Assignment 1

1. Write a Java program and compile it in command line to execute to greet your friend
2. Write a Java program to find the maximum Compile time and Run time error messages of simple one line output message.
   1. Delete any of the semicolons
   2. Swap the word public, static, void, main
   3. Omit the word public, static, void, main
   4. Remove the array Subscript around string
   5. Replace String with int or float
   6. Replace String[] as String…
3. Write a Java program to create a Conversation between Java and Python
4. Write a Java program to check if the given year is a leap year or not
5. Write a Java program that takes a date as input and prints the day of the week that date falls on. Read the three int input as m(month), d(day) and y(year). Use 1 of m for January, 2 for February, and so forth. For output print 0 for Sunday, 1 for Monday and so forth. Use the following formula for the Gregorian calendar.
6. Write a Java program to take the temperature (in degrees Fahrenheit ) and the wind speed v(in miles per hour). The Weather service outputs the temperature(wind chill) as follows. Read temperature and velocity from user and print the wind chill. Use Math.pow(a,b) (import java.lang.Math)for a^b. Constraint: T value is larger than 50(valid range <= 50°F) v value larger than 120 or less than 3(valid range 3 to 120 mph)
7. Write a Java program to model the AND gate using the linear combination of inputs formula Y=Bias +W0⋅X1+W1⋅X2 where X1 and X2 are the input values, and y is the output, determine the values for the weights W0 and W1, and the bias term that will correctly model the behavior of a logical AND gate. Use the condition that Y>0.5 results in output 1 and Y≤0.5 results in output 0
8. Write a Java program to print the digit position and its value of an Integer
9. Write a Java program to calculate the future value of the investment if the principal amount read randomly between Rs 10,000 to 100,000 the annual interest rate between 1.0% to 10.0% and the investment period is between 1 to 30 years. Provide the future value as the result Amount=Principal×(1+Compound\_Interest)^Years Hint: Random random = new Random(); long principal = random.nextInt(100001); // Random between 0 and 100,000

Assignment 2

1. Write a Java program to read an integer of range 0 to 99 randomly in a 1D array and character array using the random integer. Apply the method to sort the array content and return the number of comparisons done. Apply method to Print the sorted array with array index position
2. Write a Java program to read n random integer in a 1D array of A and B of size n. Apply method to search the occurrence of element in B and print the number of B element occurrence in A
3. Write a class in Java to withdraw, deposit and check balance in an ATM

Assignment 3

1. Linked list implementation in Java
2. Queue implementation in Java

Assignment 4

1. Write a java program to perform string methods by considering the given string inputs  
   String s1=”Welcome to Java”;  
   String s2=s1;  
   String s3=new String(“Welcome to Java”);  
   String s4=s1.intern();
2. Write a java program to read the string and displays the reverse of the string
3. Write a java program to count the number of occurrence of the each letter in the given string using a single array
4. Write a java program that extracts all numbers from a given string and returns them as a new string. For example, "a1b2c3" should return "123"
5. Write a Java program that performs string compression using the counts of repeated characters. Example string "aabcccccaaa" would become "a2b1c5a3"
6. Write a java program to check the given string is palindrome or not
7. Write a java program that read a two string of the given format and compares the string  
   15.10.10 is greater than 14.20.50 as 15 >14
8. Write a java program to validate the URL (“https”, "://", "/", "?",”&”) and extracts its components protocol, domain, path, query parameters
9. Write a java program to create an acronym from a given phrase using 2D string array. For example, "JVM " should return "Java Virtual Machine"

Assignment 5

1. Write a Java program that first reads a piece of text entered by a user on one line and then reads a key on the second line. The program displays the frequency with which the key has occurred in the piece of text
2. Write a Java program as per the following specification: The input to the program is a string. The string contains substrings 'not' and 'bad' such that 'bad' comes after 'not'. There are only single occurrences of 'not' and 'bad'. The program outputs a string such that the whole 'not...bad' substring in the input is replaced by 'good'
3. Write a Java program to print the frequency of characters in a string in the given format
4. Write a Java program to check whether an input string is a pangram or not.
5. Write a Java program to design an immutable singleton class representing a Person with properties like name and age. Ensure that only a single Person object is created, its state and behavior remain unchanged after construction
6. Write a Java program to create a Complex Number class with the following features
   1. Single inheritance
   2. Multilevel inheritance
   3. Hierarchical inheritance
   4. Multiple inheritance
   5. Runtime polymorphism
   6. Compile time polymorphism
   7. Super keyword
   8. Shallow copy
   9. Deep copy
   10. Shallow cloning
   11. Deep cloning
   12. Finalize method
   13. Package

