A D PATEL INSTITUTE OF TECHNOLOGY

B.E I.T (Sem 5)

2150704- OBJECT ORIENTED PROGRAMMING JAVA

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INDEX

PRACTICAL NO.		AIM	DATE	DATE OF COMPLITION
1		To set PATH environment variable and to build simple program	23/6/2017	30/6/2017
	1.1	Write a program to display a simple message		
	1.2	Write a program to display two messages in separate lines.		
	1.3	Write a program to display a string with an embedded quote		
2		To study various operators, control statements and arrays (onedimensional and multidimensional arrays)	30/06/2017	7/7/2017
	2.1	Write a program to sort all elements of one dimensional integer array using command line arguments		
	2.2	Write a program to find maximum and minimum element of one dimensional integer array.		
	2.3	Write a program to display following using multidimensional array		
	2.4	Write a program for computing xy by doing repetitive multiplication. x and y are of type integer and are to be given as command line arguments		
	2.5	Write a program to display the elements of one dimensional array using for each loop		
	2.6	Write a program to find the number and sum of all integers greater than 100 and less than 200 that are divisible by 7.		
	2.7	Write a program to convert rupees to dollar. 60 rupees=1 dollar		
	2.8	Write a program that calculate percentage marks of the student if marks of 6 subjects are given		
	2.9	Write a program to enter two numbers and perform mathematical operations on them.		
3		To study String and StringBuffer Class and Operations on String	7/7/2017	14/7/2017
	3.1	Write a program to find length of string and print second half of the string		
	3.2	Write a program to accept a line and check how many consonants and vowels are there in line		
	3.3	Write a program to count the number of words that start with capital letters.		
	3.4	Write a program to find that given number or string is palindrome or not		
	3.5	Write a program to sort the array of Strings using command line argument		
	3.6	Given a string, return a new string where the first and last chars have been exchanged.		
4		To study about classes, objects, methods and constructors	14/7/2017	4/8/2017
	4.1	Create a stack class with instance variables tos, and item of type integer and integer array respectively. Also define two methods push and pop that insert elements in the stack and remove the elements from the stack respectively. Write a program to insert 10 items in stack and remove it.		
	4.2	Write a program that creates 50 Student objects and saves these in an array. Assign an ID number to each student starting from 1 as it is created. After all student objects have been created, display their IDs in sequence		
	4.3	Define the Rectangle class that contains Two double fields x and y that specify the center of the rectangle, the data field width and height ; A no-arg constructor that creates the default rectangle with (0,0) for (x,y) and 1 for both width and height; A parameterized constructor creates a rectangle with the specified x, y, height and width; A method getArea() that returns the area of the rectangle; A method getPerimeter() that returns the perimeter of the rectangle. Write a program that creates two rectangle objects. One with default values and other with user specified values. Test all the methods of the class for both the objects		
5		To study the concept of polymorphism using method overloading and constructor overloading	4/8/2017	11/8/2017
	5.1	Create a circle class with 2 constructors. The first form takes a double value that represents the radius of a circle; this constructor assumes that circle is centered at the origin. The second form takes 3 double values, the first 2 arguments define the coordinates of the center & third argument defines the radius. Also declare one member function which calculates an area of a circle. Write a program to demonstrate the same		

	5.2	Create a class named absolute. Define the method named findAbs() to find absolute value for integer, float and double. Pass the appropriate type of argument to the method to overload it. Write a program to invoke this overloaded method.		
6		To study the concept of inheritance and method overriding	11/8/2017	18/8/2017
	6.1	Three classes namely A, B, and C respectively forms a multilevel inheritance hierarchy. Each class declares a method named display() with the same type signature which displays name of the class. Write a program to demonstrate the same by creating the object of each class		
	6.2	Rewrite the above program by only creating the object of last class in inheritance hierarchy to get the same output		
	6.3	Three classes namely A, B, and C declare an instance variable named a, b, and c of type int respectively. These variables are initialized in its respective constructor. Each constructor also displays a message to indicate that it has started execution. The main() method begins by instantiating class C. The instance variables for the object are then displayed. Write a program to demonstrate the same.		
	6.4	Rewrite the above program by using super keyword to explicitly invoke its immediate super class's constructor. Also use this keyword		
	6.5	Write a program that creates an Integer object. Then obtain the associated Class object. Invoke the getSuperclass() method to get the Class object for the super class of Integer. Invoke the getName() method to obtain the name of the class and super class and display them		
	6.6	The abstract class Fruit has four sub classes named Apple, Banana, Orange and Strawberry. Write an application that demonstrates how to establish this class hierarchy. Declare one instance variable of type String that indicates the color of a fruit. Create instances of these objects and display output in the form super class name: sub class name: color with and without overriding toString() method of Object class.		
	6.7	The abstract class Airplane has three subclasses named B747, B757, and B767 and an abstract method getPassengers() that is implemented by each subclass that returns different number of passengers. Declare one instance variable of type String that indicates unique serial number of an airplane. Write an application that declares this class hierarchy. Instantiate 5 types of airplanes and display them in order of type, serial number, and capacity		
7		To study the concept of packages and interfaces	18/8/2017	1/9/2017
	7.1	Write a program that creates one interface LO declares lightOff & lightOn methods. Class SO is extended by CONE & CUBE. Class LC extends CONE & implements LO. Class LCB extends CUBE & implements LO. Instantiate the LC & LCB classes. Use interface reference to refer to those objects. Invoke the method of the LO interface via the interface reference.		
	7.2	Write a program that illustrates interface inheritance. Interface K1 declares method mK() and a variable intK that is initialized to 1. Interface K2 extends K1 & declares mK(). Interface K3 extends K2 & declares mK(). The return type of mK() is void in all interfaces. Class U implements K3. Its version of mK() displays the value of intK. Instantiate U & invoke its method.		
	7.3	The Transport interface declares a deliver() method. The abstract class Animal is the super class of the Tiger, Camel, Deer, and Donkey classes. The Transport interface is implemented by the Camel and Donkey classes. Write a demo program that initializes an array of four Animal objects. If the object implements the Transport interface, the deliver() method is invoked.		
	7.4	Write a program that demonstrates use of packages & import statements. (simple addition program)		
	7.5	The abstract class Tent has concrete subclasses named TentA, TentB, TentC & TentD. The WaterProof interface defines no constants & declares no methods. It is implemented by TentB & TentD. Define all of the classes & implement the interfaces as specified. Create one instance of each class then display all WaterProof tents. Place this code in a package named tents.		
		To study about exception handling mechanism		
	8.1	Write a program that reads two arguments from the prompt & perform the division operation on them. Write the appropriate exception handling code.		
	8.2	Write a program that accepts the fully qualified name of a class as its argument. Compute & display how many super classes exist for that class. (HINT. Use the forName() and getSuperClass() methods of class.) If a ClassNotFoundException occurs, catch it & provide an error for the user.		

