ools in C++

The main aim of oop is to bind together the data and the functions that operate on them so that no other part of the code can access this data except this function.

Class: It is a user defined data types, which holds
its own data members and member functions, which
can be accessed and used by creating an instance
of that class.

Object: When a class is defined no memory is allocated but when 9t is "instantiated (i.e., object is created) memory is allocated.

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Encopsulation: In oop, Encopsulation is defined as binding together the data and the functions that manipulates the

Abstraction: Abstraction means displaying only essential information and hiding the details.

- · Abstraction using classes
- · Abstraction using Header files (mathin -> pow())

Polymorphism: In simple words, we can define polymorphism as the ability of a message to be displayed in more than one form.

- · Operator overloading
 - · Function overloading

() int sum (10, 20, 30)

int sum (10, 20)

1

Inheritance: The capability of a class to derive properties and characteristics from another clas is called Inheritance. Friend Class . A friend class

- · Subclass
- · Superclass
 - · Reusability

Dynamic Binding: In dynamic banding, the code to be executed in response to function call 18 decided at run time.

Constructors: A constructor is a member function o a class which initializes objects of a class. In Ct constauctor is automatically called when the object creates.

It has some name as class ?tself.

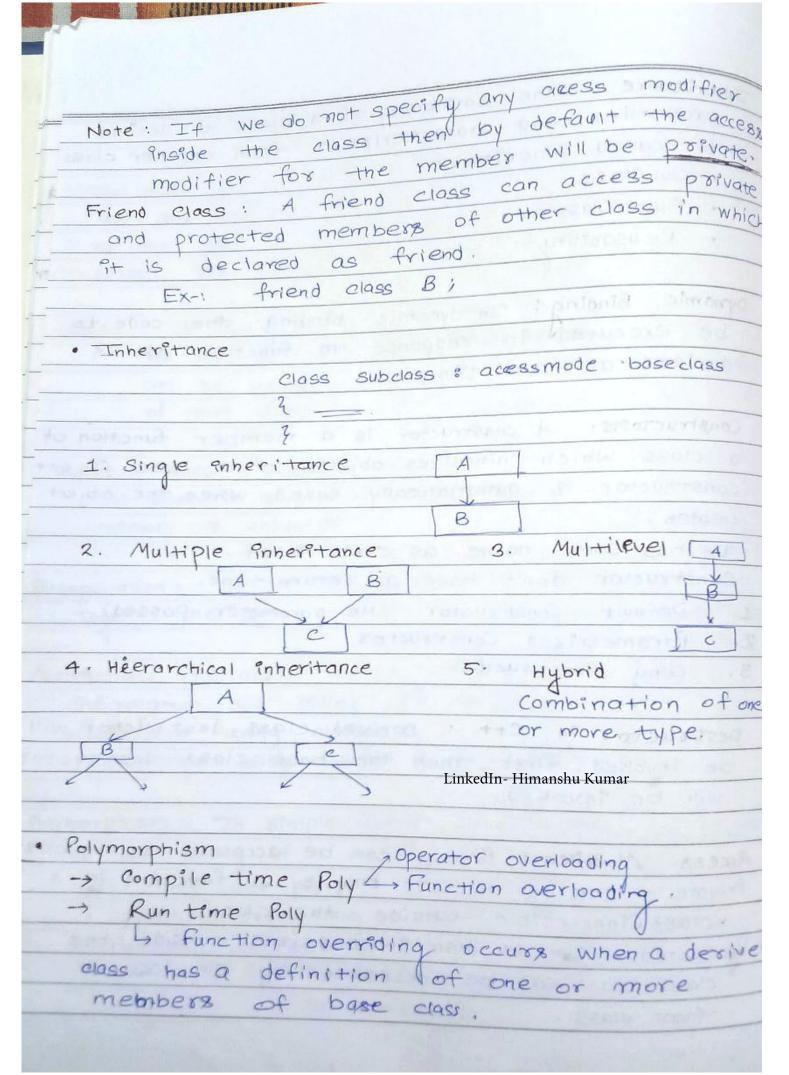
Constructor don't have a return type,

- 1. Default Constructor (No parameter passed)
- 2. Parametrized Constructor
- 3. Copy Constructor LinkedIn-Himanshu Kumar

Destructor in C++ : Derived class destructor will be invoked first, then the base class destructor Will be gruoked.

