

1 of 19 on open Set 2 (1) Why Java is known as object oriented programming. Define the features of object-oriented programming in detail.

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Ans: + Java is known as object oriented Programming Language because Java
ic a him programming language that uses object in each of its programs.

In each java program you have to create classes and in the main function of java you have to create objects of the classes.

> You can curite a c++ program cuithout creating a class but you have to create class and objects in java program that why java is called " purely" object oriented programming language.

All the concepts like inhesitance , modularity, polymorphism, and encapsulation in cops are supported by Java ...

Features, of Java

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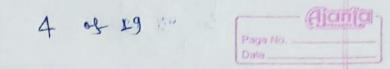
The fundamental idea behind oops is to combine both data and functions into single unit. Such unit is called an object. Class is a template, blueprint 08 contract that defines what an objects data fields and methods will be . A Java class uses variables to define data fields and methods to define actions. An object represents on entity in the real world that can be distinctly identified. General concepts: (1) Objects (2) Classes (3) Data Abstractions 4) Data Encapsulation (5) Inheritance @ Polymosphism 7 Dynamic Birding 8 Message Passing 1.) Objects: Objects are basic run time entitles in an object objected System - They may represent of person, a place, a bank account that a program must handle. They may also be a user

defined functions such as vectors,
date and time program object
Should be chosen such that they
roatch closely the real world
Object example. Elements of
Computer user environment are
windows, menus and graphics objects.
The physical objects are automobile
in graphics stimulation, electronic
component in Circuit designing.
The mouth between programming
objects and a real world
objects is a good resulting.
Objects offering the resolv revolution
in programming.

2 classes:

In cops, objects are the members of closses almost all computer languages have built in data types like integer, float etc. In similar way you can define many objects of same class and the entire code of an object can be made a user define data type with the help of a class. A class is thus a collection of objects of similar type. For eg. Staff and Students are the members of the college.

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A class is thus a collection of objects of similar type. for e-g Staff and Students are the members of the college. It is significantly useful as it is used to combine the data and Operations into a single entity.

## (3) Data Encapsulation:

The corapping up to date and function into a single unit is called ou " Encapsulation". The data is not accessible to the outside coorld and only those functions which are members of class can access the data. These functions provide interface between objecte and programs. This insulation of data from direct access by programm is called at data hiding.

(4) Data Abstraction: Data Abstraction refers to the representation et essential features without including background deteils or explainations. classes use the concept of abstraction and are defined as at list

of abstract attributes such as size, cost, etc. It avoids undesired side effects of the members data when it is defined out of the class and also protects the international a misuse of important data. Classes efficiently manage the complexity of large programs through encapsulation.

## (5) Inheritance:

It is a process by which the object of the one class acquires the properties of objects of another class. If supports the concept of its tree hierarchical classification. For e.g. Sparrow is apart of class flying birds which again is a part of class bird. The principle behind this is that each derived class shares the common characteristics with the class from which it is derived. In pops, the concept of inhesitance provides the idea of reusability if we can add additional features of an existing class without modifying it. This is possible by

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desiving a new class from existing one. The new class will have the combined features of both the classes.

6) Polymosphism :-

Polymosphism means the ability to take more than one from. for e.g. an operation may exhibit different behaviour in different instants. The behavior depends upon the types of data used in the operation for example consider operation addition for two numbers, the operation coill generate sym. If operated are strings the operation could perform a third string by concentenation. To handle function overloading a single function mame can be used to handle different numbers and different types of arguments.

Birding refers to a linking procedure called to the code which is to executed in response to call Dynamic birding means

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that the code associated with a given procedure called is not known until the time et call at the run time. consider a procedure 'draw' shown in a fig by inheritance every object will have this procedure. This 'draw' produce will be redefined in each class that defines the object: At the run time, the code matching the object under current reference will be called.

(8) Message communication:

An Object- oriented programs

Consists of Set of objects that

Common unicate with each other.

The process of programming in

an object oriented language

involves following basic Steps:—

- · Creating classes that defines object and their behavior.
  - · Creating object from class definition.
  - · Establiciting communication among

Objects may communicate with one another by sending and receiving information

through functions. A message for an object is a request for execution of a procedure. Theirefore it involves a function in receiving object that generates dir desired results.

2.) Suppose you have string "hello".

How many ways you can create

this string object? Analyze

cuith code. Also define Autoboxing and Unboxing featur in

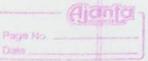
Java.

Am: In Java, a string is a

Sequence of characters for
example suppode we have string
"hello" is containing a sequence
of characters h', 'e', 'I' and
'o'. We use double goutes
to represent in Java.

There is two way to create string in Java! -

1) By using String Literal
2) By using new Keyword



10 of 19 Page No 2) By using new keyword :-Since strings in Java are objects

we can create strings using

the [new] keyword as & // Demo program illustrate it. Class Test Public Static void main (String () args) String name = new String ("hello"); System. out. printly (name); output hello In the above example, we have created a String name using the new keyword. Here, when we create a String object, the (String()) contructor is invoked. To legra more about const Note: - The Istring class provides various constructors to create Strings .

