# OBJECT ORIENTED PROGRAMMING THROUGH JAVA

## LAB MANUAL

| | | |
|---|---|---|
| **Year** | : | **2018 - 2019** |
| **Course Code** | : | **ACS103** |
| **Regulations** | : | **IARE - R16** |
| **Semester** | : | **III** |
| **Branch** | : | **CSE** |

**Prepared by**

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# INSTITUTE OF AERONAUTICAL ENGINEERING

**(Autonomous)**
**Dundigal, Hyderabad - 500 043**

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## 1. PROGRAM OUTCOMES:

| | PROGRAM OUTCOMES (POS) |
|---|---|
| **PO-1:** | Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems (**Engineering Knowledge**). |
| **PO-2:** | Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences (**Problem Analysis**). |
| **PO-3:** | Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations (**Design/Development of Solutions**). |
| **PO-4:** | Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions (**Conduct Investigations of Complex Problems**). |
| **PO-5:** | Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations (**Modern Tool Usage**). |
| **PO-6:** | Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice (**The Engineer and Society**). |
| **PO-7:** | Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development (**Environment and Sustainability**). |
| **PO-8:** | Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice (**Ethics**). |
| **PO-9:** | Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings (**Individual and Team Work**). |
| **PO-10:** | Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions (**Communication**). |
| **PO-11:** | Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **PO-12:** | Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change (**Life-long learning**). |

## 2. PROGRAM SPECIFIC OUTCOMES (PSO'S):

| PROGRAM SPECIFIC OUTCOMES (PSO'S) | |
|---|---|
| PSO – I | **Professional Skills:** The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity. |
| PSO – II | **Problem-Solving Skills:** The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success. |
| PSO – III | **Successful Career and Entrepreneurship:** The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies. |

# 3. ATTAINMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

| WEEK. NO | Experiment | Program Outcomes Attained | Program Specific Outcomes Attained |
|---|---|---|---|
| 1. | BASIC PROGRAMS | PO1, PO2, PO5 | PSO2 |
| 2. | MATRICES, OVERLOADING, OVERRIDING | PO1, PO2, PO5 | PSO2 |
| 3. | PALINDROME, ABSTRACT CLASS | PO1, PO2, PO5 | PSO2 |
| 4. | INTERFACE | PO1, PO2, PO5 | PSO2 |
| 5. | MULTITHREADING | PO1, PO2, PO5 | PSO2 |
| 6. | FILES | PO1, PO2, PO3, PO4, PO12 | PSO1, PSO2 |
| 7. | FILES | PO1, PO2, PO3, PO4, PO5, PO12 | PSO1, PSO2 |
| 8. | JAVA PROGRAM WITH DATABASE | PO1, PO2, PO3, PO4, PO5, PO12 | PSO1, PSO2 |
| 9. | FILES | PO1, PO2, PO3, PO4, PO5, PO12 | PSO1, PSO2 |
| 10. | TRAFFIC LIGHT | PO1, PO2, PO3, PO4, PO5, PO12 | PSO1, PSO2 |
| 11. | MOUSE EVENTS | PO1, PO2, PO3, PO4, PO5, PO12 | PSO1, PSO2 |
| 12. | CALCULATOR | PO1, PO2, PO3, PO4, PO5, PO12 | PSO1, PSO2 |
| 13. | APPLET | PO1, PO2, PO3, PO4, PO5, PO12 | PSO1, PSO2 |

# 4. MAPPING COURSE OBJECTIVES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES:

| Course Objectives | Program Outcomes | | | | | | | | | | | | Program Specific Outcomes | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 | PSO 3 |
| I | √ | √ | √ | | | | | | | | | | √ | | |
| II | √ | √ | | √ | √ | | | | | | | | √ | | |
| III | | | √ | | √ | | | | | | | √ | √ | √ | |
| IV | √ | √ | √ | | | | | | | | | √ | | √ | |

## 5. SYLLABUS:

## OBJECT ORIENTED PROGRAMING THROUGH JAVA LABORATORY

**III Semester: CSE / IT**

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIA | SEE | Total |
| ACS103 | Foundation | - | - | 3 | 2 | 30 | 70 | 100 |
| Contact Classes: Nil | Tutorial Classes: Nil | Practical Classes: 39 | | | | Total Classes: 39 | | |

**OBJECTIVES:**
**The course will enable the students to:**
I.   Practice object-oriented programs and build java applications.
II.  Implement java programs for establishing interfaces.
III. Implement sample programs for developing reusable software components.
IV.  Create database connectivity in java and implement GUI applications.

## LIST OF EXPERIMENTS

| WEEK-1 | BASIC PROGRAMS |
|---|---|

a.  Try debug step by step with small program of about 10 to 15 lines which contains at least one if else condition and a for loop.

b.  Write a java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula.

c.  The Fibonacci sequence is defined by the following rule. The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a java program that uses both recursive and non recursive functions.

| WEEK-2 | MATRICES, OVERLOADING, OVERRIDING |
|---|---|

a.  Write a java program to multiply two given matrices.

b.  Write a java program to implement method overloading and constructors overloading.

c.  Write a java program to implement method overriding.

| WEEK-3 | PALINDROME, ABSTRACT CLASS |
|--------|----------------------------|

a. Write a java program to check whether a given string is palindrome.

b. Write a java program for sorting a given list of names in ascending order.

c. 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

| WEEK-4 | INTERFACE |
|--------|-----------|

Write a program that creates a user interface to perform integer division. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 and Num2 were not integers, the program would throw a Number Format Exception. If Num2 were zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

| WEEK-5 | MULTITHREADING |
|--------|----------------|

a. Write a java program that implements a multi-thread application that has three threads. First thread generates 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.

b. Write a java program that correct implements of producer consumer program

| WEEK-6 | FILES |
|--------|-------|

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

b. Write a java program that displays the number of characters, lines and words in a text file.

c. Write a java program that reads a file and displays the file on the screen with line number before each line.

| WEEK-7 | FILES |
|--------|-------|

a. Suppose that table named table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas.

| | |
|---|---|
| | Write a java program to display the table using labels in grid layout. |
| | b. Write a java program that connects to a database using JDBC and does add, delete, modify and retrieve operations. |

| WEEK-8 | **JAVA PROGRAM WITH DATABASE** |
|---|---|
| | a. Write a java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (/t). It takes a name or phone number as input and prints the corresponding other value from the hash table. Hint: Use hash tables. |
| | b. Implement the above program with database instead of a text file. |

| WEEK-9 | **FILES** |
|---|---|
| | a. Write a java program that takes tab separated data (one record per line) from a text file and insert them into a database. |
| | b. Write a java program that prints the metadata of a given table. |

| WEEK-10 | **TRAFFIC LIGHT** |
|---|---|
| Write a java program that simulates a traffic light. The program lets the user select one of three lights: Red, Yellow or Green with radio buttons. On selecting a button an appropriate message with "STOP "or "READY" or "GO" should appear above the buttons in selected color. Initially, there is no message shown. | |

| WEEK-11 | **MOUSE EVENTS** |
|---|---|
| | a. Write a java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired. Use adapter classes. |
| | b. Write a java program to demonstrate the key event handlers. |

| WEEK-12 | **CALCULATOR** |
|---|---|
| Write a java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +,-,*, % operations. Add a text field to display the result. Handle any possible exception like divided by zero. | |

| WEEK-13 | **APPLET** |
|---|---|
| | a. Develop an applet that displays a simple message. |
| | b. Develop an applet that receives an integer in one text field and computes its factorial value and returns it in another text field, when the button named ─compute‖ is clicked. |

## ADDITIONAL PROGRAMS

1. Design a class to represent a Student details include the Student ID, Name of the Student, Branch, year, location and college. Assign initial values using constructor. Calculate average of marks of 6 subjects and calculate attendance percentage.

2. Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism

3. Write a program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds**.**

4. Write an Applet that computes the payment of a loan on the amount of the loan, the interest rate and the number of months. It takes one parameter from the browser. Monthly; if true, the interest rate is per month, otherwise the interest rate is annual.

5. Write a java programs to find factorial of a number. user is allowed to enter a number into the text field whose factorial is to be determined. On pressing the button the value of the text field is firstly converted into integer and then processed to find its factorial. The result will get displayed in another text field.(Hint: use swings).

## Reference Books:

1. P. J. Deitel, H. M. Deitel, "Java for Programmers", Pearson Education, PHI, 4th Edition, 2007.
2. P. Radha Krishna, "Object Oriented Programming through Java", Universities Press, 2nd Edition, 2007
3. Bruce Eckel, "Thinking in Java", Pearson Education, 4th Edition, 2006.
4. Sachin Malhotra, Saurabh Chaudhary, "Programming in Java", Oxford University Press, 5th Edition, 2010.

## Web References:

1. www.niecdelhi.ac.in
2. https://www.linkedin.com/in/achin-jain-85061412
3. www.rank1infotech.com

## SOFTWARE AND HARDWARE REQUIREMENTS FOR A BATCH OF 30 STUDENTS:
## HARDWARE:
Intel Desktop Systems: 36 nos
Printers: 02
## SOFTWARE:
System Software: Microsoft Windows 7 Academic Get Genuine Legalization License
Application Software's: MS Office, Antivirus (Symantec Endpoint Protection 12.1.5)
Net Beans 8.0.2, JDK 7.0.