Access Modifier: Public - can be accessed by any class Private: - can be accessed bonly by a function in a class (Praccesible butside the class).

Protected: IF is also gnaccessible outside the class but can be accessed by subclass of that class.



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Advantages of Data Abstraction . Avoid 0 code duplication and anc. reusability. can change internal implementation of class Latine Function a andependently. Structure Vs class: Most imposition difference is security. In bushing is all that manager all the A structure 98 not secure and cannot hide 948 member function and variable while class 18 secure and can hide 9+8 programming & designing details. to in the equation type, a function to these Local Classes in C++: A class declared inside a function becomes local to that function and is called local floss. All the methods of local class must be defined Enside the class only. LinkedIn-Himanshu Kumar Virtual function and Runtime Polymorphism: A virtual function is a member function which is declared within a base class and redefined (overriden) by derived class. Functions are declared with Virtual Keyword in print (float 1) Class. base Exception Handling an C++: represent a block of code that can throw toy: an exception. catch: represent a block of code that get executed when error is thrown I to the throw! Used to throw on exception.

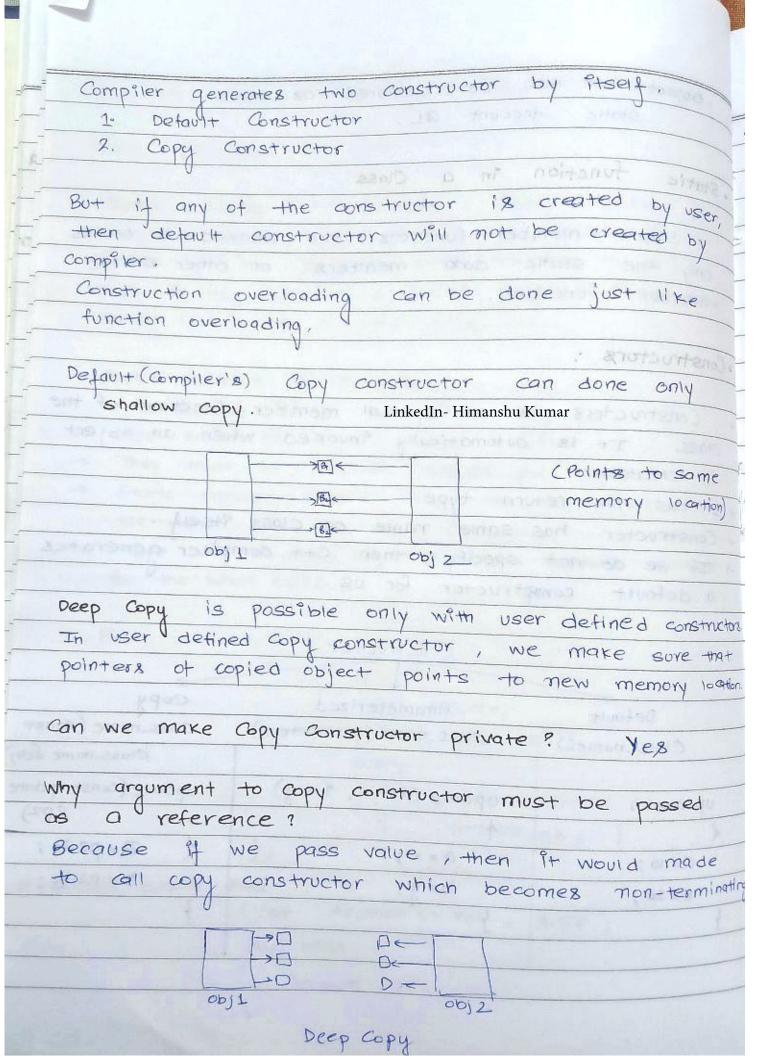
hook -> Catch(.)
Inere 18 a special cath block -> catch() H catches all types of error.
- St catches all types of error
To the second se
· Inline Function
- Tomman d
- inline is a request not command.
It is function that is expanded in line when it
colled. When the inline function is called, Whole
- code get anserted or substatuted at the point of a
function call,
The section of the se
in isne return-type fun()
at Classes in C++ 1 A cons decimal, inflocia
