1	Print Message Write a program to display a message "Welcome to object oriented programming" Sample Output 1: Welcome to object oriented programming
2	Print Username Jeffy, who is going to complete the higher education in this year, needs to create a simple application which accept the name of a person and welcome them with a message along with their name. She wants to read the data using the class "Scanner". Implement this scenario using Java. Sample Input 1: Enter the name: Johnson Sample Output 1: Welcome Johnson. Sample Input 2: Enter the name: Stain Polson Sample Output 2: Welcome Stain Polson.
3	Bill Generation Tom went to a movie with his friends in a multiplex theatre and during break time he bought pizzas, puffs and cool drinks. Consider the following prices : ● Rs.100/pizza ● Rs.20/puffs ● Rs.10/cool drink Generate a bill for What Tom has bought. Sample Input 1: Enter the no of pizzas bought:10 Enter the no of puffs bought:12 Enter the no of cool drinks bought:5 Sample Output 1: Bill Details No of pizzas:10 No of puffs:12 No of cooldrinks:5 Total price=1290 ENJOY THE SHOW!!!
4	Spell Check

	Ruya's teacher gave her an assignment to practice the spelling of "RAINBOW". Ruya's mother helped her in doing this by spelling each letter as Ruya wrote it in her notebook. If Ruya writes wrong spelling her mother should say "The spelling is wrong" Sample Input 1: Enter the first letter:R Enter the second letter:A Enter the third letter:I Enter the fourth letter:N Enter the fifth letter:B Enter the sixth letter:O Enter the seventh letter:W Sample Output 1: RAINBOW Sample Input 2: Enter the first letter:R Enter the second letter:E Enter the third letter:I Enter the fourth letter:N Enter the fifth letter:B Enter the sixth letter:O Enter the seventh letter:W Sample Output 2: The spelling is wrong
5	Highest Placement SRV college wants to recognize the department which has succeeded in getting the maximum number of placements for this academic year. The departments that have participated in the recruitment drive are CSE,ECE, MECH. Help the college find the department getting maximum placements. Check for all the possible output given in the sample snapshot Note : If any input is negative, the output should be "Input is Invalid". If all department has equal number of placements, the output should be "None of the department has got the highest placement". Sample Input 1: Enter the no of students placed in CSE:90 Enter the no of students placed in ECE:45 Enter the no of students placed in MECH:70 Sample Output 1: Highest placement CSE Sample Input 2: Enter the no of students placed in CSE:55 Enter the no of students placed in ECE:85 Enter the no of students placed in MECH:85 Sample Output 2:

	Highest placement ECE MECH Sample Input 3: Enter the no of students placed in CSE:0 Enter the no of students placed in ECE:0 Enter the no of students placed in MECH:0 Sample Output 3: None of the department has got the highest placement Sample Input 4: Enter the no of students placed in CSE:10 Enter the no of students placed in ECE:-50 Enter the no of students placed in MECH:40 Sample Output 3: Input is Invalid
6	Convert Numbers into Months Ram is very weak in converting the numbers into months. But his friends often tease him by asking him to do that. To solve his problem a close friend of him, suggested to meet IIT students, who were very good at programming. Help ram to resolve his problem. Note : ● Range of inputs is 1 to 12. ● If the input given is beyond the range display error message as given in the sample output. Sample Input 1: 2 Sample Output 1: February Sample Input 2: 15 Sample Output 2: No month for the number 15
7	Find Season Reaya's teacher has asked her to prepare well for the lesson on seasons. When her teacher tells a month, she needs to say the season corresponding to that month. Write a program to solve the above task. ● Spring - March to May, ● Summer - June to August,

	● Autumn - September to November and, ● Winter - December to February. Month should be in the range 1 to 12. If not the output should be "Invalid month". Sample Input 1: Enter the month:11 Sample Output 1: Season:Autumn Sample Input 2: Enter the month:13 Sample Output 2: Invalid month
8	Lucky Number William planned to choose a four digit lucky number for his car. His lucky numbers are 3,5 and 7. Help him find the number, whose sum is divisible by 3 or 5 or 7. Provide a valid car number, Fails to provide a valid input then display that number is not a valid car number. `Note : The input other than 4 digit positive number[includes negative and 0] is considered as invalid.` Refer the samples, to read and display the data. Sample Input 1: Enter the car no:1234 Sample Output 1: Lucky Number Sample Input 2: Enter the car no:1214 Sample Output 2: Sorry its not my lucky number Sample Input 3: Enter the car no:14 Sample Output 3: 14 is not a valid car number
9	Pencil Count Nila uses pencils to write at school and at home. When she was in her 1st standard, her parents bought her one pencil. In her 2nd standard, she needed 5 pencils, and in 3rd standard, she needed 14 pencils and so on. How many pencils does she get from the provided standard? Note : If the input given is not between 1 to 12 then the output should be "Invalid Standard" Sample Input 1: Enter the standard: 4 Sample Output 1:

	Nila gets 30 pencils Sample Input 2: Enter the standard: 5 Sample Output 2: Nila gets 55 pencils Sample Input 3: Enter the standard:14 Sample Output 3: Invalid Standard
10	List of prime numbers To speed up his composition of generating unpredictable rhythms, A.R.Rahman wants the list of prime numbers available in a range of numbers.Can you help him out? Write a java program to print all prime numbers in the interval [a,b] (a and b, both inclusive). <u>Note</u> ● Input 1 should be lesser than Input 2. Both the inputs should be positive. ● Range must always be greater than zero. ● If any of the condition mentioned above fails, then display "Provide valid input" ● Use a minimum of one for loop and one while loop Sample Input 1: 2 15 Sample Output 1: 2 3 5 7 11 13 Sample Input 2: 8 5 Sample Output 2: Provide valid input
11	Repetition of a Number Pinky's mom provides Pinky with a number and a key digit. She wants Pinky to find out how many times that key digit appears in that number. Help Pinky to do that by writing a program. Sample Input 1: Enter the number 16466 Enter the key digit 6 Sample Output 1: 6 appears 3 times in 16466 Sample Input 2:

	Enter the number 8458 Enter the key digit 6 Sample Output 2: 6 appears 0 times in 8458

12	Bonus Points - Bike Race
	
	There is an app for bike race which provides bonus points for the player. In this app the player has to play the race and on completion, the total kilometers travelled by the player is calculated. Based on this distance travelled, the product of digits in the odd position and also product of digits in the even position is calculated. Whichever is highest, that is the bonus points given to the user. If the product of odd and even position digits are same, then the player should receive double the product as bonus.
	`Example : If the distance travelled is 5632`
	`Product of digits in odd position = 5 * 3 = 15`
	`Product of digits in even position = 6 * 2 = 12`
	`As 15 > 12, the bonus points the player gets is 15.`
	Write a program to do this operation.
	Create a class BikeRace.java with the main method.
	Note : Input should be the distance travelled and the output is the bonus points. If the input is less than zero, the output should be “Invalid Input”.
	
