Brainware Computer Academy
Object Oriented Programming using Core Java
(Specially Designed for WBCHSE, CBSE, ICSE & ISC)
(Practical Assignment)

Session 1

1) Write a program that displays the text "Welcome To JAVA. Its great."
2) Take two integer variables x and y, where x=10 and y=20. Write a program to display the sum of these two variables.

Session 2

3) Write a program to convert 69 ^{O}F into its equivalent centigrade temperature.
4) Modify the program that prints, "Welcome to JAVA" and break the same into two lines.

Session 3

5) Take a word (say "BRAINWARE") as a command line argument and display it as "Hello BRAINWARE".
6) Define the following variables and evaluate the following expressions:
   if w=100, x=10, y=5,z=2 then w*{(x/y)%z}=?

Session 4

7) Write a program to check a specified number whether it is odd or even.
8) Accept student_name and marks from keyboard and display their performance according to the following conditions:

MARKS	Performance
<50	Fair
>=50 and <75	Good
>=75 and <85	V. Good
>=85	Excellent

Session 5

9) Re-write the above program using if-else-if construct.
10) Accept your date of birth and find out your Zodiac sign (Use switch -case).
11) Using if-else statements determine the season of your current month.

Session 6

12) Write a program to display numbers from 1 to 50 using for, while and do-while loop.
13) Write a program to display total number of vowels in a string.

Session 7

14) Write a program to display the following figures:

a)
```
*
* *
* * *
* * * *
* * * * *
```

b)
```
        A
      B   B
    C   C   C
      D   D
        E
```

15) Write a program to swap two numbers without using any temporary variable.

16) Write a program to calculate the factorial of a number (the number can be taken as command line argument)

Session 8

1) Write a class Shape that has two methods named create_rec() & create_sqr()(with two arguments and one argument) to create objects as rectangle or square respectively. It has a method called area() that returns the area of the corresponding object.
2) Write a class Calculator that has the following members:
   a) Two int: opp1 & opp2
   b) Four methods:
      Add(), Subtract(), Multiply() & Divide()
      The functions will return the result of the corresponding operation into opp1 and opp2 variables

Session 9

3) Re-write the above methods of calculator class each of which take two arguments of either integer or float type and returns their result either as int or as float depending upon their arguments data type.

Session 10

4) Re-write the class Shape that has two constructors (with two arguments and one argument) to create objects as rectangle or square respectively. It has a method called area() that returns the area of the corresponding object.

5) Create a class called Employee that has three member variables: ename, empno, basic and methods calculate_pay(). DA=basic * 50%. Net_Pay=Basic + DA. Keep a constructor in this class that takes arguments name and employee number & basic. Incorporate appropriate methods to view the employee data.

Session 11

1) Now derive a new class called TeachingStaff from the Class Employee and this class should override the function calculate_pay() where DA=basic * 75%. (It may contain a member variable called qualifications).

2) There will be a null constructor in class TeachingStaff. Now use super to invoke the base class's constructor

Session 12

3) Modify the class you created in Session 8 question 1. Overload area() function by passing two arguments and returns a new object that has the area equals to the area of its argument.
4) Create a class Fruit, which is abstract in nature. Try to create a n object of the class and see the compiler's response.

Session 13

5) Create a class Winamp that has a final method called play(). Again create another derived class called WinampNextgen from Winamp and try to override the play() method. See the compiler's o utput.
6) Now specify the play() in Winamp class as private, protected & public one after another and see the output each time.

Session 14

7) Create a package and place the Calculator class of Session 8 question 2 into that package.
   a) Specify the class and all its members as public
   b) Use the instance of that class within another class from a different package.
   c) Write a class that inherits the above Calculator class to override the method divide() so that the devisor cannot be zero.
      i) Place the class in the same packag e.
      ii) Place it in a different package

Session 15

8) Test the above base class with different access specifiers.
9) Put the Employee & TeachingStuff classes of Session 11 in two different packages and re-design the program to provide maximum possible level of data hiding & encapsulation.

Session 16

1) Write a class that has the following members:
   a) An int[] of 10 elements: arr[10]
   b) Void add(int) to add integers into that array sequentially.
   c) int out(void) to take out the integers from that array following LIFO pa ttern

   Write a menu-driven program to implement that class
2) Write a java program that will contain two arrays. In the first array store the following computer peripherals name:
   a) Monitor
   b) CPU
   c) Mouse
   d) Keyboard
   e) Modem
   f) Printer

And store the following ID in the second array

a) 60
b) 30
c) 90
d) 80
e) 40
f) 50

Write a method that will display the products with their corresponding ID

Session 17

3) Take a int[][] of length 4 * 4 and display its contents in a 4*4 matrix format.
4) Accept a word and find out the length of the word and display it using array.
5) Write a program to add two 2D matrix using 2D arrays and store the added matrix in a third 2D array and display the content.

Session 18

1) Write a class Excep1 that will receive a command line argument and divide a certain number by the argument. If the argument is non-numeric type then it will raise appropriate exception
2) The above class should also handle the situation if the divisor is zero by raising appropriate exception

Session 19

3) Write a program that will implement multiple catch using NumberFormatException, ArrayIndexOutOfBounds, ArithmeticException. Put a "finally" block, which raises "I am Finally" message.

Session 20

4) Create a class called ClassThrow that creates and throws an Arithmetic exception when user inputs any negative numbers.
5) Create a user defined Exception class called MyException that will raise an exception if any user gives a salary value less than 1000. The program should implement "throws" keyword

Session 21

1) Write a program that will accept any String from the keyboard and displays whether it is a palindrome(MADAM) or not.
2) Generate a Fibbonacci series where end term will be provided by user from keyboard.

Session 22

3) Write a program, which opens an existing file (input from keyboard) and display its contents.
4) Write a program to copy a source file into another destination file. Source and destination file names will be supplied on runtime from command line.