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Function Overloading 98 a feature 9n C++ When
two or more functions can have same name b
different parameters. LinkedIn-Himanshu Kumar
tuel function and Runtime Palymorphism:
void print (int L)
Cout << "Here 18 9n+ " << 9 << end);
and the converse of the state o
void print (float i)
a seenal;
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https://www.linkedin.com/in/himanshukumarmahuri/
3 0,201(10).
print (10.12);
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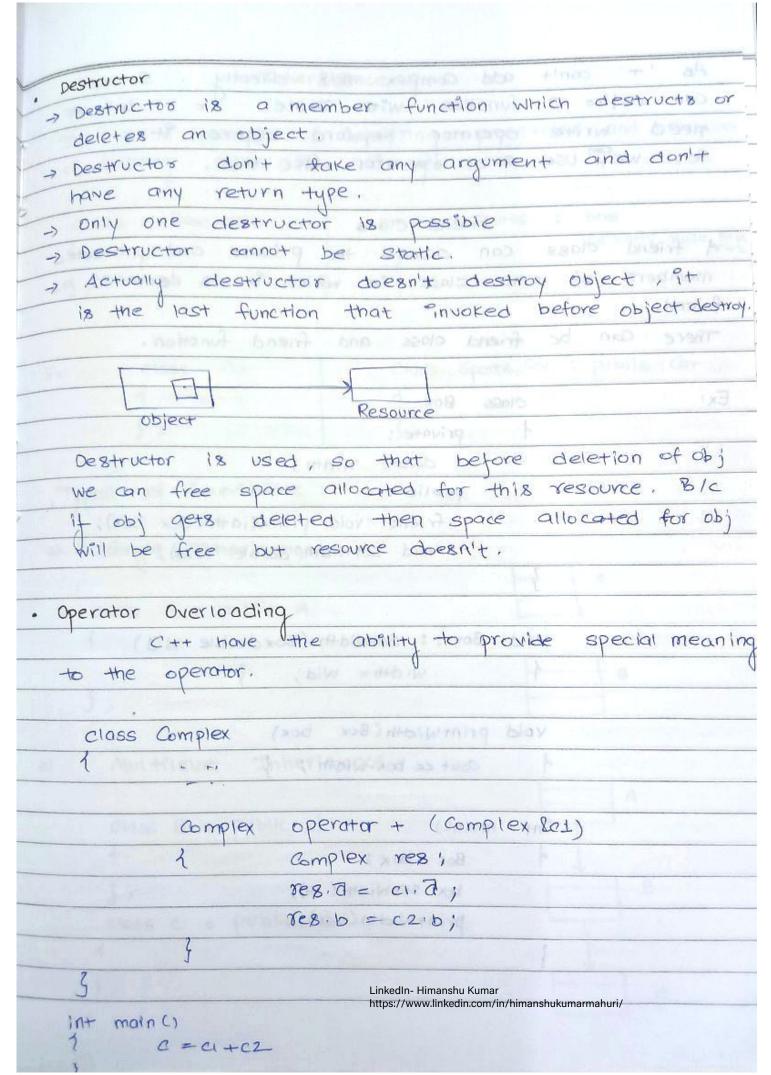
Differences blw c and c	THE HODEL RIVER SYNTONIE .
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c supports procedural prog.	· C++ is known as hybrid
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ON SHIP OREIX COURTS HE ALL ALL THE	both procedural and
(defaut formalized tours), and	priented plag
- coast the	o C++ has Auppor
oops concept so 9+ has no	phism, encapsulation and
support for polymorphism,	inheritance as it is all
encapsulation and inheritance	o ooks manquageny siture.
Cis a subset of C++	· C++ 18 superset of C
C contains 32 keywords	6 C++ Contain 52
E Contains Spire shietuo	Daul Chopues bauren
at and catalida proportion provide	ton, catch, throw)
c is a function driven language	e e C++ 1B CIT OF
C 18 a forcion situation	id ridoade.
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is not support in c.	
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	a collection of dissimilar elements
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· Static Member	s in CTT
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· Static variable	in a function: When a variable
declared as stat	ic, space for it gets allocated for -
lifetime of the	e program. (defaut entralized 10 0)
Even if the	function is called multiple times,
space for 9t	is allocated once.
Other Str. Physical Co.	washington to the design of the man