	Sample Input 1 :
	Enter the distance travelled
	8694
	Sample Output 1 :
	Your bonus points is 72
	
	Sample Input 2 :
	Enter the distance travelled
	263
	Sample Output 2 :
	Your bonus points is 12

13	Celcius to Farenheit Conversion Write a program to convert Celsius to Farenheit. Display the result correct to 1 decimal. Create a class "CelsiusConversion.java" and write the main method. Hint : 5 * (F – 32) = 9 * C, F-Farenheit , C- Celsius Sample Input 1 : 80 Sample Output 1 : 176.0 Sample Input 2 : 88 Sample Output 2 : 190.4

14	Check for Leap Year Given a year, check if the year is leap year or not. If yes, the output should be “Leap Year”. Else output should be “Not a Leap Year”. The input should be a positive four digit number. Else, the output should be “Invalid Year”. Sample Input 1 : Enter the Year 2016 Sample Output 1 : Leap Year Sample Input 2 : Enter the Year 2001 Sample Output 2 : Not a Leap Year
15	Factors of a Number Betsy teaches her daughter to find the factors of a given number. When she provides a number to her daughter, she should tell the factors of that number. Help her to do this, by writing a program. Write a class FindFactor.java and write the main method in it. Note : ● If the input provided is negative, ignore the sign and provide the output. If the input is zero ● If the input is zero the output should be “No Factors”. Sample Input 1 : 54 Sample Output 1 : 1, 2, 3, 6, 9, 18, 27, 54 Sample Input 2 : -1869 Sample Output 2 : 1, 3, 7, 21, 89, 267, 623, 1869
16	Multiplying adjacent numbers Write a program that prints a sequence of numbers by slightly modifying the Fibonacci series. The series of numbers is created by multiplying adjacent numbers instead of adding them. Prompt the user to enter the starting number and the number of terms. Also write code to check the following conditions ● whether the first number entered by the user is greater than or equal to the second number. If so display "Invalid Input", else get the number of terms. ● Out of three inputs check whether each input value is greater than 0. If first input value entered is less or equal to 0 then display "Invalid Input" else get the 2nd input value.

	If second input value entered is less or equal to 0 then display "Invalid Input" else get the 3rd input value. If third input value entered is less or equal to 0 then display "Invalid Input" else print the required terms. Sample Input Enter the first number: 2 Enter the second number: 3 Enter the number of terms: 4 Sample output 2, 3, 6, 18, 108, 1944
17	Count at the Cow barn Tom was standing outside a cow barn. A group of men were appointed to take care of the cattle. All Tom could see was ‘m’ heads and ‘n’ feet. Write a program to display the number of cows and the number of men found. Input consists of the heads as the first input and feet as the second input. If sum of number of cows and number of men is not equal to heads, then display “Invalid Input”. Sample Input 1 3 10 Sample Output 1 Number of Cows: 2 Number of Men: 1 Sample Input 2 10 44 Sample Output 2 Invalid Input
18	Pair of Two digits Write a program that accepts a pair of two digit numbers which satisfies the following condition. The product of the numbers should be the same, when both the numbers are reversed and multiplied. If products were same,then print "Yes" else print "No". Note: Assume both the inputs are 2-Digit values. Hint: [13*62=31*26] Sample Input: 13 62 Sample output: Yes
19	Prime numbers ending with one

	Write a program that prints a series of prime numbers that end with 1. Prompt the user for the first number (n1) and the last number(n2) in the series. Print all possible prime numbers that ends with one from n1 to n2. If n2 itself is prime, stop the series. Else print the nearest prime number that ends with one, next to n2. Sample input: Enter the first number 10 Enter the last number 100 Sample output: 11,31,41,61,71,101
20	currency calculator Write a program to convert dollars into Indian money. The currency calculator is capable of converting only USA, Canada, Singapore and Hong Kong dollars to INR. Prompt the user to enter the Currency code and the amount to be converted. Display the result as given in the sample output. Note the currency code and exchange rate for the countries {Canada –CAD, 52.08} , {Hong Kong – HKD, 8.86}, {Singapore – SGD, 51.29} {USA – USD, 69.55} Sample input 1 Enter the currency code HKD Enter the amount 3400 Sample output 1 Hong Kong dollar 3400 equals to 30124.00 Indian Rupee Sample input 2 AED Sample output 2 Currency code not found
21	Sum and Product Lisa is hosting a party, during which she has planned for surprise gifts for her guests. The guests while entering the hall should pick two slips of paper upon which numbers are written. At the end of the party the guests should bring their slip of papers to Lisa. The Lucky ones are those who received numbers that satisfy the following condition. The sum of the two numbers is the reverse of the product of the two numbers. For example, If a guest has got X and Y as the two numbers, he will be a winner only if X+ Y= AB; Then X * Y =BA. Note : Both X and Y should be greater than 0. Otherwise print "Invalid Input" Write a program to help Lisa find out the lucky winner. The program should accept two numbers, check the logic and display the message as shown in the sample output.

	Sample input 1 24 3 Sample output 1 You are Lucky! Here Is your Gift. Sample input 2 46 2 Sample output 2 Better Luck Next Time Sample input 3 0 Sample output 3 Invalid Input Sample input 4 89 0 Sample output 4 Invalid Input
22	Find Profit or Loss Sam started a new business with an investment of Rs.1, 00,000. During the first year the he got a profit of x%, whereas in the second year he lost a certain amount(say Rs. Y). Help him to find out the profit/loss (in terms of initial investment) in percentage at the end of the second year. Sample input 1: Enter the profit percentage 20 Enter the amount lost in Rs. 50000 Sample output 1: After two years he gets a loss of 30%. Explanation : investment = 100000 profit = 20% of 100000 = 20000 Loss=50000 If loss > profit, there is a loss If loss < profit, there is a profit If loss = profit, no gain no loss Here loss > profit So loss To calculate loss% - loss amount = loss - profit = 30000 Loss % =(loss amount / investment) * 100 That is 30000 * 100 / 100000 = 30% Sample input 2: Enter the profit percentage 20