## 6. INDEX:

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| | | | |
|---|---|---|---|
| | | **FILES** | |
| **WEEK-6** | a. | Write a java program that reads a file name from the user, and then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes. | 46 |
| | b. | Write a java program that displays the number of characters, lines and words in a text file. | 48 |
| | c. | Write a java program that reads a file and displays the file on the screen with line number before each line. | 50 |
| | | **FILES** | |
| **WEEK-7** | a. | Suppose that table named table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using labels in grid layout. | 52 |
| | b. | Write a java program that connects to a database using JDBC and does add, delete, modify and retrieve operations. | 57 |
| | | **JAVA PROGRAM WITH DATABASE** | |
| **WEEK-8** | a. | Write a java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (/t). It takes a name or phone number as input and prints the corresponding other value from the hash table. Hint: Use hash tables. | 66 |
| | b. | Implement the above program with database instead of a text file. | 70 |
| | | **FILES** | |
| **WEEK-9** | a. | Write a java program that takes tab separated data (one record per line) from a text file and insert them into a database. | 75 |
| | b. | Write a java program that prints the metadata of a given table. | 83 |
| | | **TRAFFIC LIGHT** | |
| **WEEK-10** | a. | Write a java program that simulates a traffic light. The program lets the user select one of three lights: Red, Yellow or Green with radio buttons. On selecting a button an appropriate message with "STOP" or "READY" or "GO" should appear above the buttons in selected color. Initially, there is no message shown. | 85 |
| | | **MOUSE EVENTS** | |
| **WEEK-11** | a. | Write a java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired. Use adapter classes. | |
| | b. | Write a java program to demonstrate the key event handlers. | |
| | | **CALCULATOR** | |
| **WEEK-12** | a. | Write a java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +,-,*, % operations. Add a text field to display the result. Handle any possible exception like divided by zero. | |
| | | **APPLET** | |
| **WEEK-13** | a. | Develop an applet that displays a simple message. | |
| | b. | Develop an applet that receives an integer in one text field and | |

| | | | | |
|---|---|---|---|---|
| | | | computes its factorial value and returns it in another text field, when the button named "compute" is clicked. | |
| | | | **ADDITIONAL PROGRAMS** | |
| | | 1. | Design a class to represent a Student details include the Student ID, Name of the Student, Branch, year, location and college. Assign initial values using constructor. Calculate average of marks of 6 subjects and calculate attendance percentage. | 89 |
| | | 2. | Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism. | 91 |
| | | 3. | Write an Applet that computes the payment of a loan on the amount of the loan, the interest rate and the number of months. It takes one parameter from the browser. Monthly; if true, the interest rate is per month, otherwise the interest rate is annual. | 94 |
| | | 4. | Write a program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds**.** | 97 |
| | | 5. | Write a java programs to find factorial of a number. user is allowed to enter a number into the text field whose factorial is to be determined. On pressing the button the value of the text field is firstly converted into integer and then processed to find its factorial. The result will get displayed in another text field.(Hint: use swings). | 100 |

# WEEK-1: BASIC PROGRAMS

# EXPERIMENT-1.1

## 1.1.1 OBJECTIVE:

To debug step by step with small program of about 10 to 15 lines which contains at least one if else condition and a for loop.
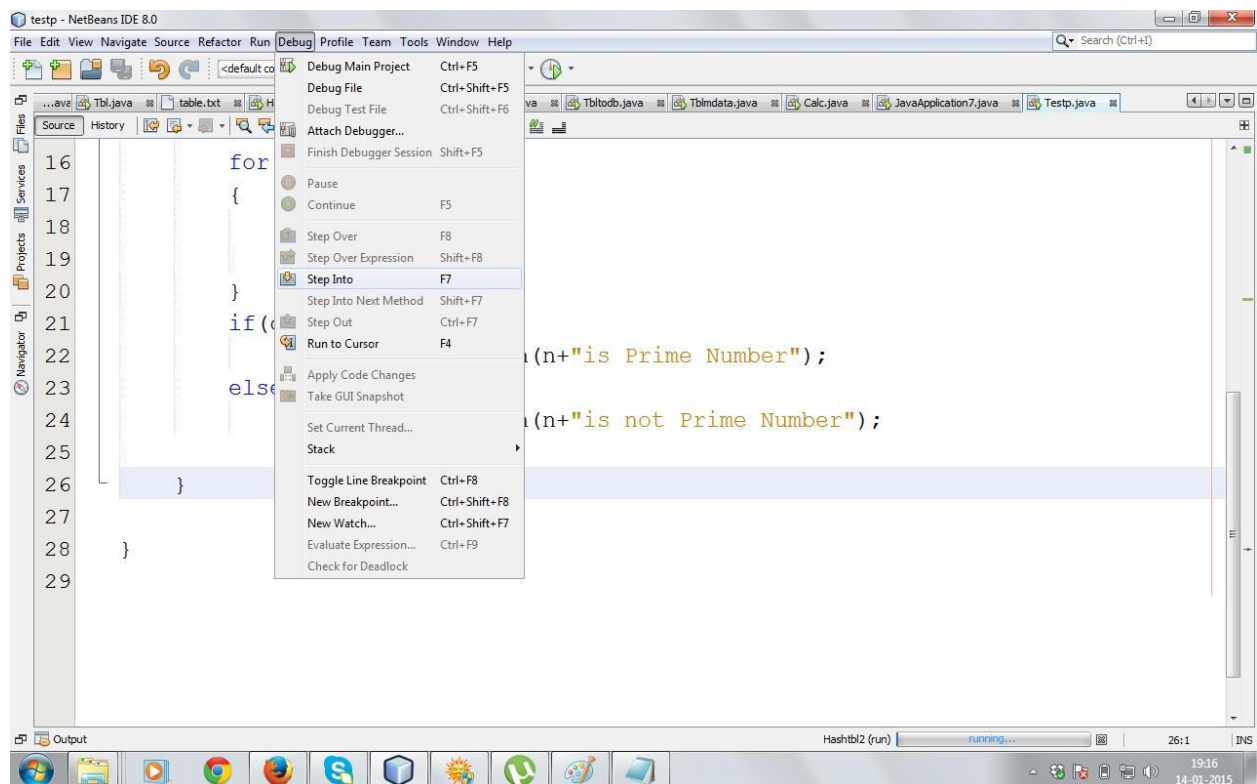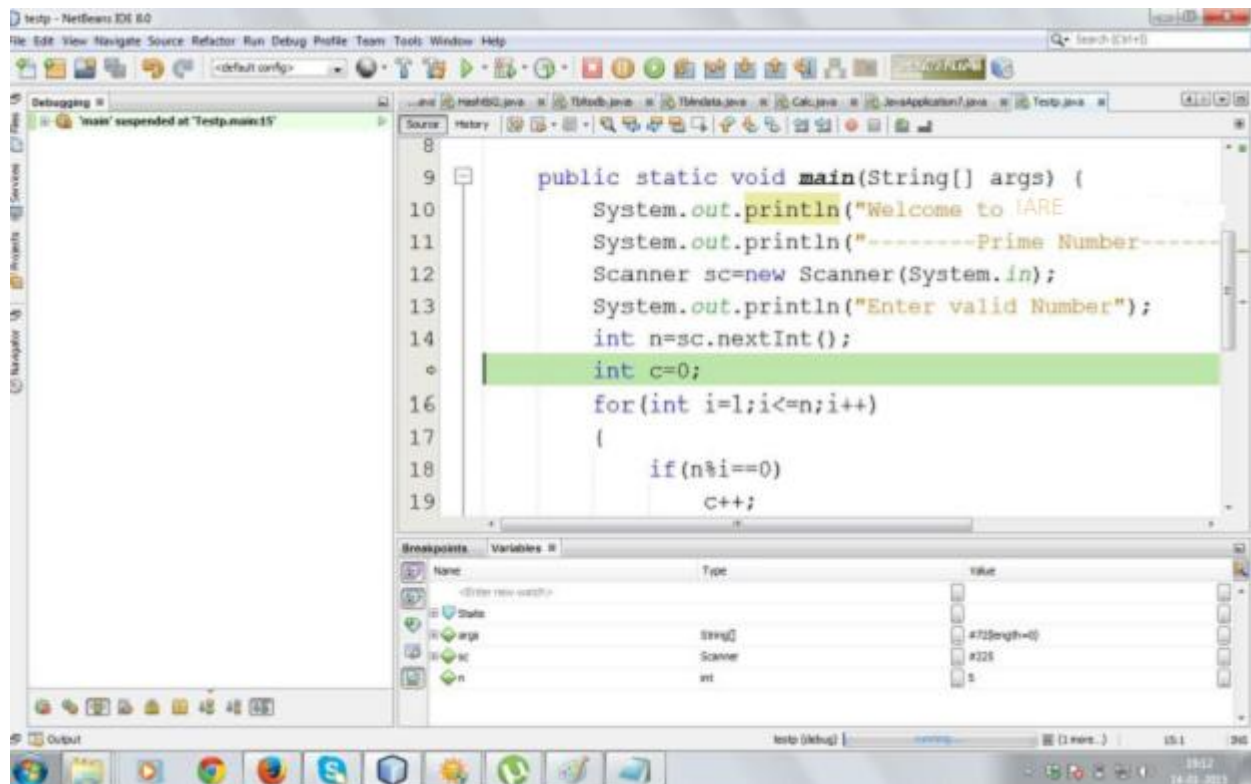
## 1.1.2 RESOURCES:

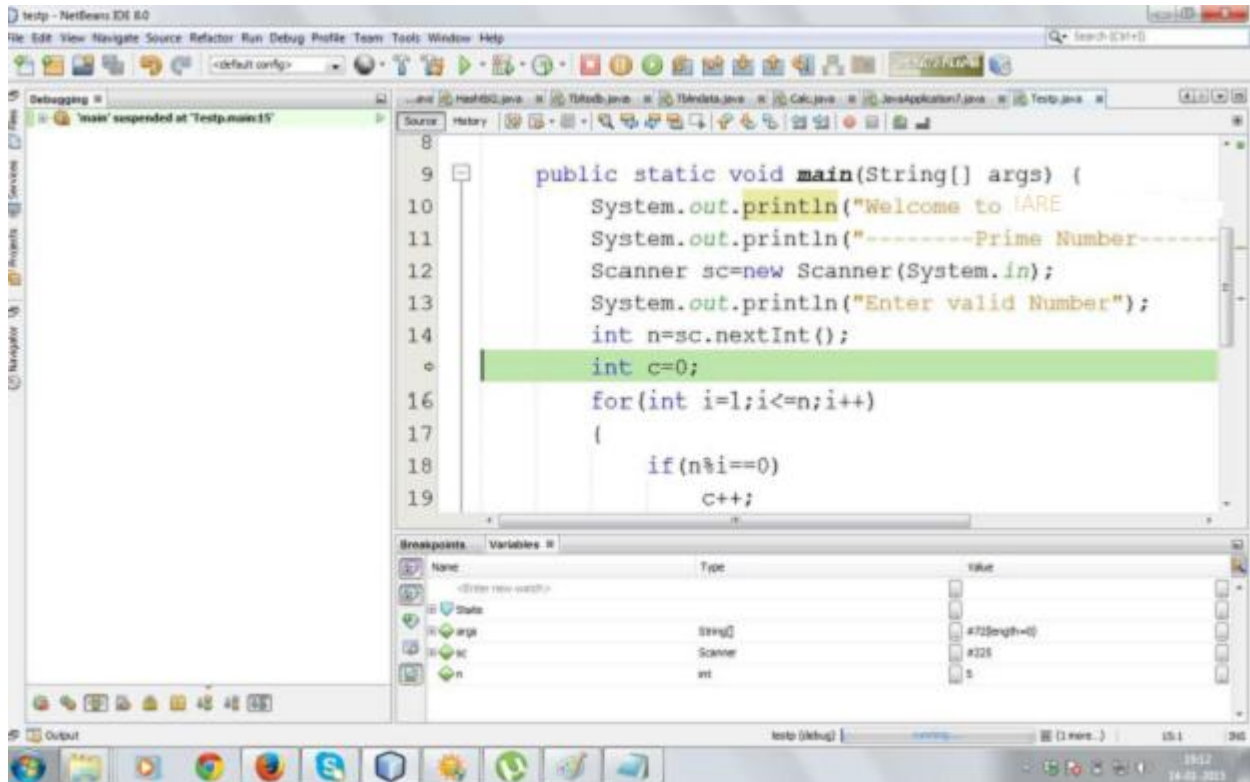Net Beans 8.0.2, JDK 7.0 is required, 1GB RAM, Hard Disk 80 GB.