· Static variable	in a class:
	inside the class body.
	as class member variable.
	be defined outside the class.
→ Static variab	le doesn't belong to any object, bu
the Whole c	loss
-> There will b	e only a copy of Static member variab
for the Whole	class. moral revolution for the
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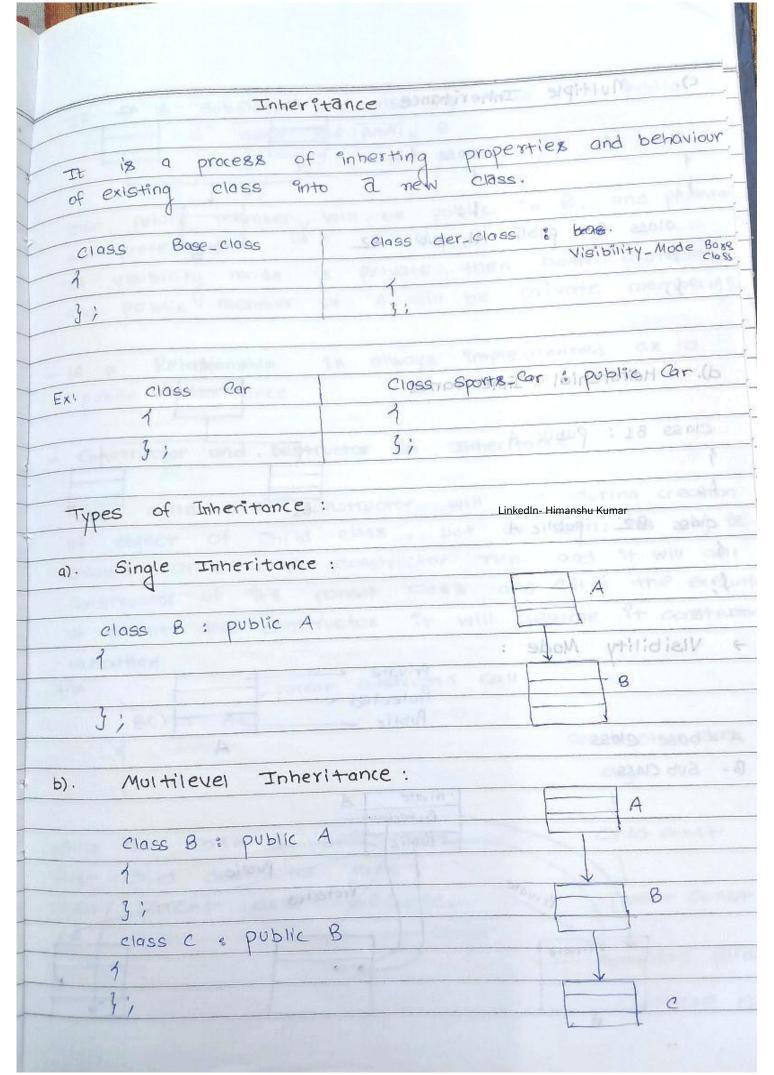
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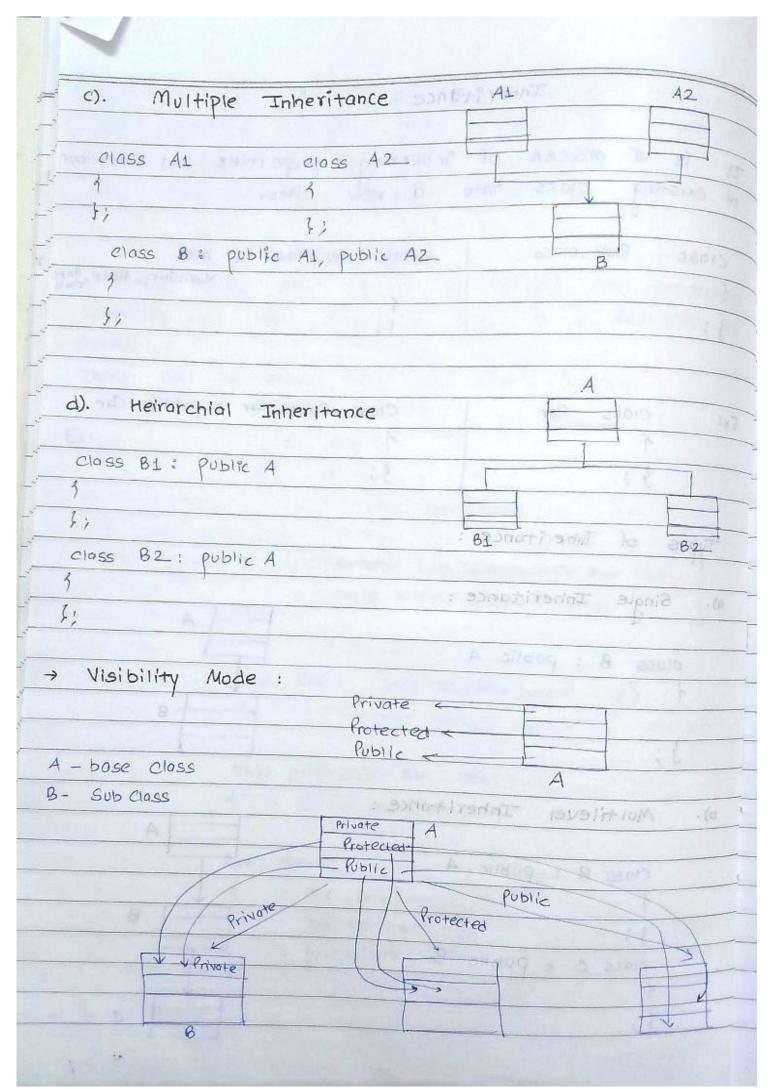
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· Object can also be	declared as st	atic: 9 1911 amab
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member functions.	mints to the relation that	Construction o
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-> It has no return typ		
-) Constructor has same	name as class	9tself.
-> If we do not specify	, then C++ con	mpiler generates
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con c	define a function with hours of
need	write operator keyword before it.
So, 1	we'd use a all operator fire this.
	199/st myster pine son
	Friend class
A friend	d class can occess the private and protect
	8 of other class in which it is declared
friend.	is brother wastern?" front moltano? test in all
There	can be friend class and friend function,
Ex:	
	1 private;
Equip to	of the state of the width; and all months of
LinkedIn- Himar	Drogesk with public trability successfully
	friend void printwidth (Box box);
	void setwidth (double Wid);
	}
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crat mean	void Box: : SetWidth (Boxdouble Wid)
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first child destructor exec. , parent const then parent desc, executed, parent const complete pare	Child const
then parent desc, executed, complete pare	while an case of desconcion
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	1 desc. executed
complete d	complete c