	Enter the amount lost in Rs. 20000 Sample output 2: After two years he gets no loss or no gain.
23	Siblings Fund Raising Harry, James, Leo and Sara are siblings and their mother has asked them to sell cake boxes for a fund raising event. She told them that there is a surprise gift for the ones who sell the maximum number of boxes. There can be more than one maximum. Write a program to display the names of all the siblings who receive gifts by selling the maximum number of boxes. If all the four sold the same number then display, “All get the same gifts." Sample input 1: Enter the number of boxes sold by Sara 14 Enter the number of boxes sold by Harry 14 Enter the number of boxes sold by Leo 14 Enter the number of boxes sold by James 10 Sample output 1: Sara, Harry and Leo receive the gifts. Sample input 2: Enter the number of boxes sold by Sara 14 Enter the number of boxes sold by Harry 14 Enter the number of boxes sold by Leo 14 Enter the number of boxes sold by James 20 Sample output 2: James receives the gifts.
24	Numerology number Harry has developed a new interest in learning numerology, so starts paying attention to the numbers that comes up as he goes about his daily routines. Write a program to help him. The program should get the input from the user and display the individual digits separated by a single space. Assume input is less than 1000000000. For example, the number 7654 should be displayed as 7 6 5 4 Also display the sum of the digits, the numerology number(Multi-digit numbers are added and reduced to a single digit), number total number of odd numbers and total number of even numbers. For example if the given number is 7654 then, The Numbers are : 7 6 5 4 Sum of digits : 22 (7+6+5+4)

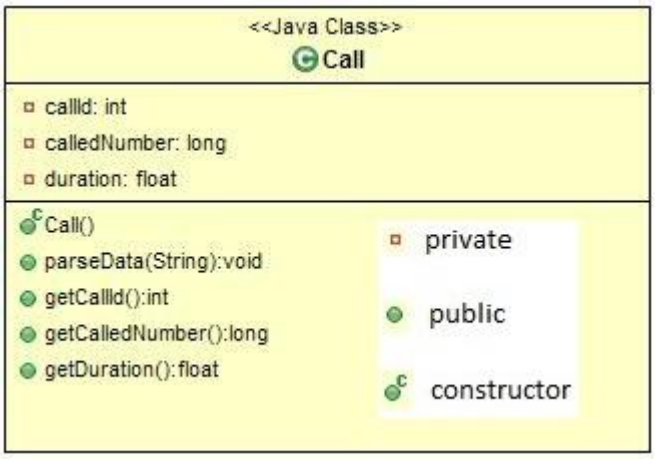
	Numerology number : 4 ((7+6+5+4 =22 => 2+2) sum of digits is again added and reduced to a single digit). Number of odd numbers: 2 Number of even numbers: 2 Sample input: Enter the number 86347 Sample output: The Numbers are : 8 6 3 4 7 Sum of digits : 28 Numerology number: 1 Number of odd numbers: 2 Number of even numbers: 3
25	Decimal to Fraction Bobby is in her 2nd grade and has just started to learn about fractions. Whenever she comes across a decimal number she is curious to know the equivalent fraction for that number. Help her to convert a decimal number into a fraction. Write a program that accepts a decimal number and prints the fraction equivalent in the simplified/reduced form. Sample input1 12.5 Sample output 1(Improper Fraction- where the numerator is greater than denominator) Fraction: 25/2 Sample input 2 0.625 Sample output 2(Proper Fraction- where the numerator is lesser than denominator) Fraction: 5/8 Sample input 3 3 Sample output 3 Input a decimal number
26	Grade Points At Raffle's Academy, students are given grade points to a maximum of 5 during their final exam. The grade points are mapped to Letter grades as follows. Letter Grade Grade points O 5 A >= 4.5 and <5.0 B >= 4.0 and <4.5 C >=3.0 and <4.0 D >=2.0 and <3.0 E >=1.0 and <2.0 F >=0.0 and <1.0 Write a program to that get's an input between 0 and 5 and outputs the grade of the student. Sample input:

	Enter the grade point: 4.5 Sample output: Grade: A Sample input: Enter the grade point: 3.4 Sample output: Grade: C Sample input: 1.2 Sample output: Grade: E
27	Banner Display Cathy wants to display a banner with the text “Have a wonderful day” in front of her shop, so that she could see a smile on the face of each passerby. Write a program to display Cathy’s message Sample output Have a wonderful day
28	Welcoming Freshmen The second year students at Stamford University are arranging a welcome party to their first year students. Each student while entering the party hall should say his/her name aloud. After a few seconds, a welcome message will pop up on a screen along with their name. Write a program to get the name from the user and display it along with the welcome message. Sample Input Enter the name Brian rav Sample output Welcome Brian rav! Achieve with all your might.
29	KN Agencies Sales Orders KN Agencies are dealers for a popular brand of Electric Kettle and Induction Stove. The selling price of the Electric Kettle and Induction Stove differs based on the number of units ordered and product chosen (either Electric Kettle or Induction Stove), as shown below . <u>Electric Kettle</u> <u>Induction Stove</u> No. of units Price/Unit (Rs) No.of units Price/unit(Rs) 1 – 10 950 1 –15 1100 11 - 20 900 16 – 25 1000 21 and above 850 26 and above 975 Design a program to get input from the user(If Electric Kettle enter ‘E’ and if Induction Stove enter ‘I’, and the number of units.) and display the total amount that has to be paid. Hint : Assume that input provided will be either 'E' or 'I' alone. No need to do any validation

	for the input provided. Sample input Enter 'E' for Electric Kettle and 'I' for Induction Stove(No other character will be accepted) E Enter the number of units ordered 12 Sample Output Total amount to be paid is Rs.10800

CodingHand

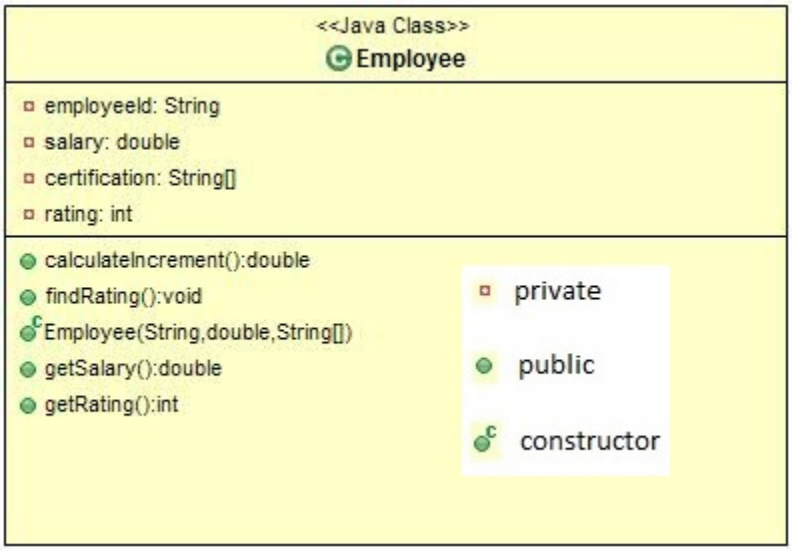
Classes and Objects, Packages

1	Call Details For the postpaid customers, the airvoice mobile shop maintains the calls made by the customer in the file in the given format below: Callid:callednumber:noofminutes Example: 123:9874561230:2.5 The shop wants to extract the information from the file and populate them in to the Call object. Develop a java application to do the above task. Consider the class given below: 