## 1.1.3 PROGRAM LOGIC:

1. Create a class with the name 'Testp'.
2. Read n values from keyboard using a Scanner class.
3. Find the (n % i == 0) using dynamic initialization
4. Check the (n % i == 0) value using if condition.

## 1.1.4 OUTPUT:

## 1.1.5 PRE LAB VIVA QUESTIONS:

1. Difference between header files and import packages?
2. What is the difference between procedural and object-oriented programs?
3. What are Encapsulation, Inheritance and Polymorphism?
4. What is OOPs?

## 1.1.5 POST LAB VIVA QUESTIONS:

1. What is an object and how do you allocate memory to it?
2. What is the difference between an argument and a parameter?
3. What are different types of access modifiers?
4. What is Unicode?

# EXPERIMENT-1.2

## 1.2.1 OBJECTIVE:

Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminate $b^2-4ac$ is negative, display a message stating that there are no real solutions.

## 1.2.2 RESOURCES:

JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 1.2.3 PROGRAM LOGIC:

1. Create a class with the name 'roots'.
2. Declare the double variables r1, r2.
3. Read a, b, c values from keyboard using a Scanner class.
4. Find the discriminate value using dynamic initialization
        int d=b*b-4*a*c;
5. Check the discriminate value using if condition.

## COMPLIATION:

To execute a java program we require setting a class path:
C:\set path= C:\Program Files\Java\jdk1.6.0\bin;.;
C:\javac roots.java

## EXCEUTION:

C:\java roots

## 1.2.4OUTPUT:

Given quadratic equation:ax^2 + bx + c
Enter a:2
Enter b:2
Enter c:2
Given quadratic equation:2x^2 + 2x + 2
Roots are imaginary

Given quadratic equation:ax^2 + bx + c
Enter a:1
Enter b:4
Enter c:1
Given quadratic equation:1x^2 + 4x + 1
Roots are real and unequal
First root is:-0.2679491924311228
Second root is:-3.732050807568877

5

Enter a:1
Enter b:2
Enter c:1
Given quadratic equation:1x^2 + 2x + 1
Roots are real and equal

## 1.2.5  PRE LAB VIVA QUESTIONS:

1. What is an  array?
2. Define class with example?
3. Define object?
4. Define  OOP?

## 1.2.6 POST LAB VIVA QUESTIONS:

1. Define variable?
2. What is instance variable?
3. Define class variable?
4. What is an expression?

# EXPERIMENT-1.3

## 1.3.1 OBJECTIVE:

The Fibonacci sequence is defined by the following rule: The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

## 1.3.2 RESOURCES:

JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 1.3.3 PROGRAM LOGIC:

1. Create a class with the name 'Fibnon'.
2. Declare the int variables n, n1.
3. Create an object for predefined class Random and generate a random using nextInt()
4. In main() create an object for fib1 class and call the method fibc() using the object.

## COMPLIATION:

To execute a java program we require setting a class path:
C:\set path= C:\Program Files\Java\jdk1.6.0\bin;.;
C:\javac Fibnon.java

## EXCEUTION:

C:\java Fibnon

## 1.3.4OUTPUT:

Enter value of n:5
Fibonacci Series:0 1 1 2 3

## 1.3.5 PRE LAB VIVA QUESTIONS:

1. Define recusion?
2. How call by reference is done?
3. Describe object creation?
4. Describe class and its objects?

## 1.3.6 POST LAB VIVA QUESTIONS:

1. Define method?
2. How method are called?
3. How static methods are called?
4. Define constructor?

# WEEK-2: MATRICES, OVERLOADING, OVERRIDING

# EXPERIMENT-2.1

## 2.1.1 OBJECTIVE:

 To write a java program to multiply two given matrices

## 2.1.2 RESOURCES:

Net Beans 8.0.2, JDK 7.0 is required, 1GB RAM, Hard Disk 80 GB

## 2.1.3 PROGRAM LOGIC:

1.  Create a class for MatrixMulti
2.  Declare  three arrays of two dimensional of size m and n that is a[][],b[][] and c[][].
3.  Read the values into a[][] array and b[][] array.
4.  Compute multiplication and store the product in c[][] array by using c[i][j]=c[i][j]+a[i][k]*b[k][j];
5.  Print the result.

## 2.1.4 OUTPUT:

Enter the base of squared matrices
2
Enter the elements of 1st martix row wise


1
1
1
1
Enter the elements of 2nd martix row wise


1
1
1
1
Multiplying the matrices...
The product is:
2 2
2 2

## 2.1.5 PRE LAB VIVA QUESTIONS:

1.  Describe constructors with parameter and without parameter?
2.  Define scanner class?
3.  What is the method to read string?
4.  What is the method to int,char,float?

## 2.1.6 POST LAB VIVA QUESTIONS:

1. Describe string methods?
2. What is string buffer class?
3. String class is defined in which package?
4. List String Tokenizer methods?

# EXPERIMENT-2.2

## 2.2.1 OBJECTIVE:

To write a java program to implement method overloading and constructors overloading.

## 2.2.2 RESOURCES:

Net Beans 8.0.2, JDK 7.0 is required, 1GB RAM, Hard Disk 80 GB
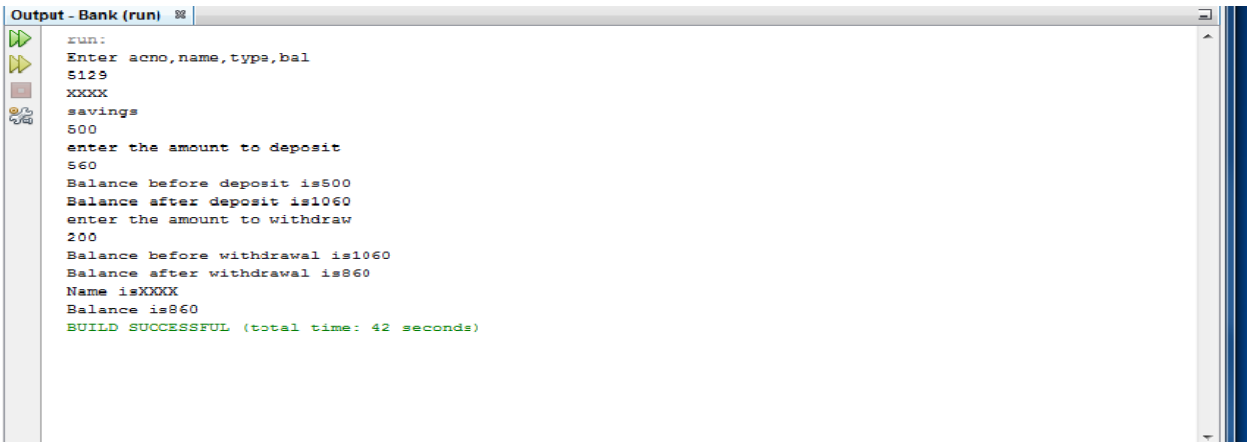
## 2.2.3 PROGRAM LOGIC:

**METHOD OVERLOADING**

1. Create a class for MOverload.
2. Declare a method with same signature and difference in number of parameters and return type.
3. Perform different operations by using same method name.
4. Print the result.

**CONSTRUCTOR OVERLOADING**
1. Create a class for COverload.
2. Declare a constructor with same signature and difference in number of parameters .
3. Perform different operations by using constructors.
4. Print the result.

## 2.2.4 OUTPUT:

```
Output - Bank (run)

run:
Enter acno,name,typa,bal
5129
XXXX
savings
500
enter the amount to deposit
560
Balance before deposit is500
Balance after deposit is1060
enter the amount to withdraw
200
Balance before withdrawal is1060
Balance after withdrawal is860
Name isXXXX
Balance is860
BUILD SUCCESSFUL (total time: 42 seconds)
```

## 2.2.5 PRE LAB VIVA QUESTIONS

1   What is method overloading?
2   Can same methods present in different classes?
3   How to call methods?
4   Describe final class?

## 2.2.6 POST LAB VIVA QUESTIONS

1    What is garbage collector?
2    Define final variable?
3    Define finalize method?
4    Define inheritance?

# EXPERIMENT-2.3

## 2.3.1 OBJECTIVE:

To write a java program to implement method overriding.

## 2.3.2 RESOURCES:

Net Beans 8.0.2, JDK 7.0 is required, 1GB RAM, Hard Disk 80 GB

## 2.3.3 PROGRAM LOGIC:

1. Create a class MODemo.
2. Create a  subclass B extends  MODemo..
3. Subclass has same method as super class.
4. Create object to call methods using super keyword.

## 2.3.4 OUTPUT:

i and j:1 2

k: 3

## 2.3.5 PRE LAB VIVA QUESTIONS:

1. What is method overiding?
2. What is subclass?
3. What is superclass?
4. What is method overloading?

## 2.3.6 POST LAB VIVA QUESTIONS:

1. Describe how subclass methods override super class?
2. When we use method overriding?
3. Which object is used to call super class members?
4. Difference between method overloading and method overriding?

