestic or commercial). Compute the bill amount using the following tariff. If the type of the EB connection is domestic, calculate the amount to be paid as follows:

First 100 units – Rs. 2 per unit
 101-200 units – Rs. 3.50 per unit
 201 -500 units – Rs. 5 per unit
 > 501 units – Rs. 6 per unit

If the type of the EB connection is commercial, calculate the amount to be paid as follows:

First 100 units – Rs. 3 per unit
 101-200 units – Rs. 5.50 per unit
 201 -500 units – Rs. 7 per unit
 > 501 units – Rs. 8 per unit

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

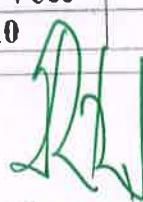
- i) Write a java program to find whether the number is odd or even numbers in an array. ii) Write a java program to check whether the given string is a palindrome.

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50

3. Write a java program using package to find the number is Armstrong number

Aim and Procedure	Program	Results	Viva-Voce	Total
10	20	10	10	50




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OOP MODEL PRACTICAL EXAMINATION

Submitted to: Anna University
Reg. No: 922121104013



[Signature]

Subject: OOP

Name: Harini S

Branch: CSE - II

Sub code: CS3381

9. Write a java program to find the maximum value from the given type of elements using a generic function.

Aim and Procedure	Program	Results	Viva-Voce	Total
TO write a program to find the maximum value from the given type of elements using a generic function.	10	20	10	6

ALGORITHM:

1. Start the program.
2. Import the java package
3. Comparable Interface is used to order the objects of user-defined class
4. The interface is found in java.lang package and contains only one method named compareTo(Object).
5. The compareTo() method works by returning an int value that is either positive, negative or zero
6. Create a generic method max(), that can accept any type of argument
7. Then set the first element as the max element, and then compare the other element with the max(TN) method.

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