<table>
<tr><td></td><td>In the Call class include the given attributes and methods with the access specifiers as specified in the class diagram.
The getter methods are used to retrieve the value.
The parseData method takes the string as argument, the string value will be (123:9874561230:2.5). This method should extract the callid, called number and number of minutes from the string and set the callId, calledNumber and noOfMinutes.
In the Main class, create an object for the Call class; Get the details as shown in the sample input and invoke the parseData method. Display the details as shown in the sample output using the getters method.
Note: The attribute/method/class name should be specified correctly as given in the class diagram.
Sample Input:
Enter the call details:
102:6547891230:2.15
Sample output:
Call id:102
Called number:6547891230
Duration:2.15</td></tr>
<tr><td>2</td><td>Employee rating
DreamTek Company provides a rating to its employees based on the “Certification” they have completed. For each certification completed by the employee the rating will be increased by one. Based on the rating the company planned to provide an increment for the employees. For the current year , the employees can take up any of the certification courses. They are:
a. JAVA
b. ORACLE
c. GCUX
d. CCNA
e. AWS
For each certification the rating will be 1. If an employee has completed three certifications, their rating will be 3. The employee is supposed to take up the certification suggested by the company. If the employee takes up some other certification, their rating will not be updated for that certification.
The increment for the employee will be given based on the below criteria:
<table>
<tr><td>Rating</td><td>Increment Percentage</td></tr>
<tr><td>1</td><td>2%</td></tr>
<tr><td>2</td><td>3.5%</td></tr>
</table>
</td></tr>
</table>

3	5%
4	7.5%
5	10%

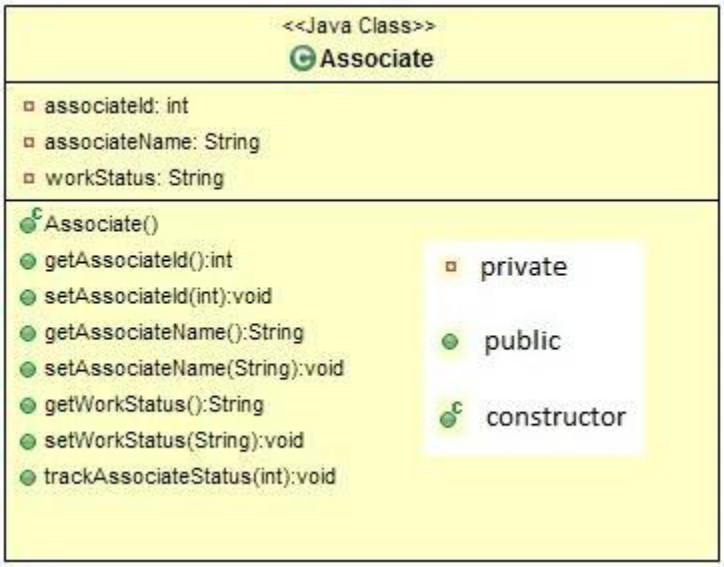
Help the DreamTek Company to develop a java application to do the above task.
Consider the below class:



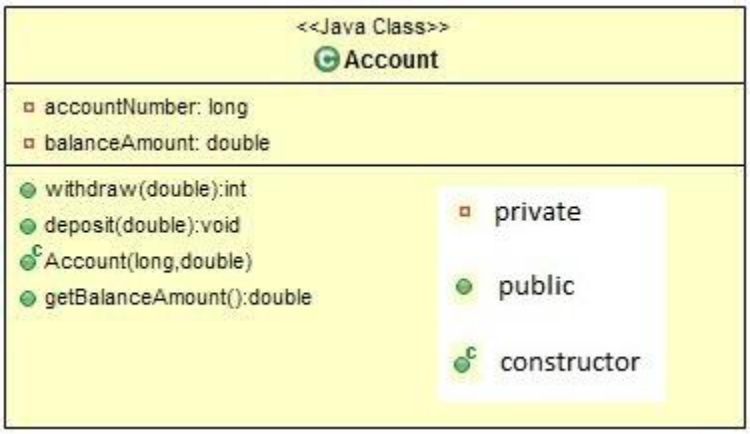
In the Employee class include the given attributes methods and constructor with the access specifiers as specified in the class diagram.
The constructors are used to initialize the value and the getter methods are used to retrieve the value.
The findRating() method should set the rating based on the certification completed by the employee.
The calculateIncrement() method should calculate the increment based on the rating and update the salary with the incremented amount. This method should return the increment amount. (For example: if the salary is 50000, and the incremented amount is 4000, then this method should return 4000, and update the salary as 54000).
In the Main class, Get the details as shown in the sample input and create an object for the Employee class; invoke the appropriate methods to get the results as shown in the sample output.
Sample Input1:
Enter the employee id:
TEK163
Enter the salary:
50000

	Enter the no of certification complete: 3 Enter the certification names: JAVA ORACLE CCNA Sample Output1: Your rating is 3 Increment amount is 2500.00 Current salary 52500.00 Sample Input2: Enter the employee id: TEK163 Enter the salary: 50000 Enter the no of certification complete: 3 Enter the certification names: JAVA J2EE CCNA Sample Output2: Your rating is 2 Increment amount is 1750.00 Current salary 51750.00 Sample Input3: Enter the employee id: TEK163 Enter the salary: 50000 Enter the no of certification complete: 3 Enter the certification names: PHP J2EE MYSQL Sample Output3: Your rating is 0 Increment amount is 0.00 Current salary 50000.00
3	DreamTek Company DreamTek Company provides an initial training for all its employees, once they join the company. During the training phase they call the employees as “Associate”. The initial training is conducted for 60 days for each Associate. In these 60 days they learn various technologies. The first 20 days they learn “Core skills”, the next 20 days they learn “Advanced modules” and the final 20 days they go to the “Project phase”. Help the

DreamTek Company to find in which phase the associates are in.
Consider the below class:



In the Associate class include the given attributes and methods with the access specifiers as specified in the class diagram.
The setter methods are used to set the value and the getter methods are used to retrieve the value.
The trackAssociateStatus method takes the number of days as argument and sets the work status of the associate based on the number of days. If the number of days is greater than 60 days then set the work status as “Deployed in project”.
In the Main class, create an object for the Associate class; Get the details as shown in the sample input and assign the value for its attributes using the setters. Invoke the trackAssociateStatus method and find the work status and display the details as shown in the sample output.
Sample Input1:
Enter the associate id:
123
Enter the associate name:
john
Enter the number of days:
45
Sample Output 1:
The associate john work status:Project phase
Sample Input 2:
Enter the associate id:
124
Enter the associate name:
ram
Enter the number of days:
70
Sample Output 2:
The associate ram work status:Deployed in project