# WEEK-3: PALINDROME, ABSTRACT CLASS

## Experiment 3.1

### 3.1.1 OBJECTIVE:

To write a java program to check whether a given string is palindrome.

### 3.1.2 RESOURCES:

Net Beans 8.0.2, JDK 7.0 is required, 1GB RAM, Hard Disk 80 GB

### 3.1.3 PROGRAM LOGIC:

1. Create a class with the name Test.
2. Read or declare a string.
3. Reverse the string.
4. Compare the input string and reversed string, if both are equal print 'palindrome' else print 'not palindrome.

### 3.1.4 INPUT AND OUTPUT:

Input: mom

Output: palindrome

Input: maa

Output: not palindrome

### 3.1.5 PRE LAB VIVA QUESTIONS:

1. What is a string?
2. What are the methods of string class?
3. How to create string object?
4. How to modify string?

### 3.1.6 POST LAB VIVA QUESTIONS:

1. What method should be used to reverse the string?
2. What is the use of equals method?
3. What is the use of length()?
4. What is StringBuilder?

# EXPERIMENT 3.2

### 3.2.1 OBJECTIVE:

To write a java program for sorting a given list of names in ascending order

### 3.2.2 RESOURCES:

Net Beans 8.0.2, JDK 7.0 is required, 1GB RAM, Hard Disk 80 GB

### 3.2.3 PROGRAM LOGIC:

1. Create a class comparison
2. Read list of names.
3. Compare the names alphabetically.
4. Sort the names and print the result.

### 3.2.4  OUTPUT:

Enter names
 Harish
 Ramesh
Mahesh
 Rakesh
Sorted order is
Ramesh
Rakesh
Mahesh
Harish

### 3.2.5 PRE LAB VIVA QUESTIONS:

1. What is a string?
2. What are the methods of string class?
3. How to create string object?
4. How to modify string?

### 3.2.7 POST LAB VIVA QUESTIONS:

1. What is use of compareTo()?
2. What is Scanner class method to read string?
3. What is toUppercase()?
4. What is char charAt(int index)?

# EXPERIMENT 3.3

### 3.3.1 OBJECTIVE:

To 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.

### 3.3.2 RESOURCES:
Net Beans 8.0.2, JDK 7.0 is required, 1GB RAM, Hard Disk 80 GB

### 3.3.3 PROGRAM LOGIC:
1. Start the program
2. Create a class with the name Shape.
3. Create the Rectangle, Triangle, Circle extends Shape.
4. Create the objects to the individual classes.
5. Call the PrintArea() on individual object.

### 3.3.4 OUTPUT:

```
run:
Area of Rectangle is  200
---------------------------------------
Area of Triangle is   525
---------------------------------------
Area of Circle is  12
---------------------------------------
BUILD SUCCESSFUL (total time: 3 seconds)
```

### 3.3.5 PRE LAB VIVA QUESTIONS:

1. What is an interface?
2. What is an abstract class?
3. Where does the abstract class is used?
4. Can we create an object of abstract class?

### 3.3.5  POST LAB VIVA QUESTIONS:
1. What is difference between abstract class and interface?
2. Can a abstract class be defined without any abstract methods?
3. Can an interface extend another interface?
4. Can an abstract class extend another interface?

# WEEK-4 : INTERFACE

## EXPERIMENT 4.1

### 4.1.1 OBJECTIVE:

Write a program that creates a user interface to perform integer division. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 and Num2 were not integers, the program would throw a Number Format Exception. If Num2 were zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box

### 4.1.2 RESOURCES:

Net Beans 8.0.2, JDK 7.0  is required, 1GB RAM, Hard Disk 80 GB .

### 4.1.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name 'A extends JFrame'.
3. Declare the JLabel,JTextField,JButton variables.
4. Declare the default constructor of the class.
5. Add buttons,TextField and labels to the Flow Layout.
6.Call ActionPerformed method.

### 4.1.4  OUTPUT:
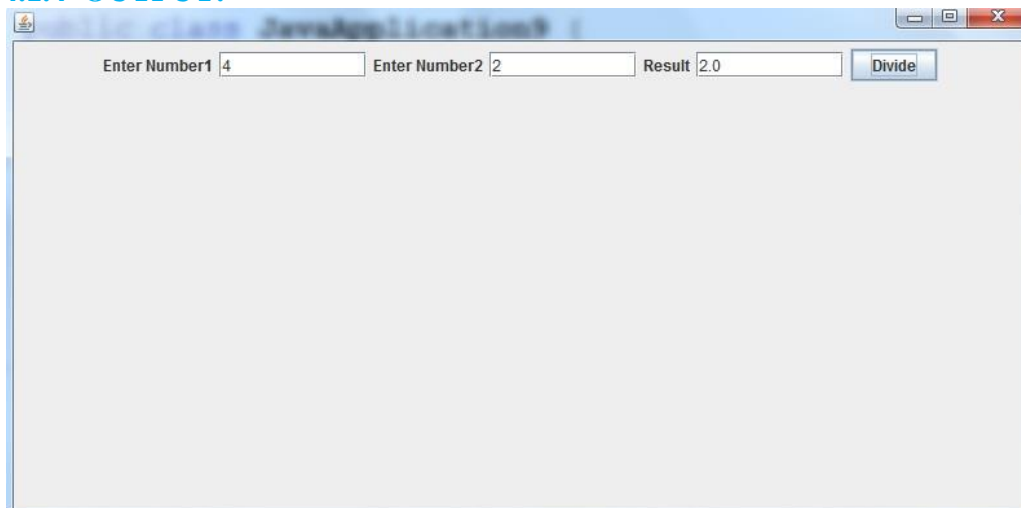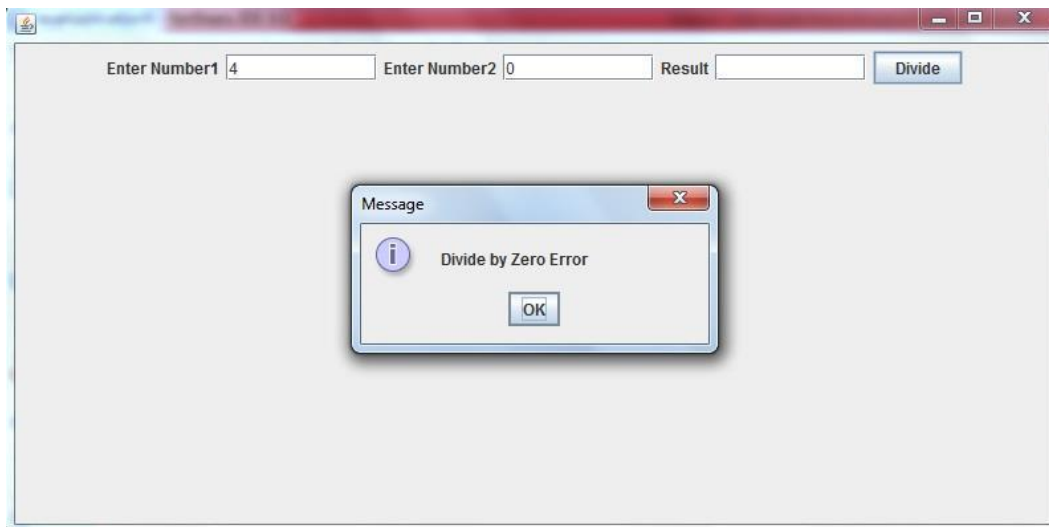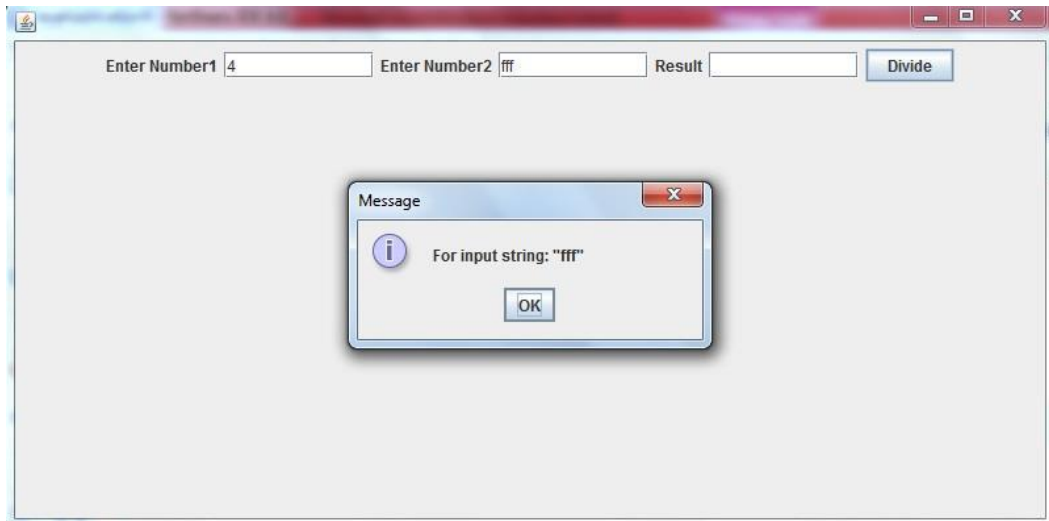
## 4.1.5 PRE LAB VIVA QUESTIONS:

1 **.**Exceptions are defined in which java package?
2. How are the exceptions handled in java?
3. What is Runtime Exception or unchecked exception?
4. What is the difference between exception and error class?

## 4.1.6 POST LAB VIVA QUESTIONS:

1. What is checked exception?
2. What is an event and what are the models available for event handling?
3. What is difference between ClassNotFoundException and NoClassDefFoundError?
4. What is use of throws keyword?

# WEEK-5: MULTITHREADING

# EXPERIMENT-5.1

## 5.1.1 OBJECTIVE:

To implements a multithread application that has three threads .First thread generates random integer for every second and if the value is even, second thread computes the square of number and prints .If the value is odd, the third thread will print the value of cube of number.

