Practical List – CC11 Java Programming (060010409)

Practical No.:1	**Enrollment No.:**
Practical Problems	**1** Write a program to display following output. Hello friend, I am from "M.Sc. (IT)" **2** Write a program to read the price of item in decimal form (like 75.95) from command line argument and print the output in paisa (like 7595 paisa). **3** Write a program to perform below task: 1. Calculate sum of given two variables, where subject_mark1= 26 and subject_mark2=40. 2. Consider same variable and display average using conditional operator. 3. Display minimum marks of student. **4** Write a program to display character of given ASCII number. E.g. intasciiNumber=65, Output would be A. **5** Write a program in which there are three variables whose data type is byte, int and double; the value of int is 260 and value of double is 323.142. Convert the value of int into byte, double into int and double into byte and display all the values after conversion. **6** Write a program to convert given no. of days into months, years and days; assume that each month is of 30 days. For Example: if input is 69 than Output is 2 months and 9 days. **7** The total distance travelled by a vehicle in t seconds is given by Distance = $ut + (at^2)/2$ Where u is the initial velocity(meters per second), a is the acceleration (meters per second^2). Write a program to evaluate the distance travelled at regular intervals of time, given the values of u and a. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of u and a. **8** In inventory management, the Economic Order Quantity for a single item is given by $$EOQ = \sqrt{\frac{2 * demand\ rate\ * setup\ costs}{holding\ cost\ per\ unit\ time}}$$ and the optimal Time Between Orders $$TBO = \sqrt{\frac{2 * setup\ costs}{demand\ rate * holding\ cost\ per\ unit\ time}}$$ Write a program to compute EOQ and TBO, given demand rate (items per unit time), setup costs (per order), and the holding coast (per item per unit time). **9** Write a program to accept amount as command line argument and display total number of notes of Rs. 500, 100, 50, 20, 10, 5, 2, 1. Find minimum number of notes required for the given domination. Input: Amount: 575 / Output : Total number of notes: 500: 1 100: 0 50: 1

	20: 1 10: 0 5: 1 2: 0 1: 0

10 Write a program to print all possible combinations of three digits. Take care that no combination gets repeated.

Input :	Output :
2 1 3	1 2 3 2 3 1 3 1 2 1 3 2 2 1 3 3 2 1

11 Write a menu driven program to perform following task on 1D array:

1. Total number of even integers
2. Total number of odd integers
3. Sum of all even integers
4. Sum of all odd integers

12 Write a program to find the sum of all integers greater than 100 and less than 200 that are divisible by 7.

13 Admission to a professional course is subject to the following conditions:

Marks in mathematics	>=60
Marks in physics	>=50
Marks in chemistry	>=40
Total in all three subjects	>=200
OR	
Total in mathematics and physics	>=150

Given the marks in the three subject, write a program to process the applications to list the eligible candidates.

14 Given a number, write a program using while loop to reverse the digits of the number. For example, the number 12345 should be written as 54321.

15 Write a program to print the following outputs using for loops:

```
$  $  $  $  $
$  $  $  $
$  $  $
$  $
$
```

```
1
0  1
1  0  1
0  1  0  1
1  0  1  0  1
```

	1 2 2 3 3 3 4 4 4 4 5 5 5 5 5 **16** Arrange the elements of an array of number in increasing order of their value and then decreasing order of their value. **17** Write a program to find the sum of each row of the n*n matrix and sum of each column of the n*n matrix. Note that store the sum of each row in single-dimensional array (sumrow[n]) and sum of each column in single-dimensional array (sumcol[n]).
Objective(s)	Clear basic concept of Java platform, program structure, control statement and array.
Pre-requisites	Object oriented features like class and object.
Duration for Completion	8 Hours
PEO(s) to be achieved	PEO2: To provide quality practical skill of tools and technologies to solve industry problems.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development
CO(s) to be achieved	CO1: Demonstrate the core concept of core Java along with control flow, exception and perform different operation on arrays.
Solution must contain	- Program and output - Sample Calculation where needed.
Nature of submission	Handwritten
References for solving the problem	- Search on Internet - Buyya, R., et. al. Object-oriented Programming with Java: Essentials and Applications, McGraw Hill - Schildt, H., The Complete Reference : Java , Eighth Edition, Tata McGraw Hill
Post Laboratory questions	1. *How can you determine the total number of arguments passed in the command line? Write example of it.* 2. *If user want to display third word from the given command line argument how user will display? Explain it with example.* 3. *How one can perform computation on the values, if a command line argument contains integer values?* 4. *What is input and output Stream? Which stream is used to represent keyboard input?* 5. *If accessing an index that bigger than the size of the array then which exception will be arise? List out other Exception that may be arise while performing operation on arrays.*
Assessment	
Faculty Name **Signature** **Date**	