4	ZeeZee bank ZeeZee bank maintains the account details for each customer. The account details are: a. Account number b. Type of account c. Balance amount Consider the below class:  In the Account class include the given attributes methods and constructor with the access specifiers as specified in the class diagram. The constructors are used to set the value and the getter methods are used to retrieve the value. The withdraw method takes the amount to be withdrawn as argument. This method should check the balance and detect the withdrawn amount from the balance amount and return 1. If there is insufficient balance then return -1. The deposit method takes the amount to be deposited as argument and adds the deposited amount to the balance amount. In the Main class, Get the details as shown in the sample input and create an object for the Account class; invoke the deposit method to deposit the amount and withdraw method to withdraw the amount from the account. Sample Input1 & Output1: Enter the account number: 1234567890 Enter the available amount in the account: 15000 Enter the amount to be deposited: 1500 Available balance is:16500.00 Enter the amount to be withdrawn: 500 Available balance is:16000.00 Sample Input2 & Output2: Enter the account number: 1234567890 Enter the available amount in the account: 15000 Enter the amount to be deposited:

	1500 Available balance is:16500.00 Enter the amount to be withdrawn: 18500 Insufficient balance Available balance is:16500.00
5	Book Detail Create a class Book with the following private member variables ● String bookName ● int bookPrice ● String authorName Include appropriate getters and setters method. Create a class TestBook which has the main method. Get the details as shown in the sample input. Create an object for book class and assign the value for its attrbutes using the setters. Print the output as shown in the sample output using the getters method. Note: Use the same attribute names as given in the question and camel case notation for methods. Name of book and author can have space in between. Sample Input 1: Enter the Book name: Java Enter the price: 500 Enter the Author name: Einstein Sample Output 1: Book Details Book Name :Java Book Price :500 Author Name :Einstein
6	Ticket Price Calculation - Static Ticket Calculation Create a class Ticket with the following private variables int ticketid; int price; static int availableTickets; Include getters and setters methods in the Ticket class. AvailableTickets should hold only positive value. Zero and negative values are not allowed.(This logic should be checked inside the corresponding setter method) Write the following method in the Ticket class: public int calculateTicketCost(int nooftickets) —this method should check the ticket availability, If the tickets are available, reduce the nooftickets from availableTickets and calculate the total amount as nooftickets*price and return the total amount. If the tickets are not available, this method should return -1. Write a main method in the Main class to test the application. Sample input and output 1:

	Enter no of bookings: 2 Enter the available tickets: 25 Enter the ticketid: 123 Enter the price: 100 Enter the no of tickets: 5 Available tickets: 25 Total amount:500 Available ticket after booking:20 Enter the ticketid: 124 Enter the price: 100 Enter the no of tickets: 2 Available tickets: 20 Total amount:200 Available ticket after booking:18 Sample input and output 2: Enter no of bookings: 1 Enter the available tickets: 25 Enter the ticketid: 123 Enter the price: 100 Enter the no of tickets: 26 Tickets not sufficient / available
7	Student Details - Constructor Create a class Student with the private attributes int studentId String studentName, studentAddress, collegeName. Include appropriate getter methods. Write 2 constructors for the Student class based on the below assumptions. Assume most of the students are from “NIT” college. So user has to give input whether the student is from NIT or not. 1. If student belongs to NIT, give input as 'yes/YES' and skip input for the attribute collegeName and create student object with 3-argument constructor to initilze the values for studentId, studentName and studentAddress and collegeName as “NIT”. 2. If student belongs to other college, give input as 'no/NO' and get college name from the user and create student object with 4-argument constructor to initialize all the values.

	3. Instead of Yes / No, if user enters different input then display 'Wrong Input' and get the input again. Based on the above assumptions write the necessary constructors in the Student class. Write a class StudentMain with the main method and test the application. Get all the input needed from the main method. Sample Input 1: Enter Student's Id: 12 Enter Student's Name: John Enter Student's address: Chennai Whether the student is from NIT(Yes/No): NO Enter the college name: SVS Sample Output 1: Student id:12 Student name:John Address:Chennai College name:SVS Sample Input 2: Enter Student's Id: 43 Enter Student's Name: Tom Enter Student's address: Coimbatore Whether the student is from NIT(Yes/No): y Wrong Input Whether the student is from NIT(Yes/No): yes Sample Output 2: Student id:43 Student name:Tom Address:Coimbatore College name:NIT
8	BankAccountDetails In the first round of HR interview for a banking sector, HR decides to make candidates design an application which provides only information on transaction like amount withdrawn with respect to fields given. Develop a program to implement this scenario. Create a class Account with the private attributes: ● accountId int ● accountType String

- balance int

The method public boolean withdraw(int) used to calculate the current balance of the respective account. Before that it should enough balance. If there is enough balance, deduct the amount from the balance and print "Balance amount after withdraw: XXX" and return true. If there is no enough balance, print "Sorry!!! No enough balance" and return false.

Create a class AccountDetails with main function and the below methods :

- public Account getAccountDetails() - This methods gets the input related to Account from the user and returns the Account object with all values set. If the input given for balance is less than or equal to zero, consider it as invalid and display "Balance should be positive". Continue this kind of evaluation till user enters a positive value.
- public int getWithdrawAmount() - This methods gets the amount to be withdrawn as input from the user and returns the same. If the input given for amount is less than or equal to zero, consider it as invalid and display "Amount should be positive". Continue this kind of evaluation till user enters a positive value.

Use appropriate getters and setters.