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## -: Autoboxing and Unboxing in Java :-

In Java, primitive data types are
treated differently so do there
comes the introduction of
corresponding and Unboxing. Autoboxing refers
to the conversion of a primitive
Value into an object of the
corresponding wrapper class is
called autoboxing. For example,
converting futo int to Integer
class. The Java compiler applies
autoboxing when a primitive
Value is:—

(1) passed as a parameter to a method
that expects an object of the
corresponding wrapper class.

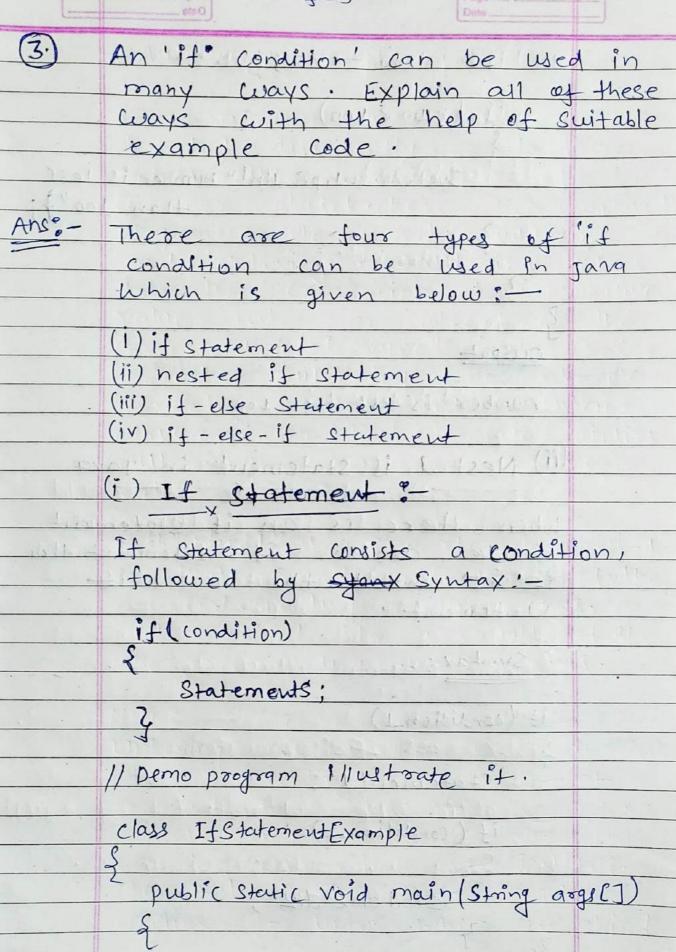
(ii) Assigned to a variable of the
corresponding wrapper class.

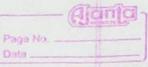
Unboxing on the other hand refers
to converting an object of
a curapper type to its
corresponding primitive value. For
example conversion of Integer
to int. The Java compiler
applies to unbox when an object

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***************************************	of a wrapper	class is 7.1	
28.6	O passed as a parameter to a method that expects a value of the corresponding primitive		
<u>Thomagan</u>	Type into 202100 common in		
Sin Hive	Corresponding (	a variable of the Drimitive type.	
21-	Primitive Type	Wrapper class	
1 2/1 100	boolean	Bootean	
ointo.	byte	Byte	
	char	Character	
boother to	float	Float	
1-1-1-1-21	Alder ALERY PRETA PRINCE	Integer	
. 2.	Long	Long	
J. of a contr	Short	Short	
1 -10	double	Double	
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La Labora T	(iii) If else Statement:
	the boundary and the partition of the
	Syntax:
	Language and the state of the s
+	if (condition)
	S
	The design water and the series
	Statements;
	- 4 DIG EN HELL STORY FIRST STREET
	else
	e
()	1 7 mil Bright Held Diddle Diddle Did
	Statements;
	3 TOTAL SOLD SOLD SOLD SOLD SOLD SOLD SOLD SOL
	A Company of the Comp
	The Statements inside "it" would
	execute if the condition is
I dest	true, and the statements inside
11 11	"else" would execute if the
	condition is false.
	The transfer of the state of th
	11 Demo program illustrate it.
1 C AL 10 18	ROBLIC STA
	public class If Else Example
	\$
	public static roid main (String args[1)
	f jut hum = 120;
	if (nym (so)
	S

19 of 19 public stass It Else If Example public Static void main (Strong args []) jut num = 1234; it (num < 100 } num > 210) System. Out. Pointin (" Its a two digit number"); else if ( num < 1000 & num >= 100) System. out. posith ("Its a tree digit number"); else if ( num (10000 22 num >= 1000) System. out. pointln (" Its a four digit number 11). elce if (num < 100000 82 num >= 10000) system. out. ponutln (" Its a five digit number"); else System. but println ("number is not hetwen 1 2 99999 between 1 2 99999"); its four digit number