Assignment 6

1. Write a Java program to perform unchecked exception. Use appropriate try-catch blocks to handle these exceptions and provide meaningful error messages
2. Write a Java program that demonstrates different try-catch-finally block combinations
   1. Try without catch block
   2. Try without finally block
   3. Try with catch and finally block
   4. Try with multiple catch block
   5. Nested try catch finally block
   6. Try with resources
3. Write a Java program to create a custom exception class called InvalidMarkException that extends Exception. Then, write a Student class with a method to set marks that throws this custom exception if the mark is out of range (e.g., less than 0 or greater than 100)
4. Write a Java program to illustrate the propagation of checked and unchecked exception
5. Write a Java program to illustrate the method overloading in exception handling mechanism for checked and unchecked exception
6. Implement a base class and a derived class to demonstrate exception handling in method overriding
   1. Overriding a method that throws an unchecked exception
   2. Overriding a method that throws a checked exception

Assignment 7

1. Write a Java program to create an interactive quiz form
2. Write a Java program to design a simple calculator
3. Write a Java program to create a google account
4. Write a Java program to create a simple GUI

Assignment 8

1. Create a program that copies a text file using both byte streams and character streams. Compare the performance
   1. Counts the occurrences of a specific character
   2. Encrypt the text
2. Write a Java program to enhance the previous program by using BufferedInputStream / BufferedOutputStream and BufferedReader / BufferedWriter. Compare the performance with non-buffered versions
   1. Counts the occurrences of a specific word
   2. Encrypt the text
3. Write a Java program that reads a file and counts the occurrence of a specific character using InputStreamReader
4. Write a Java program to Create a Student class and a program that manages student records using ObjectOutputStream and ObjectInputStream. Implement functions to add students, update GPAs, and display grades

Assignment 9

1. Write a Java program to implement two sum problem
2. Write a Java program to convert integer to roman numericals
3. Write a Java program to count the number of vowels and consonants in a word
4. Write a Java program to check whether the given linked list is a palindrome
5. Write a Java program to perform stack implementation using arrays
6. Write a Java program to perform exception Handling
7. Assignment 7, 4th question

Assignment 10

1. Write a Java program to implement socket programming using TCP
   1. Capitalizer
   2. E-mail validator
2. Write a Java program to implement socket programming using UDP
   1. Capitalizer
   2. E-mail validator

Assignment 11

1. Write a Java program to implement a Servlet.   
   Define the web.xml file or use annotations to map the servlet to a specific URL. Create a Java class that extends HttpServlet and overrides the doGet() or doPost() methods, depending on the type of HTTP request you want to handle. Implement business logic in the doGet() or doPost() methods (e.g., print a message or process a form). Optionally, configure the servlet in the web.xml (for traditional web applications) or use annotations to specify the URL pattern the servlet will handle. Retrieve parameters (e.g., form data) from the HTTP request using request.getParameter(). Write the response using response.getWriter(), sending output back to the client (e.g., HTML content). Deploy the servlet on a servlet container like Tomcat. Open a browser and visit the URL mapped to the servlet to test the functionality. (Pom.xml ; Servlet.java ; index.jsp ; Index.html ; Web.xml)

Assignment 12

1. Write a Java program to implement JDBC [Student info].  
   Load the database driver. o Create a Connection object to connect to the database. Prepare SQL queries using Statement or PreparedStatement to interact with the database. o Use executeQuery() for retrieving data (SELECT). Use executeUpdate() for inserting, updating, and deleting data (INSERT, UPDATE, DELETE). Retrieve the result of the query using ResultSet for SELECT queries. Close ResultSet, Statement, and Connection to free up resources.

Assignment 13

1. Write a Java program to implement JSP [Calculator, HTTP sessions, cookies]  
   Display a form that allows the user to input two numbers and select an arithmetic operation (add, subtract, multiply, divide). Submit the form to the servlet to perform the calculation. Retrieve the input values (numbers and operation) from the request. Perform the selected arithmetic operation. Store the result of the operation in the HTTP session so that it can be accessed later. Retrieve the existing calculation history from the session and update it with the new calculation result. Store the updated calculation history in a cookie to persist across sessions. Forward the result and the updated history to the JSP for display. Use cookies to store the calculation history. The history is stored as a semicolon-separated string in the cookie. Each time the user performs a new calculation, update the cookie with the new history. Display the result of the calculation on the page. Display the calculation history from both the session and the cookie. The session will store history for the current session, and the cookie will persist history even after the browser is closed. (Web.xml ; Cookie.java ; Cookieshttp.java ; Web.xml ; Sign.xml ; Cookie.java)