Sample input 1:
Enter account id:
100
Enter account type:
Savings
Enter balance:
10000
Enter amount to be withdrawn:
500
Sample Output 1:
Balance amount after withdraw: 9500
Sample input 2:
Enter account id:
101
Enter account type:
Savings
Enter balance:
1000
Enter amount to be withdrawn:
1500
Sample Output 2:
Sorry!!! No enough balance

Sample input 3:
Enter account id:
100
Enter account type:
Savings
Enter balance:
-100
Balance should be positive
Enter balance:

	5000 Enter amount to be withdrawn: 500 Sample Output 1: Balance amount after withdraw: 4500
9	Average and Grade Calculation Develop a smart application as Student Grade Calculator(SGC). Create a class Student with following private attribute : int id, String name, marks(integer array), float average and char grade. Include appropriate getters and setters methods and a 3 argument constructor with arguments in the order id, name and marks(int array). *public void calculateAvg()*- This method should calculate average and set average mark for the current student. *public void findGrade()*- This method should set the grade based on the average calculated. If the average is between 80 and 100 then, then return grade as 'O', else 'A' .If the student gets less than 50 in any of the subjects then return grade as 'F'. Using appropriate setter method set the grade to the student. (Note : number of subject should be greater than zero, if not display as 'Invalid number of subject' and get number of subject again, Assume mark for a subject should be in the range 0 - 100. If not display a message "Invalid Mark" and get the mark again) Write a class StudentMain and write the main method. In this class, write a method public static Student getStudentDetails() - this method should get the input from the user for a student, create a student object with those details and return that object. *In main create student's object by invoking the getStudentDetails method. Also calculate average and grade for that student object using appropriate methods.* *SGC app* should get the input and display the output as specified in the snapshot: Sample Input 1: Enter the id: 123 Enter the name: Tom Enter the no of subjects: 3 Enter mark for subject 1: 95 Enter mark for subject 2: 80 Enter mark for subject 3: 75 Sample Output 1: Id:123 Name:Tom Average:83.33 Grade:O

	Sample Input 2: Enter the id: 123 Enter the name: Tom Enter the no of subjects: 0 Invalid number of subject Enter the no of subjects: 3 Enter mark for subject 1: 75 Enter mark for subject 2: 49 Enter mark for subject 3: 90 Sample Output 2: Id:123 Name:Tom Average:71.33 Grade:F
10	Student and Department Detail Create a class Department with the following private member variables ● int did ● String dname Include appropriate getters and setters method in Department class. Create a class Student with the following private member variables ● int sid ● String sname ● Department department Include appropriate getters and setters method in Student class. Create a TestMain class which has main method. In addition to main method, create a method public static Student createStudent() - All input as shown in the sameple input should be got in this method. Set the values to the Student object and return that object Note : In main method, invoke the createStudent method and print the details of the object returned by that method. Sample Input 1: Enter the Department id: 100 Enter the Department name: Computerscience Enter the Student id: 123 Enter the Student name: sudha Sample Output 1: Department id:100

	Department name:Computerscience Student id:123 Student name:sudha

Arrays and Strings

1	Array square An array of N integers is passed as input to the program. The program must print another array where value at each index will be the sum of the square of all the values in the input array except the value at that index in the input array. [Input format: First input refers to the no of elements in the array and the next is the series of elements in the array] Sample Input1: 5 1 2 3 4 5 Sample Output1: 54 51 46 39 30
2	**Generate number using odd digits** Jose gets n numbers in an array. Write a Java program to take the single digit odd numbers in the array and make a number by combining those odd numbers alone. Example: If the array is {2,7,14,24,41,3} the output should be a single number 73, if not found print "Single digit odd number is not found in the array".If the array size is zero or lesser then display the message as "Invalid array size" Sample Input 1: Enter the size of an array: 4 Enter the array elements: 45 3 56

	7 Sample Output 1: 37 Sample Input 2: Enter the size of an array: 0 Sample Output 2: Invalid array size
3	Alternate Numbers Difference Write a java program to read an array of integer elements. The program should find the difference between the alternate numbers in the array and find the index position of the smallest element with largest difference. If more than one pair has the same largest difference consider the first occurrence. Note : When taking the difference take the absolute value i.e. neglecting the sign. Example : If it is 3-10=-7, consider it as 7. If the array size is less than 3,Display “Invalid array size”. Sample Input1: 6 4 3 2 10 8 6 Sample Output1: 1 Explanation : Here alternate number difference means 4-2, 3-10, 2-8, 10-6 Neglect the sign So diff is 2,7,6,4 Largest diff is 7 -----> 3-10, here the smallest number is 3 and its index is 1. Hence the output is 1. Sample Input2: 7 7 6 2

	2 3 1 8 Sample Output2: 2 Sample Input3: -1 **Sample Output3:** Invalid array size
4	Next Greatest number Write a program to find the next greatest number that can be formed using the digits in the given input number. If the given number cannot generate the next greatest number then print the input number itself Sample Input1: 23 Sample Output1: 32 Sample Input2: 123 Sample Output2: 132 Sample Input3: 6251 Sample Output3: 6512
5	Mark Comparison Joe and her friend got their marks for the IV semester. They were comparing the common scores which they have got. Write a java program to find the common scores between two arrays and display the position of the matching scores from the first and second array. If array size is not matching then display "Invalid array size". If no elements are matching then display "No matching scores". If any of the elements are negative then display "No Negative Elements". Input and output format: The first input corresponds to the size of the first array The second input set corresponds to the elements of the first array The third input corresponds to the size of the second array The fourth input set corresponds to the elements of the second array

	Sample Input1: 4 96 55 88 77 4 55 96 44 66 Sample Output1: (1,2)(2,1) Sample Input2: 4 43 54 67 23 5 Sample Output2: Invalid array size Sample Input3: 4 96 55 88 77 4 53 67 44 66 Sample Output3: No matching scores Sample Input4: 4 1 2 3 4 4 34 -1 Sample Output4: No Negative Elements

<table>
<tr><td>6</td><td>Print the characters in descending order
Write a program to get the String an input from the user and display the alphabets in the String in descending order (Assume all the characters are given in lower case).
Note : In the String “programming” the characters m or r or g is repeated
Sample Input 1:
love
Sample Output 1:
vole
Sample Input 2:
programming
Sample Output 2:
rponmiga</td></tr>
<tr><td>7</td><td>Vowels in a FishBowl
Steffi plans a game to teach her students about vowels . There are 5 students .Steffi places 25 slip of papers in a fishbowl, where each slip contains a word.Each student has to take 5 slips and count the number of vowels in each slip and write it in a paper consecutively.
The Points are given as below
<table><tr><th>No of Vowels</th><th>Points</th></tr><tr><td>1</td><td>0</td></tr><tr><td>2</td><td>1</td></tr><tr><td>3</td><td>3</td></tr><tr><td>4</td><td>4</td></tr><tr><td>5</td><td>6</td></tr></table></td></tr>
</table>