## 5.1.2 RESOURCES:

Net Beans 8.0.2, JDK 7.0.is required, 1GB RAM, Hard Disk 80 GB

## 5.1.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name 'even implements Runnable' and 'odd implements Runnable'.
3. Create thread objects and Random class object.
4. Pass the objects of our class to thread class .
5. Call the start method.

## 5.1.4 OUTPUT:

```
Output - mthread (run)

    run:
    Main Thread and  Generated Number is 95
    Thread Name:ODD Thread and 95 is odd number and Cube of 95 is: 857375
    -------------------------------------
    Main Thread and  Generated Number is 90
    Thread Name:Even Thread and 90is even Number and Square of 90 is: 8100
    -------------------------------------
    Main Thread and  Generated Number is 35
    Thread Name:ODD Thread and 35 is odd number and Cube of 35 is: 42875
    -------------------------------------
    Main Thread and  Generated Number is 41
    Thread Name:ODD Thread and 41 is odd number and Cube of 41 is: 68921
    -------------------------------------
    Main Thread and  Generated Number is 75
    Thread Name:ODD Thread and 75 is odd number and Cube of 75 is: 421875
    -------------------------------------
    Main Thread and  Generated Number is 29
    Thread Name:ODD Thread and 29 is odd number and Cube of 29 is: 24389
    -------------------------------------
    Main Thread and  Generated Number is 55
    Thread Name:ODD Thread and 55 is odd number and Cube of 55 is: 166375
    -------------------------------------
    Main Thread and  Generated Number is 84
    Thread Name:Even Thread and 84is even Number and Square of 84 is: 7056
    -------------------------------------
    Main Thread and  Generated Number is 36
    Thread Name:Even Thread and 36is even Number and Square of 36 is: 1296
    -------------------------------------
    Main Thread and  Generated Number is 51
    Thread Name:ODD Thread and 51 is odd number and Cube of 51 is: 132651
    -------------------------------------
    Main Thread and  Generated Number is 15
    Thread Name:ODD Thread and 15 is odd number and Cube of 15 is: 3375
    -------------------------------------
```

## 5.1.5 PRE LAB VIVA QUESTIONS:

1. Why did the designers decide to force a method to specify all uncaught checked exceptions that can be thrown within its scope?
2. What are the states associated in the thread?

3. When you will synchronize a piece of your code?
4. What is the difference between process and thread?


## 5.1.6 POST LAB VIVA QUESTIONS:

1. What is multithreading and what are the methods for inter-thread communication and what is the class in which these methods are defined?
2. When you will synchronize a piece of your code?
3. What is daemon thread and which method is used to create the daemon thread?
4. What is deadlock?

# Experiment 5.2

**5.2.1 OBJECTIVE:**

Write a java program that correct implements of producer consumer program.

**5.2.2 RESOURCES:**

Net Beans 8.0.2, JDK 7.0  is required, 1GB RAM, Hard Disk 80 GB.

**5.2.3 PROGRAM LOGIC:**

**5.2.4 OUTPUT:**

Put:1 Got:1
Put:2 Got:2

Put:7 Got:7
Put:8 Got:8
Put:9 Got:9

Put:3 Got:3
Put:4 Got:4
Put:5 Got:5
Put:6 Got:6

**5.2.5 PRE LAB VIVA QUESTIONS:**

    1.What is PC Problem?
    2. What is Synchronization of threads?
    3.What happens multiple objects acting on same object?
    4. What is the difference between runnable and thread?

**5.2.6 POST LAB VIVA QUESTIONS:**

    1. What is multithreading and multiprocessing?
    2. When we use multithreading?
    3. Difference between daemon thread and normal thread?
    4. How to set thread priority?

# WEEK-6: FILES

## Experiment 6.1

### 6.1.1 OBJECTIVE

Write a Java program that reads a file name from the user, and then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
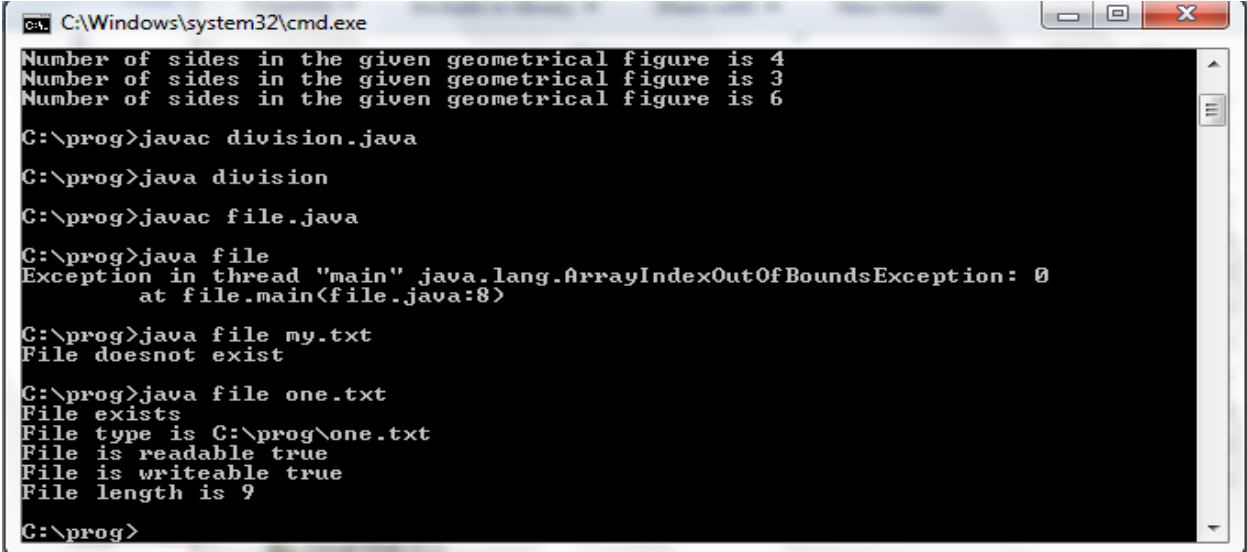
### 6.1.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

### 6.1.3 PROGRAM LOGIC:

1. Read a file name from user.
2. Write relevant file methods to find the necessary details.
3. Display the result.

### 6.1.4 OUTPUT:



### 6.1.5 PRE LAB VIVA QUESTIONS:

1. What is file?
2. How to create file input stream?
3. What is character stream?
4. What is byte stream?

### 6.1.6 POST LAB VIVA QUESTIONS:

1. How to convert the string data into long data?

2. Which input stream is used for primitive data?
3. What is reader class?
4. Define file attributes and its methods?

# Experiment 6.2

### 6.2.1 OBJECTIVE
To print the number of characters, lines and words in a text file.

### 6.2.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

### 6.2.3 PROGRAM LOGIC:

1. Open an existing file.
2. Claculate count of characters, count of lines by considering '\n' and count of words by considering '\t',' ', '\n'
3. Print the count.

### 6.2.4 OUT PUT:

This is II CSE
1 4 32

Draw the frequency response
1 4 58

### 6.2.5 PRE LAB VIVA QUESTIONS:

1. What is File Input and output stream?
2. How to extract tokens?
3. What is a string class?
4. What is stringbuffer class?

### 6.2.6 POST LAB VIVA QUESTIONS:

1. How to convert the string data into long data?
2. Which containers use a Border layout as their default layout?
3. What is an event and what are the models available for event handling?
4. Which listeners are implemented for JButton ?

# Experiment 6.3

### 6.3.1 OBJECTIVE:

Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

### 6.3.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

### 6.3.3 PROGRAM LOGIC:

1. Create file and store some information.
2. Create class linenum.
3. Read that file created already display line number before each line.

### 6.3.4 OUT PUT:

Demo.java

```
class Demo
1 {
2 public static void main(java Demo beta gamma delta)
3 {
4 int n = 1 ;
5 System.out.println("The word is " + args[ n ] );
6 }
7 }
8?
```

### 6.3.5 PRE LAB VIVA QUESTIONS

1. What is file class?
2. What are common methods in streams?
3. What is the difference between reader class and writer class?
4. What is piped input stream?

### 6.3.6 POST LAB VIVA QUESTIONS

1. What are input stream classes?
2. What are output stream classes?
3. What is buffered reader class?
4. How to file object?

# EXPERIMENT-7.1

## 7.1.1 OBJECTIVE:

To display a table using Label in Grid Layout. Suppose that a table named Table.txt is stored in a text file. The First line in the file is the header, and the remaining lines correspond rows in table. The elements are separated by commas.
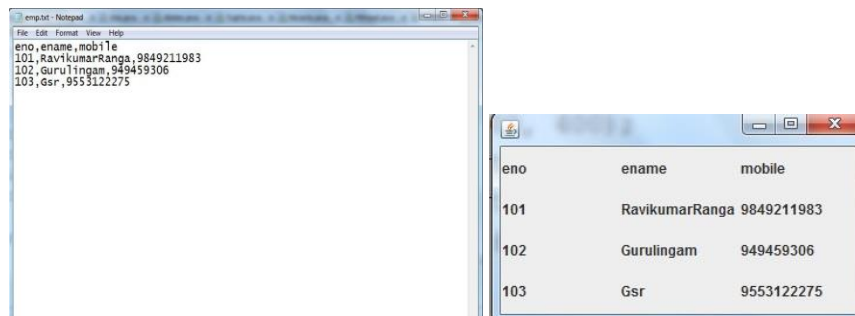
## 7.1.2 RESOURCES:

JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 7.1.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name A implements ItemListener.
3. Create the FileInputStream object.
4. Create the Scanner object delimited by comma.
5. Close the Jframe.

## 7.1.4 OUTPUT:



## 7.1.5 PRE LAB VIVA QUESTIONS

1. What is the difference between gui and cui?
2. What is awt?
3. How to enable the frame ?
4. Which container is best suitable for gui type of applications?

## 7.1.16 POST LAB VIVA QUESTIONS

1. What are different types of layout manager in awt?
2. What is difference between jframe and swing?
3. What are different types of components present?
4. What is the root class for all container classes?

