1.Write a Java program to read 5 subject marks of a student and calculate the total and grade. The grade system is as follows.

Letter Grade	Grade Points	Marks Range
O (Outstanding)	10	91 – 100
A+ (Excellent)	9	81 – 90
A (Very Good)	8	71 – 80
B+ (Good)	7	61 – 70
B (Average)	6	50 – 60
RA	0	< 50

2.Write a java class called 'student' with name, and rollno. Write a class 'Result' to get Marks of 3 subjects and another class "Sports' to get the points obtained in sports. Calculate the total Marks and displays the result (pass or fail) with points obtained in sports for three students using inheritance and constructor

3. Define an abstract class "car" with members reg_no, model, reg_date. Define two subclasses of this class – "transportVehicles " (validity_no, start_date, period) and "privateVehicle " (owner_name, owner_address). Define appropriate constructors. Create n objects which could be of either transportVehicles or privateVehicle class by asking the user's choice. Display details of all "privateVehicle" objects and all "transportVehicles" objects

4. Create an interface "CreditCardInterface" with methods to viewCreditAmount, viewPin, changePin and payBalance. Create a class Customer (name, card number, pin, creditAmount – initialized to 0). Implement methods of the interface "CreditCardInterface" in Customer class. Create an array of customer objects and perform the following actions.
 * Pay Balance
Change Pin

5.Develop the Internal mark calculation system based on the attendance percentage using Java. Get the student name, register number, total number of working days in the semester and Number of days present. Calculate attendance percentage of the students and award attendance mark based on the following condition.
Attendance percentage >=90 – 5 Marks
Attendance percentage >=80 and < 90 – 4 Marks
Attendance percentage >=75 and < 80 – 3 Marks
Attendance percentage < 75   - 0 Marks

6. Write a java program for exception handling:
 a. To create a user defined exception whenever user input the word "hello".
 b. To add two integers and raise exception when any other character except number (0 – 9) is given as input

7. Create a class Doctor with attributes id, name, age and department. Initialize values through parameterized constructor. If age of Doctor is not in between 25 and 65 then generate user-defined exception "AgeNotWithinRangeException". If name contains numbers or

special symbols raise exception "NameNotValidException". Define the two exception classes.

8. Create a new Java GUI application to convert miles to kilometers when pressing the "Convert!" button. Note that you need to implement the ActionListener interface and override the actionPerformed() method. Note that 1 mile is equal to 1.609 kilometers.

9, Develop a Java application with employee class includes emp_name, emp_id, address, mail_id, mobile_no as members.
Inherit the classes Programmer, Assistant Professor from employee class.
Add Basic Pay 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 the pay slips for the employees with their gross and net salary.

10.
i) Write a java program which stores the list of strings in an ArrayList and then displays the contents of the list.
ii) Write a java program to concatenate and compare the two strings.

11, (i) Design a Java console application program for implement string operations – Append and Insert the value at particular Index using ArrayList in java.

(ii) Develop a Java application using packages to implement the following currency converter Dollar to Indian Rupees, Euro to Indian Rupees, Yen to Indian Rupees and vice versa.

12, (i) Perform the following operations by using the Java program for file handling process. Get the file name from the user. Display the information about the file with various properties like Availability of the file, Readable or Writable or both, type of the file and length of the file in bytes.

13, Write a Java program for handling the following exceptions
 (i) Arithmetic Exception   (ii) ArrayIndexOutOfBounds Exception
(iii) NumberFormat Exception (iv) StringIndexOutOfBound Exception

14, 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

15. Write a java program for generating three threads to perform the following operations
i)   Getting N numbers as input
ii)   Printing the numbers divisible by five
iii)   Computing the average

16.Write a java program that implements inter-thread communication for producer-consumer pattern