	More than 5 8 A student who gets the highest point is considered the winner. When no point is scored by anyone then display “No one has got any points”. Sample input 1 mango basket ball auspicious kangaroo precaution misbehavior battery cup screen parasite hello good come education invitation squeeze paper ant multiplication COOPERATION DEMOCRACY CONGRATULATIONS YOU BYE Sample output 1 1 1 0 8 4 6 6 1 0 1 4 1 1 1 6 6 4 1 0 8 8 3 8 1 0 1 14 2 14 3 13 4 19 5 20 The winner is student 5 with points 20
8	Least offer Maya buys “N” no of products from a shop. The shop offers a different percentage of discount for each item. She wants to know the item that has the minimum discount offer, so that she can avoid buying that and save money. [Input Format: The first input refers to the no of items; the second input is the item name, price and discount percentage separated by comma(,)] Sample Input 1: 4 mobile,10000,20 shoe,5000,10 watch,6000,15 laptop,35000,5 Sample Output 1: shoe Explanation: the discount on mobile is 2000, the discount on shoe is 500, the discount on watch is 900 and the discount on laptop is 1750. So the discount on shoe is the minimum. Note: More than one product can have the minimum discount , display those items separated by coma(,)
9	Ascending and descending order Write a program to get the string as input from the user and remove the duplicates. Then,

	sort the first half of the string in the descending order and the second half in the ascending order. If the String length is 7 consider the first 4 as the first half and next 3 as the second half. Assumption: Only lowercase characters are allowed Sample Input 1: programming Sample Output 1: rpogaimn Explanation: 1. programming -> progamin(After removing duplicates) 2. prog/amin ->rpog(Descending pattern) aimn(Ascending pattern) 3. 'rpogaimn' is the output for 'programming' Sample Input 2: cake Sample Output 2: caek
10	Mail Domain ZeeZee Company provides an official id to its employees once they complete the pre-onboarding training. During the training, the zeezee company needs to send a mail to their personal ids. The company wants to send a mail to all the trainees. Help the company to find out the trainee's personal mail id. The employee's official mail id will be employeename@zeezee.com. Find the mail domains apart from zeezee.com [First input is the number of mail ids, the next inputs is the mail id] Sample Input1: 5 suvi@gmail.com vivek@zeezee.com john@yahoo.com prem@zeezee.com johan@gmail.com Sample Output1: suvi@gmail.com john@yahoo.com johan@gmail.com Sample Input2: 5 suvi@gmail.com vivek@gmail.com john@yahoo.com prem@yahoo.com johan@gmail.com Sample Output2: suvi@gmail.com vivek@gmail.com john@yahoo.com prem@yahoo.com

	johan@gmail.com Sample Input2: 5 femina@zeezee.com jaya@zeezee.com sri@zeezee.com banu@zeezee.com vijila@zeezee.com Sample Input2: No personal mail id
11	Count repeating words In a given sentence, find the maximum repeated word and print the same.(Assume that all the characters are in lower case) Sample Input1: java is programming language and an object oriented language Sample Output1: language Sample Input2: suvi felt happy because suvi saw that the others were happy Sample Output2: suvi happy Sample Input2: he went out yesterday Sample Output2: No repetition of words
12	Sentence - Convert to upper and lower Write a program to get a sentence as input. In the first word of the sentence keep the first character as it is and change the remaining to upper case, then in the second word keep the first two characters as it is and change the remaining to upper case. Continue this pattern for the remaining words too. Sample Input1: java is a programming language Sample Output1: jAVA is a progRAMMING languAGE Sample Input1: good programming practice Sample Output1: gOOD prOGRAMMING praCTICE

13	Count consecutive repeating characters Write a program to count the consecutive repeating characters. Sample Input1: aaabbcbbbb Sample Output1: a3b2c1b4 Sample Input2: aaaabbcbbbb Sample Output2: a4b2c1b4 Sample Input3: ascbnt Sample Output2: ascbnt
14	Zig zag Array Write a program to arrange the elements in the array so that it satisfies the below condition. a<b>c<d>e<f……. [Input format: The First input refers to the no of elements in the array and the next is the series of elements in the array] Sample Input 1: 6 1 2 3 4 5 6 Sample Output 1: 1 3 2 5 4 6 Sample Input 2: 7 14 7 1 3 2 6 4 Sample Output 2: 7

	14 1 3 2 6 4
15	Pass and Fail Count Ram has passed in certain subjects and failed in a few. Write a program to count the no of subjects he passed in and the no of subjects he has failed in. Marks scored below 50 is considered as failed. If Ram has passed in all the subjects print "Ram passed in all subjects" and if failed print "Ram failed in all subjects". Assume maximum size of array is 20, Sample Input 1: Enter the no of subjects: 6 60 70 80 90 45 49 Sample Output 1: Ram passed in 4 subjects and failed in 2 subjects Sample Input 2: Enter the no of subjects: 0 Sample Output 2: Invalid input range Sample Input 3: Enter the no of subjects: -2 Sample Output 3: Invalid input range
16	Search a Course IIHT institution is offering a variety of courses to students. Students have a facility to check whether a particular course is available in the institution. Write a program to help the institution accomplish this task. If the number is less than or equal to zero display "Invalid Range". Assume maximum number of courses is 20. Sample Input 1: Enter no of course: 5

	Enter course names: Java Oracle C++ Mysql Dotnet Enter the course to be searched: C++ Sample Output 1: C++ course is available Sample Input 2: Enter no of course: 3 Enter course names: Java Oracle Dotnet Enter the course to be searched: C++ Sample Output 2: C++ course is not available Sample Input 3: Enter no of course: 0 Sample Output 3: Invalid Range
17	Average and Grade Calculation Develop a smart application as Student Grade Calculator(SGC). Create a class Student with following private attribute : int id, String name, marks(integer array), float average and char grade. Include getters and setters methods for all the attributes. *public void calculateAvg()*- This method should calculate average and set average mark for the current student. *public void findGrade()*- This method should set the grade based on the average calculated. All marks should be greater than or equal to 50 to calculate the grade. If one or more marks is below 50 the grade should be set as 'F'. If all marks are 50 and above, set the grade based on below condition, If the average is between 80 and 100 then, then return grade as 'O'. If the average is between 50 and 79 then return the grade as 'A' .If the average of the student is less than 50 then return grade as 'F'. average and grade attribute should be set with the appropriate values. (Note : Assume the number of subject is greater than zero and the mark for a subject is in the range of 0 - 100.) Write a class StudentMain and test the application.