8	8.3	A method named average() has one argument that is an array of strings. It converts these to double values and returns their average. The method generates a NullPointerException if an array element is null or a NumberFormatException if an element is incorrectly formatted. Write a program that illustrates how to declare and use this method. Include a throws clause in the method declaration to indicate that these problems can occur	1/9/2017	8/9/2017
	8.4	A method named add() accepts an array of strings as its argument. It converts these to double values and returns their sum. The method generates a NumberFormatException if an element is incorrectly formatted. It can also create and throw a custom exception, RangeException, if an element is less than 0 or greater than 1. Write a program that illustrates how to declare and use this method.		
	8.5	Write a program that generates a Custom Exception if any of its command line arguments are negative.		
9		To study about multi threading concept	8/9/2017	15/9/2017
	9.1	Write a program to create thread which displays "Hello World" message by extending Thread class.		
	9.2	Write a program to create thread which displays "Hello World" message by extending Thread class.		
	9.3	Write a program to perform addition of 1 to 100 numbers using 4 threads		
	9.4	Write a program to increment the value of a variable by one and display it after one second using thread.		
	9.5	Write a program to create one producer thread and one consumer thread. Producer produces 10 items for consumer. (Use single memory buffer to store items produced by producer).		
10		To study about java.io package.	15/9/2017	22/9/2017
	10.1	Create a class which ask the user to enter a sentence, and it should display count of each vowel type in the sentence. The program should continue till user enters a word "quit". Display the total count of each vowel for all sentences.		
	10.2	Create a class called Student. Write a student manager program to manipulate the student information from files by using FileInputStream and FileOutputStream		
	10.3	Refine the student manager program to manipulate the student information from files by using the BufferedReader and BufferedWriter		
	10.4	Refine the student manager program to manipulate the student information from files by using the DataInputStream and DataOutputStream. Assume suitable data		
	10.5	Write a program to read information from one text file and write to another text file. Use separate thread to read information from file and write information to file. Name of the files is taken from the user.		
	10.6	Write a program to count number of files and sub-directoriesin a specified directory. Take name of directory from user.		
	10.7	Write a program to display list of only .class files from given directory by user. (Use FilenameFilter interface to filter list of files)		
11		To study UML diagrams.	22/9/2017	29/9/2017
	11.1	Prepare a class diagram for given group of classes using multiplicity, generalization, association concepts. And add at least 5-7 attributes and 3-5 operations for particular class Page, Shape, Point, Line, Arc, Ellipse, Rectangle, Circle		
	11.2	Prepare a class diagram for given group of classes using multiplicity, generalization, association concepts. And add at least 5-7 attributes and 3-5 operations for particular class. City, Airport, Airline, Pilot, Flight, Plane, Seat, Passenger		
	11.3	Categorize the following relationships into generalization, aggregation or association		
	11.4	Prepare a state diagram for an interactive diagram editor for selecting and dragging objects		
	11.5	Prepare a use case diagram and sequence diagram for a computer email system		
	11.6	Prepare an activity diagram for computing a restaurant bill, there should be charge for each delivered item. The total amount should be subject to tax and service charge of 18% for group of six and more. For smaller groups there should be a blank entry. Any coupons or gift certificates submitted by the customer should be subtracted		
	11.7	Prepare a sequence diagram for issuing a book in the library management system.		
12		Open Ended Problem : BOOK STORE MANAGEMENT	29/9/2017	29/9/2017