# EXPERIMENT-7.2

## 7.2.1 OBJECTIVE:

To connects to database using JDBC does add ,delete ,modify and retrieve operations.
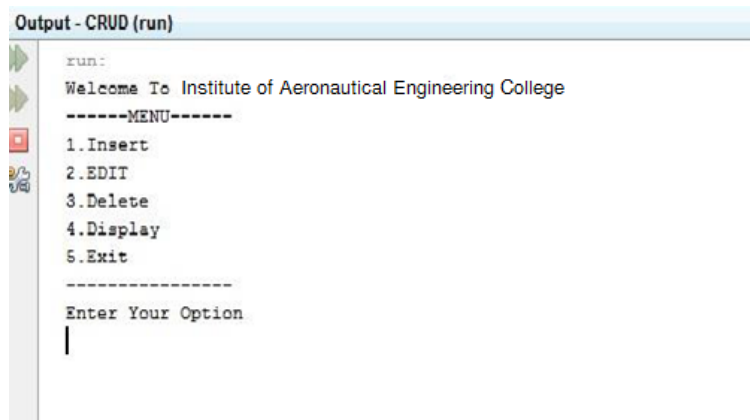
## 7.2.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

## 7.2.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name 'CRUD'.
3. Load the Driver class
4. Create a Connection object
5. Create a Statement object
6. Get the Connection and execute the create, retrieve, update and delete operations on an SQL Command
7. Close the Connection object, Statement object.
   st.close();
   cn.close();

## 7.2.4 OUTPUT:

```
Output - CRUD (run)

  run:
  Welcome To Institute of Aeronautical Engineering College
  ------MENU------
  1.Insert
  2.EDIT
  3.Delete
  4.Display
  5.Exit
  ----------------
  Enter Your Option
  |
```

```
Output - CRUD (run)
------MENU------
1.Insert
2.EDIT
3.Delete
4.Display
5.Exit
----------------
Enter Your Option
1
Enter Htno
101
Enter Name
RavikumarRanga
Enter Mobile
9849211983
Record Inserted
Enter Your Option
4
Htno    Sname   Mobile
101     RavikumarRanga  9849211983
Enter Your Option
2
Enter Htno to Update
101
Enter Name
RavikumarRanga
Enter Mobile
9849211983
Record Updated
Enter Your Option
3
Enter Htno to delete
101
Record deleted
```

## 7.2.5 PRE LAB VIVA QUESTIONS

1. What is JDBC?
2. What are drivers available?
3. What is the difference between JDBC and ODBC?
4. What is stored procedure?

## 7.2.6 POST LAB VIVA QUESTIONS

1. What are the types of JDBC Driver Models and explain them?
2. What are the steps involved for making a connection with a database or how do you connect to a database?
3. What are the types of statements in JDBC?
4. How to create and call stored procedures?

# EXPERIMENT-8.1

### 8.1.1 OBJECTIVE:

Write a java program that loads names and phone numbers from the text file where data is organized as one line per record and each field in record are separated by a tab(\t).It takes a name or phone number as input and prints corresponding other value from hash table(hint: use Hash Table).

### 8.1.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

### 8.1.3 PROGRAM LOGIC:

1. Create a text file which contains names and phone numbers separated by a tab
2. Using buffer reader the file has to be read and the content has to be moved to hash table using put method.
3. Whenever a name is given the corresponding phone number from hash table has to be displayed

### 8.1.4 OUPUT:

Loads names and phone numbers from the text file named ph.txt
D:\JP>java PhoneDictionary
iare
Student Phone numbers are
P.RaghuNandan:8977332085
P.Ronith:9052277577
Y.Srinish:9849039239
Y.Snikitha:9849098490
P.Rishikesh:9848098480
Iare
MENU
1.Search by Name
2.Search by Mobile
3.Exit
Enter Your Option( 1,2,3):
1
Iare
22
Enter Name
P.RaghuNandan
Mobile is 8977332085
Enter Your Option( 1,2,3):
2
Enter mobile
9849098490
Name is Y.Snikitha
Enter Your Option 1,2,3
3

Menu Successfully Exited

### 8.1.5 PRE LAB VIVA QUESTIONS

1. What is JDBC and its drivers?
2. What are prepared statements?
 3. What is ODBC?
4. What is driver manager?

### 8.1.6  POST LAB VIVA QUESTIONS

1. What are the types of JDBC Driver?
2. What are the steps involved for making a connection with a database or how do you connect to a database?
3. What are the types of statements in JDBC?
4. How to use DML commands?

# EXPERIMENT-8.2

### 8.2.1 OBJECTIVE:

Implement above program with database instead of text file.

### 8.2.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

### 8.2.3  PROGRAM LOGIC:

1. Create a text file which contains names and phone numbers separated by a tab
2. Using buffer reader the file has to be read and the content has to be moved to hash table using put method.
3. Whenever a name is given the corresponding phone number from hash table has to be displayed

   INPUT from database Table in Oracle:

 1) Create a table name as "phone"
 create table phone(stname varchar2(20), stmobile varchar2(20));
 2) Insert records into DataBase Table "phone"
 insert into phone values('P.Raghu','8977332085');
 insert into phone values('Ramu','9849098490');
 insert into phone values('Hari','9877335566');
 insert into phone values('Jayadev','9052778877');
 insert into phone values('Harika','9849044556');
 3) Retrieve the table
 select * from phone;
 Table displays as

### 8.2.4 OUTPUT:

 D:\JP>javac PhoneDB.java

27

```
D:\JP>java PhoneDB
Data Base Connected
Student Phone numbers are
P.Raghu:8977332085
Ramu:9849098490
Hari:9877335566
Jayadev:9052778877
Harika:9849044556
----------------------------------------------------
Main Menu
1.Search by Name
2.Search by Mobile
3.Exit
Enter Your Option 1,2,3
1
Enter Name
Jayadev
Mobile is 9052778877
-----------------------
Enter Your Option 1,2,3
2
Enter mobile
8977332085
Name is P.Raghu
-----------------------
Enter Your Option 1,2,3
3
Menu Successfully Exited
```

## 8.2.5 PRE LAB VIVA QUESTIONS:

1. What are the JDBC API components?
2. What are the JDBC statements?
3. What is the difference between Statement and PreparedStatement interface?
4. How can we execute stored procedures and functions?

## 8.2.6 POST LAB VIVA QUESTIONS:

1. What is the role of JDBC DriverManager class?
2. What does the JDBC Connection interface?
3. What does the JDBC ResultSet interface?
4. What does the JDBC ResultSetMetaData interface?

# WEEK-9: FILES

## EXPERIMENT 9.1

### 9.1.1 OBJECTIVE:

To write a Java Program that takes tab separated data (one record line) from a text file and insert them into a database.

### 9.1.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

### 9.1.3 PROGRAM LOGIC:

1. Create a text file which contains names and phone numbers separated by a tab
2. Using buffer reader the file has to be read and the content has to be moved to hash table using put method.
3. Whenever a name is given the corresponding phone number from hash table has to be displayed

### 9.1.4 OUTPUT:

D:\JP>javac Tbltodb.java
D:\JP>java Tbltodb
CSE1001:P.Raghu:8977332085
CSE1002:G.Uday:9849677889
CSE1003:Kavitha:8949088993
CSE1004:Swetha:7805805805
4 Records are inserted
After Inserted records in the Data Base Emplyee table as
Sql>select * from employee;
Siddhartha Institute of Engg. & Tech. Java Programming Record

### 9.1.5 PRE LAB VIVA QUESTIONS:

1. What does the JDBC DatabaseMetaData interface?
2. Which interface is responsible for transaction management in JDBC?
3. What is batch processing and how to perform batch processing in JDBC?
4. How can we store and retrieve images from the database?

### 9.1.6 POST LAB VIVA QUESTIONS:

1. What is CallableStatement?
2. What is Statement?
3. What is PreparedStatement?
4. What is ResultSet?

# EXPERIMENT 9.2

## 9.2.1 OBJECTIVE:

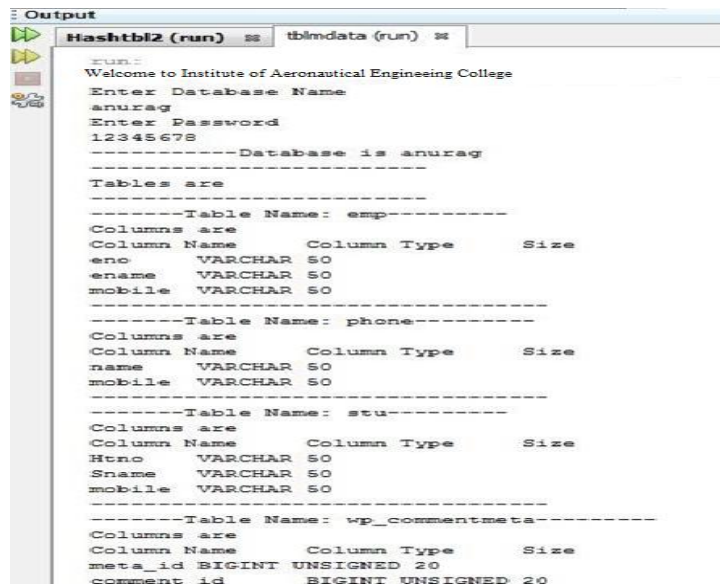To print the meta-data of given table.

## 9.2.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

## 9.2.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name Tblmdata.
3. Load the Driver class
4. Create a Connection object
5. Create a Statement object
6.  Get the Connection and execute the create, retrieve, update and delete operations on an SQL
    Command
7. Close the Connection object, Statement object.
st.close();
cn.close();

## 9.2.4 OUTPUT:



## 9.2.5 PRE LAB VIVA QUESTIONS:

1. What is Java Data Base Connectivity?
2. How to create a table in a data base?

3. How to retrieve a table in the database?
4. What is meta data?

## 9.2.6 POST LAB VIVA QUESTIONS:

1. What is meta data?
2. How to create a connection object?
3. What is result set object?
4. How do we get column count?

# WEEK-10: TRAFFIC LIGHT

## EXPERIMENT-10.1

### 10.1.1 OBJECTIVE:

To simulate a Traffic Light. The program lets the user select one of three lights: red, yellow or Green with radio buttons. On selecting radio button, an appropriate message with "stop" or "Ready" or "GO" should appear above the button in selected color. Initially, there is no message Shown.
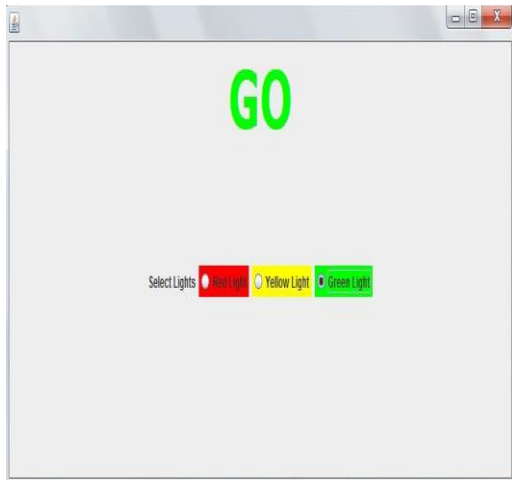
### 10.1.2 RESOURCES:

Net Beans 8.0.2, JDK7.0 is required, 1GB RAM, Hard Disk 80 GB

### 10.1.3 PROGRAM LOGIC:
1. Start the program
2. Create a class with the name A implements ItemListener.
3. Create the ButtonGroup ,JRadiobuttons,JPanel.
4. Add to the JFrame
5. Register the components to the Jframe.
6. Close the Jframe.