Practical No.: 2	**Enrollment No.:**
Practical Problems	**1** Design a class to represent a bank account. Include the following members: Data members • Name of the depositor • Account number • Type of account • Balance amount in the account Methods • To assign initial values • To deposit an amount • To withdraw an amount after checking balance • To display the name and balance Design appropriate constructor to provide initial values. **2** A book shop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, publisher, cost, and stock. Whenever a customer wants a book, the sales person inputs the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system displays the book details and requests for the number of copies required. If the required copies are available, the total cost of the requested copies is displayed, otherwise, the message "required copies not in stock" is displayed. Design a system using a class called book with suitable member methods and constructers. **3** Write a method named calculatePayment that calculates the wages for a given number of hours worked and hourly pay rate. The number of hours worked over 60 are to be paid at the rate of one and half times the regular pay rate. Use the above method in the main program to calculate the payment for 5 employees. **4** Write a method called pythaTriplet to find whether the given three numbers A, B and C passed through command line arguments form a Pythagorean triplet or not. **5** Imagine a toll booth and a bridge. Cars passing by the booth are expected to pay an amount of Rs. 50 as toll tax. Mostly they do but sometimes a car goes by without paying. The toll booth keeps track of the number of the cars that has passed without paying, the total number of car passed by, and total amount of money collected. Execute this with a class called TollBooth and print out the result as follows: a. The number of cars passed by without paying b. Total number of cars passed by c. Total cash collected
Objective(s)	Clear basic concept of class and its methods, constructor, method overloading static variable and nested class
Pre-requisites	Object oriented features like class, object, polymorphism
Duration for Completion	10 Hours
PEO(s) to be achieved	PEO2: To provide quality practical skill of tools and technologies to solve industry problems.

PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development
CO(s) to be achieved	CO1: Demonstrate the core concept of core Java along with control flow, exception and perform different operation on arrays. CO2: Construct classes, objects as per the need of problem definition. CO3: Describe and implement the concept of inheritance, overriding functions, packages and interface.
Solution must contain	- Program and output - Sample Calculation where needed.
Nature of submission	Handwritten
References for solving the problem	- Search on Internet - Buyya, R., et. al. Object-oriented Programming with Java: Essentials and Applications, McGraw Hill - Schildt, H., The Complete Reference : Java , Eighth Edition, Tata McGraw Hill
Post Laboratory questions	1. *How one can access member of a class? Explain it with example.* 2. *Specify the difference between a method and a constructor.* 3. *How can a nested constructor be called if there is a call to a parameterized constructor inside a default constructor? Explain it with example.* 4. *Which overloaded method will be invoked if passed with no arguments? Describe way how compiler differentiates overloaded method.* 5. *What is the default value stored when default constructor for a String and int data type is called?*
Assessment	
Faculty Name **Signature** **Date**	

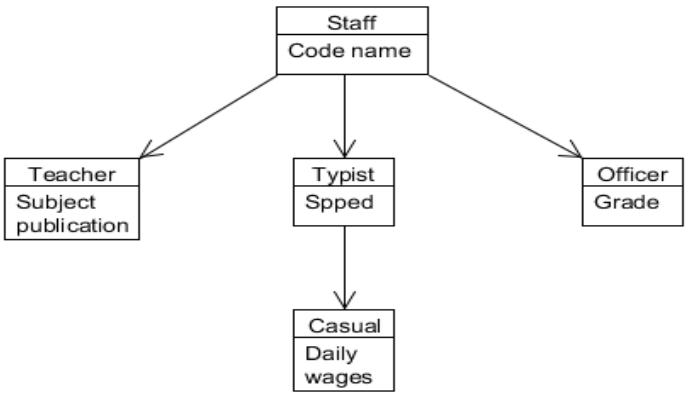
Practical No.:3	Enrollment No.:
Practical Problems	

1 Assume that a bank maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed.

Create a class Account that stores customer name, account number and type of account. From this derive the classes CurrAcct and SavAcct to make them more specific to their requirements.