	Sample Input 1: Enter the id: 123 Enter the name: Tom Enter the no of subjects: 3 Enter mark for subject 1: 95 Enter mark for subject 2: 80 Enter mark for subject 3: 75 Sample Output 1: Id:123 Name:Tom Average:83.333333 Grade:O Sample Input 2: Enter the id: 123 Enter the name: Tom Enter the no of subjects: 3 Enter mark for subject 1: 25 Enter mark for subject 2: 30 Enter mark for subject 3: 45 Sample Output 2: Id:123 Name:Tom Average:33.333333 Grade:F
18	String - Find and replace the character (First occurrence) Write a Java program to find a character from a sentence and replace it with another character. If the character is not found in the string print "character not found". Note: Replace only the first occurrence. Sample input 1: Enter the string: java programming Enter the character to be searched: a

	Enter the character to replace: o Sample output 1: jova programming Sample input 2: Enter the string: java programming Enter the character to be searched: e Enter the character to replace: o Sample output 2: character not found
19	Sort the first and second half of an array Anjali likes to play mathematical tricky games .She gets n numbers for an array. Help Anjali to write a Java program to sort the first half of the array in ascending order and the second half of the array in descending order. If the size of the array is 0 or lesser then display the message as "Array size should be greater than 0". Sample Input 1: Enter the size of an array: 5 Enter the elements: 89 23 56 12 99 Sample Output 1: 23 56 89 99 12 Sample Input 2: Enter the size of an array: 0 Sample Output 2: Array size should be greater than 0
20	Retail Shop A Retail shop wants to maintain the product availability in their shop. Create a Class Shop with the private attributes shopName, shopAddress, products(string array). Include Constructor to initialize value for this attributes and appropriate getter and setter method if needed. Write the following method in the class:

	public boolean checkProductAvailability(String productname) - this method should take the product name as argument and check whether that product is available in the shop or not (Product name to be searched is case insensitive). If the product is available, function should return true, else return false. Write the main method to test the application. Note: Always number of products should be greater than zero. Sample Input 1: Enter the shopname: TMD Enter the address: Chennai Enter number of products: 4 Laptop Camera Pendrive Mobile Enter the product to be searched: Camera Sample Output 1: Product is available at TMD, Chennai. Sample Input 2: Enter the shopname: TMD Enter the address: Chennai Enter no of products: 4 Laptop Camera Pendrive Mobile Enter the product to be searched: Telephone Sample Output 2: Product is not available at TMD, Chennai.

21	Palindrome Astrologist believes that having a palindromic name is very auspicious . As we all know, a palindrome is a word that can be read the same way in either direction.There should not be a space or any special character in the word entered. If yes, display "Invalid Input". Write a Java program to determine whether a given word is a palindrome or not. Sample Input 1: Enter the word : Malayalam Sample Output 1:

	Malayalam is a Palindrome Sample Input 2: Enter the word : Apple Sample Output 2: Apple is not a Palindrome Sample Input 3: Enter the word : no on Sample Output 3: Invalid Input Sample Input 4: Enter the word : @nnn Sample Output 4: Invalid Input
22	Numerology Write a program to find the numerological value for a given name. Note: Store the numerological number and the corresponding character in a 2-D array(2*26). Always the given name should be in capital case ,else the name is not valid. Check for the valid name,if the name is invalid print the message "Invalid name".There should not be any space in the name provided. For example: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 1 2 3 4 5 8 3 5 1 1 2 3 4 5 7 8 1 2 3 4 6 6 6 5 1 7 Sample Input 1: Enter your name: SUDHA Sample Output 1: Your numerology no is:19 Sample Input 2: Enter your name: kiran Sample Output 2: Invalid name Sample Input 3: Enter your name: ANI34 Sample Output 3: Invalid name
23	InitCap Write a program to convert the first character of each word in a sentence to uppercase.

	If the first character of each word in the given sentence is already in upper case, then print "First character of each word is already in uppercase". Sample Input 1: Enter the String: Work hard to get what you like Sample Output 1: Work Hard To Get What You Like Sample Input 2: Enter the String: Work Hard To Get What You Like Sample Output 2: First character of each word is already in uppercase
24	Array Compatiblilty Two arrays are said to be compatible if they are of the same size and if the ith element in the first array is greater than or equal to the ith element in the second array for all i elements.If the array size is zero or lesser then display the message "Invalid array size".Write a Java program to find whether 2 arrays are compatible or not.If the arrays are compatible display the message as "Arrays are Compatible" ,if not then display the message as "Arrays are Not Compatible". Sample Input 1: Enter the size for First array: 5 Enter the elements for First array: 5 14 17 19 15 Enter the size for Second array: 5 Enter the elements for Second array: 2 5 9 15 7 Sample Output 1: Arrays are Compatible Sample Input 2: Enter the size for First array: 3 Enter the elements for First array: 1 4 7

	Enter the size for Second array: 5 Enter the elements for Second array: 2 5 9 5 7 Sample Output 2: Arrays are Not Compatible Sample Input 3: Enter the size for First array: -2 Sample Output 3: Invalid array size
25	Sum of the maximum and the minimum element Anjali gets n numbers in an array. Write a Java program to print the sum of the maximum and the minimum element in the array.If the size of an array is 0 or less print "Invalid Array Size". Sample Input 1: Enter the size of an array: 5 Enter the elements: 45 23 48 90 89 Sample Output 1: 113 Sample Input 2: Enter the size of an array: 0 Sample Output 2: Invalid Array Size
26	String Concatenation The authority of XYZ gated residential colony wants its residents' name datum Should be stored in the following format - residents' name <space> his/her father's name. Write a program to concat the father's name to the residents' name. The name should be validated,on validation the name should contain only alphabets and space is allowed. If the name is not valid display the message "Invalid name". If valid string then convert it to uppercase and print it.. [Use concat(String s) of the String class.] Sample Input 1: Inmate's name:Aron

	Inmate's father's name:Terby Sample Output 1: ARON TERBY Sample Input 2: Inmate's name:Mary Anto Inmate's father's name:Jose Sample Output 2: MARY ANTO JOSE Sample Input 3: Inmate's name:Dev12 Inmate's father's name:Terby Sample Output 3: Invalid name
27	Find Average Age One of the least Insurance agencies recruited employees for their collection department. Now the HR needs a report as the average age of all the employees working in that department. Write a code to calculate the average age. Implement a method "calculateAverage(int[] age)" to calculate the average age and return the result to the caller function. Note : 1. Age limit should be minimum of 28 years and maximum of 40 years. 2. Minimum of 2 employees is mandatory to calculate average age, if fails, the output should be "Please enter a valid employee count" 3. If any of the age is invalid, terminate the process and display "Invalid age encountered!" Refer the sample given for read and display the output. Sample Input 1: Enter total no.of employees: 3 Enter the age for 3 employees: 30 31 32 Sample Output 1: The average age is 31.00 Sample Input 2: Enter total no.of employees: 2 Enter the age for 2 employees: 29 36 Sample Output 2: The average age is 32.50

	Sample Input 3: Enter total no.of employees: 1 Sample Output 3: Please enter a valid employee count
28	Login Write a program to check whether the user is an authorized user or not. Create a class Login with the private attributes userName and password,write a method public boolean validate() in the Login class, this method should check whether the given userName is john and the password is 123abc in that case return true else return false. Print "Valid user" or "Invalid user" based on the value returned from validate method. Note: Write a constructor in the Login to set userName and password. Include appropriate getter method Sample Input 1: Enter the username: john Enter the password: 123abc Sample Output 1: Valid user