### 10.1.4 INPUT AND OUTPUT:
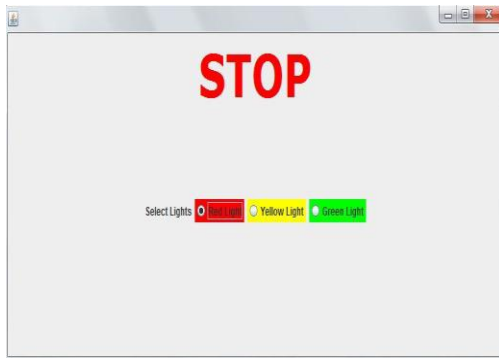
### 10.1.5 PRE LAB VIVA QUESTIONS:

1. What is a layout manager and what are different types of layout managers available in java AWT?
2. How are the elements of different layouts organized?
3. What is Garbage Collection and how to call it explicitly?
4. What is the difference between Integer and int?

### 10.1.6 POST LAB VIVA QUESTIONS:

1. What are Vector, Hashtable, LinkedList and Enumeration?
2. What is a better way of creating multithreaded application? Extending Thread class or implementing Runnable?
3. Can the start() method of the Thread class be overridden? If yes should it be overridden?
4. List the methods which when called on the object the thread releases the locks held on that object?

## WEEK-11: MOUSE EVENTS

## EXPERIMENT-11.1

### 11.1.1 OBJECTIVE:

To handle all mouse events and show event name at the center of the window when the mouse event is fired.(Use Adapter Classes)
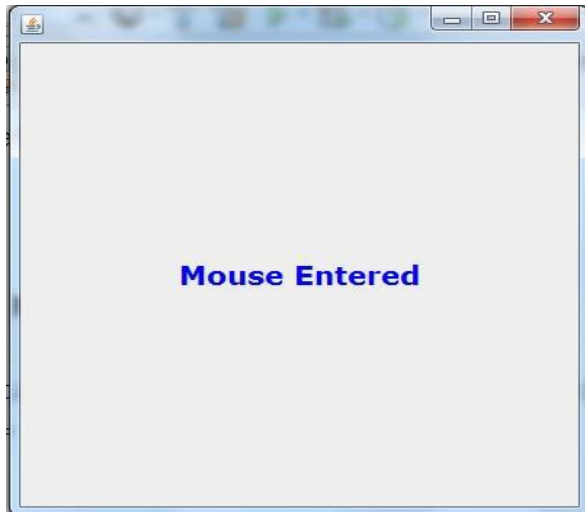
### 11.1.2 RESOURCES:

Net Beans 8.0.2, JDK.7.0 is required, 1GB RAM, Hard Disk 80 GB

### 11.1.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name A implements MouseListener.
3. Call the mouse events.
4. Add to the JFrame
5. Register the components to the Jframe.
6. Close the Jframe.

## 11.1.4 INPUT AND OUTPUT:





## 11.1.5 PRE LAB VIVA QUESTIONS:

1. What are different types of events?
2. How do we create mouse events?
3. What are different types of mouse events?
4. What are different types of objects created?

## 11.1.6 POST LAB VIVA QUESTIONS:

1. When the mouse pressed event is triggered?
2. When the mouse released event is triggered?
3. When the mouse entered event is triggered?
4. What are different types of listeners?

# EXPERIMENT-11.2

## 11.2.1 OBJECTIVE:

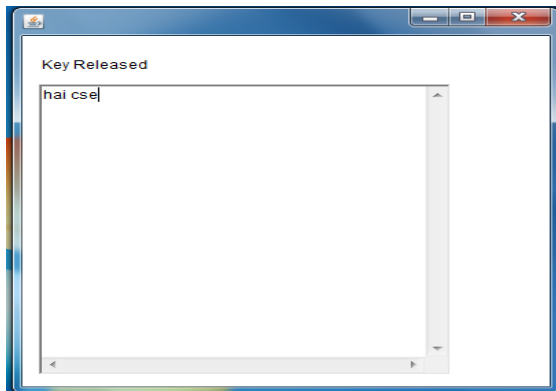Write a Java program to demonstrate the key event handlers.

## 11.2.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 11.2.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name A implements MouseListener.
3. Call the mouse events.
4. Add to the JFrame
5. Register the components to the Jframe.
6. Close the Jframe.

## 11.2.4 OUTPUT:



## 11.2.5 PRE LAB VIVA QUESTIONS:

1. Which containers use a border layout as their default layout?
2. Which containers use a FlowLayout as their default layout?
3. What is AWT?
4. What is the super class of all containers?

## 11.2.6 POST LAB VIVA QUESTIONS:

1. What is component?
2. How to interact with the Java system at runtime?
3. What is the super class of all components of Java?
4. What is a container**?**

# WEEK-12: CALCULATOR

## EXPERIMENT-12.1

### 12.1.1 OBJECTIVE:

To develop a program that works as simple calculator .Uses grid layout to arrange buttons for the digits and for the +,-,*, % operations. Add text field to display the results, Handle any possible exceptions like divide by zero.

### 12.1.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

### 12.1.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name 'A' extends JFrame implements ActionListener.
3. Declare the JButton ,JTextField ,JPanel variables.
4. Add listener to each button and to the layout.
5. Add Text Field to display the result.
6. Handle any Exceptions like divide by zero.

### 12.1.4 INPUT AND OUTPUT:
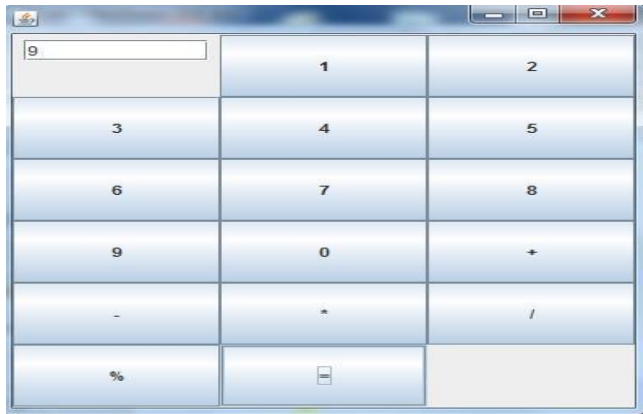
## 12.1.5 PRE LAB VIVA QUESTIONS:

1. what is awt and swing?
2. how do we create a jbutton object?
3. what is a data type?
4. what is the purpose of break statement in switch case?

## 12.1.6 POST LAB VIVA QUESTIONS:

1. How to convert the string data into long data?
2. Which containers use a Border layout as their default layout?
3. What is an event and what are the models available for event handling?
4. Which listeners are implemented for JButton ?

**EXPERIMENT-13.1**

### 13.1.1 OBJECTIVE:

To develop an Applet in java that displays a Simple Message
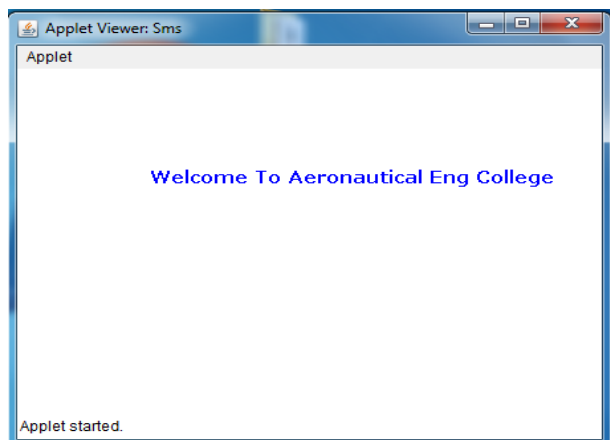
### 13.1.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

### 13.1.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name 'Sms' extends Applet.
3. Declare the Font class object.
4. Set the font.
5. Call the setFont method and drawString method     g.setFont(font);     g.drawString("String", 50, 50);
6. Create the HTML file for applet tag.

### 13.1.4 OUTPUT:



### 13.1.5 PRE LAB VIVA QUESTIONS:

1. Which containers use a Border layout as their default layout?
2. How are the elements of different layouts organized?
3. Which containers use a Flow layout as their default layout?
4. Can we create a sub package?

### 13.1.6 POST LAB VIVA QUESTIONS:

1. How does an applet will run?

2. Where does an applet will execute?
3. How do we create an applet ?
4. What is the difference between appplication and applet?

# EXPERIMENT-13.2

## 13.2.1 OBJECTIVE:

To develop an Applet in java that receives an integer in one Text Field, and computes its Factorial value and returns it in another text Field, when button named "Compute" is clicked.
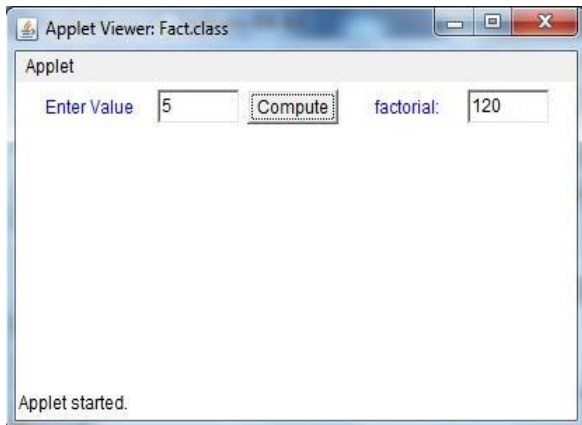
## 13.2.2 RESOURCES:

JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 13.2.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name 'Fact' extends Applet which implements ActionListener.
3. Declare the Label,TextField, Button variables.
4. Call init method
5. Call the setLayout method, setLayout(g);
6. Create the HTML file for applet tag.