- Include constructors for all three classes.
- Include the necessary methods in order to achieve the following tasks:
  - Accept deposit from a customer and update the balance
  - Display the balance
  - Compute and deposit interest
  - Permit withdrawal and update the balance
  - Check for the minimum balance, impose penalty, if necessary, and update the balance

2 An educational institution wishes to maintain a database of its employees. The database is divided into a number of classes whose hierarchical relationships are shown in below diagram. The diagram also shows the minimum information required for each class. Specify all the classes and define methods to create the database and retrieve individual information as and when required.



3 Create a class named Employee with the following details:
Data members:

- name
- address
- age
- gender

Method:

- display() to show the employee details.

Create another class FullTimeEmployee that inherits the Employee class:

Data members:
- salary
- designation

Method:
- display() to show the salary and designation along with other details of employee.

Create another class PartTimeEmployee that inherits the Employee class:
Data members:
- workingHours
- ratePerHour

Methods:
- calculatePay() to calculate the amount payable.
- display() to show the amount payable along with other details of employee.

Create objects of these classes and call their methods. Use appropriate constructors.

4 Design an interface named Stack with the following methods:
- Push and pop elements from the stack.
- Check whether the stack is empty or not.

Implement the stack with the help of arrays and if the size of the array becomes too small to hold the elements, create a new one. Test this interface by inheriting it in its subclass StackTet.java.

5 Create a package called finance and place the classes Accounts, SavingsAccount, and CurrentAccount init.

Create an abstract class Accounts with the following details:
Data members:
- balance
- accountNumber
- accountHoldersName
- address

Methods
- withdrawal() - abstract
- deposit() - abstract
- display() to show the balance of the account number.

Create a subclass SavingsAccount of Accounts and add the follwoing details:
Data members:
- rateOfInterest

methods:
- calculateAmount()
- display() to display rate of interest with new balance and all account holder details.

Create another subclass of Accounts class, CurrentAccount with the following:
Data members:
- overdraftLimit

	Method: • Display() to show overdraft limit along with the full account holder details. Create objects of these two classes and call their methods. Create appropriate constructors.
Objective(s)	Clear basic concept of exception handling and file handling
Pre-requisites	Object oriented features like class, object, polymorphism
Duration for Completion	8 Hours
PEO(s) to be achieved	PEO2: To provide quality practical skill of tools and technologies to solve industry problems.
PO(s) to be achieved	PO6: Ability to use the techniques, skills and modern tools as necessary for software development
CO(s) to be achieved	CO1: Demonstrate the core concept of core Java along with control flow, exception and perform different operation on arrays. CO2: Construct classes, objects as per the need of problem definition. CO3: Describe and implement the concept of inheritance, overriding functions, packages and interface. CO4: Implement exceptions to handle run-time errors and file handling.
Solution must contain	- Program and output - Sample Calculation where needed.
Nature of submission	Handwritten
References for solving the problem	- Search on Internet - Buyya, R., et. al. Object-oriented Programming with Java: Essentials and Applications, McGraw Hill - Schildt, H., The Complete Reference : Java , Eighth Edition, Tata McGraw Hill
Post Laboratory questions	1. *Which keyword is used for accessing the base class constructor in derived class constructor? Show one example of it.* 2. *How to call derived class method using parent class reference variable? Explain it with example.* 3. *How does a compiler determines which overridden method to be called?* 4. *Give two differences between hierarchical and multilevel inheritance.* 5. *Which statement must be first statement of the derived class constructor? Can we use this() and super() both in a same constructor? Justify your answer.* 6. *Can we create non abstract and final method in interface? Justify your answer with example.* 7. *Is it compulsory to override all the methods of interface in derived class?* 8. *Find error in following code and correct code.* *class A {* *public A(int x){}* *}* *class B extends A { }* *public class test {* *public static void main (String args []) {*

	A a = new B(); *System.out.println("complete"); } }*
Assessment	
Faculty Name **Signature** **Date**	