## 13.2.4 INPUT AND OUTPUT:



## 13.2.5 PRE LAB VIVA QUESTIONS:

1. Can applets communicate with each other?
2. How does applet recognize the height and width?
3. How do you set security in applets?
4. What are different types of layouts used in java

## 13.2.6 POST LAB VIVA QUESTIONS:

1. Which events are extended for the button component?
2. What is an event and what are the models available for event handling?
3. What is meant by controls and what are different types of controls in AWT?
4. When do you use codebase in applet?

# ADDITIONAL PROGRAMS

## EXPERIMENT-1

### 1.1 OBJECTIVE:

Design a class to represent a Student details. Include the Student ID, name of the Student, branch, year and assign initial values, calculate average of marks of 6 subjects, calculate attendance percentage.
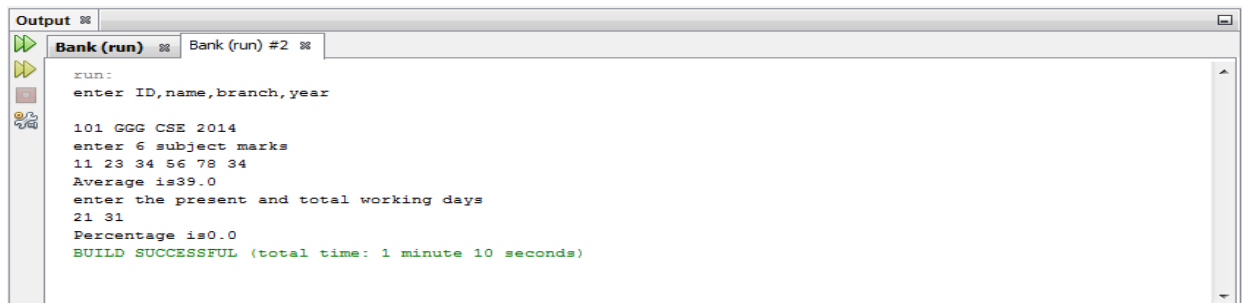
### 1.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

### 1.3 PROGRAM LOGIC:

1. Create a class for student.which contains student ID, name, branch,year.
2. Define methods in that class to assign intial values, to calculate average of marks,to calculate percentage.

### 1.4 OUTPUT:

```
Output ⊠                                                                    ▭
▷▷  Bank (run) ⊠   Bank (run) #2 ⊠
▷▷    run:
▭      enter ID,name,branch,year
⬚
       101 GGG CSE 2014
       enter 6 subject marks
       11 23 34 56 78 34
       Average is39.0
       enter the present and total working days
       21 31
       Percentage is0.0
       BUILD SUCCESSFUL (total time: 1 minute 10 seconds)
```

### 1.6 PRE LAB VIVA QUESTIONS:

1. Define variable?
2. Define instance and static variable?
3. Define method and static method?
4. Define final variable?

### 1.7 POST LAB VIVA QUESTIONS:

1. Hat is an object and howto create object?
2. What is the difference between command line argument and a parameter?
3. What are different types of access specifier?
4. What is size of byte?

# EXPERIMENT-2

## 2.1 OBJECTIVE:

Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism

## 2.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 2.4PROGRAM LOGIC:

## 1.3 OUPUT:

C:\j2sdk1.4.0\bin>javac chkd.java
Note: chkd.java uses or overrides a deprecated API.
Note: Recompile with -deprecation for details.

C:\j2sdk1.4.0\bin>java chkd
enter the date:(dd mm yyyy):
30
04
1989
30-4-1989  this is :=sunday

C:\j2sdk1.4.0\bin>java chkd
enter the date:(dd mm yyyy):
30
02
2000
invalid......

## 2.6 PRE LAB VIVA QUESTIONS:

1.  Define class?
2.  Define method overriding?
3.  What is dynamic dispatch method?
4.  Define reference variable?

## 2.7 POST LAB VIVA QUESTIONS:

1.  What is abstract class?
2.  What is run time polymoriphism?
3.  What is polymoriphism?
4.  4What is compile time binding and run time binding?

# EXPERIMENT-3

## 3.1 OBJECTIVE:

Write a program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.

## 3.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 3.3 PROGRAM LOGIC:

1. Create three classes naed by one, second, three.
2. All these three classes will implement Runnable interfaces
3. One class thread will print Goodmorning for every one second.sleep this thread for 1000 seconds.
4. Second class thread will print Hello for every two second.sleep this thread for 2000 seconds.
5. Third class thread will print World for every three second.sleep this thread for 3000 seconds.

## 3.4 OUTPUT:



## 3.6 PRE LAB VIVA QUESTIONS:

1. Define class and thread class?
2. Define runnable interface?
3. What is package of thread class?
4. Define interrupt?

## 3.7 POST LAB VIVA QUESTIONS:

1. What is multiprogramming?
2. Why class implement runnable interface?
3. How to current class thread name?
4. What is sleep() method?

# EXPERIMENT-4

## 4.1 OBJECTIVE:

Write an Applet that computes the payment of a loan based on the amount of the loan, the interest rate and the number of months. It takes one parameter from the browser: Monthly rate; if true, the interest rate is per month, otherwise the interest rate is annual.
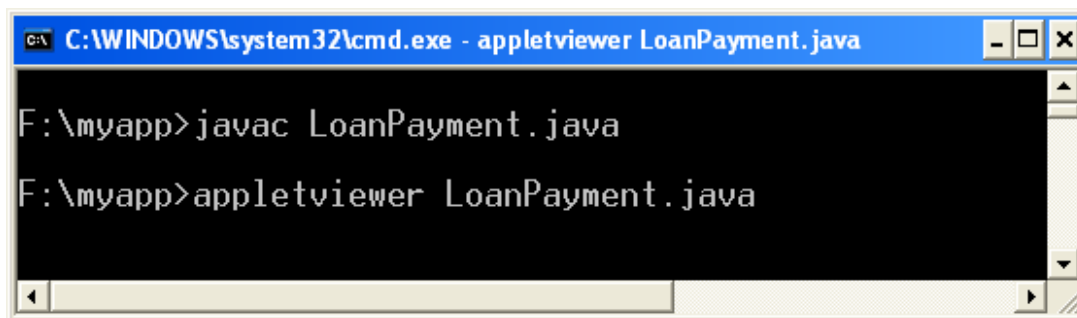
## 4.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB
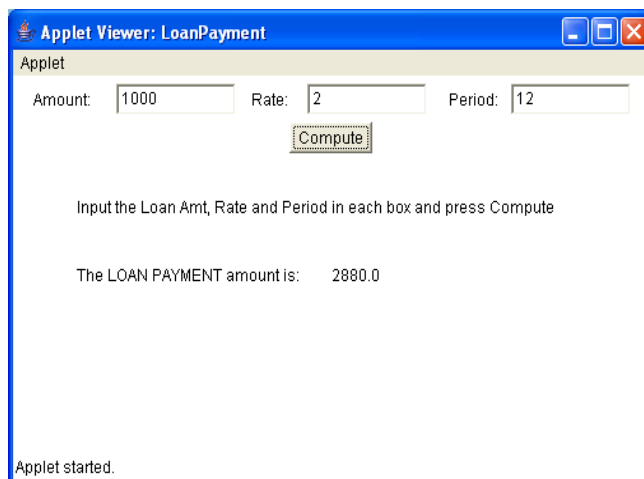
## 4.3 PROGRAM LOGIC:

1. Start the program
2. Create a class with the name A implements ItemListener.
3. Create the FileInputStream object.
4. Create the Scanner object delimited by comma.
5. Close the Jframe.

## 4.4 INPUT & OUTPUT:

## 4.6 PRE LAB VIVA QUESTIONS:

1. Define applet?
2. Define application program?
3. How to run applet program?
4. Define applet viewer?

## 4.7 POST LAB VIVA QUESTIONS:

1. What is applet tag?
2. Why html code is embedded in applet?
3. What is param tag?
4. What is sleep() method?

# EXPERIMENT-5

## 5.1 OBJECTIVE:

Write a java programs to find factorial of a number. user is allowed to enter a number into the text field whose factorial is to be determined. On pressing the button the value of the text field is firstly converted into integer and then processed to find its factorial. The result will get displayed in another text field.(Hint: use swings).
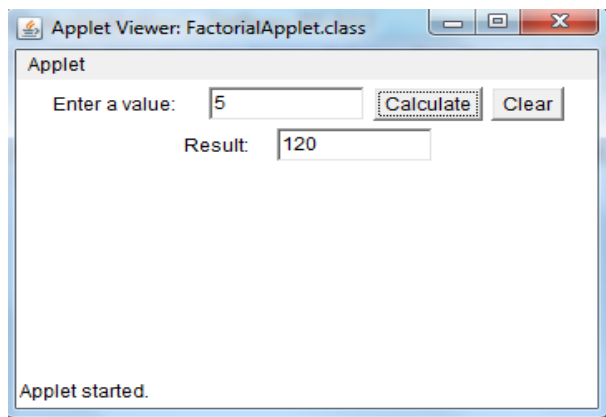
## 5.2 RESOURCES:

Net Beans, JDK1.7.0 is required, 1GB RAM, Hard Disk 80 GB

## 5.3 PROGRAM LOGIC:

1. Create a class FactorialApplet extends Applet implements ActionListener.
2. Create labels to enter a value and to print result.
3. Create two buttons to calculate and clear.

## 5.5 OUTPUT:

## 5.6 PRE LAB VIV QUESTIONS:

1. What is awt and swing?
2. How do we create a jbutton object?
3. What is a data type?
4. What is the purpose of break statement in switch case?

## 5.7 POST LAB VIV QUESTIONS:

1. How to convert the string data into long data?
2. Which containers use a Border layout as their default layout?
3. What is an event and what are the models available for event handling?
4. Which listeners are implemented for JButton ?