this pointer Every object in c++ has access to its own address through an amportant pointer acred this pointer, Friend function doesn't have a 'this' pointer, blc friends are not members of a class. Only member function have this pointer. Class Box i private: public s.
Every object in c++ has access to the pointer, through an important pointer acted this pointer, Friend function doesn't have a 'this' pointer, b/c friends are not members of a class. Only member function have this pointer. Class Box i private: int l,b,h;
through an emportant pointer aalled this pointer, blc Friend function doesn't have a 'this' pointer, blc friends are not members of a class. Only member function have this pointer. Class Box ? private: ent 2, b, h;
Friend function doesn't have a 'this' pointer, b/c friends are not members of a class. Only member function have this pointer. Class Box i private: Int 2, b, h;
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friends are not members of a class. Only member function have this pointer. Class Box 2 private: 9n+ 2,b,h;
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Pint main ()
1 — Box b; x = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 =
b. set (5, 10, 4); OA: 00
A STATE OF THE PROPERTY OF THE
The Later Confide
Method Over Riding
(achieved at run time)
that could destructor each
It is the de redefinition of bose class function in its
derived class, with same return type and same
parameters.
In Statement .

	while method Overloading is achieved at compile time.
1	
1	A Virtue function is a member thorten. A
1	Class Corcionismon a man barolina
	private: (mabbarasa) bara/aabar una
1	int gearno;
_	publica: publica:
_	void change-gear (Int gear)
-	1 1000000000000000000000000000000000000
-	geor++;
-	maining nom profes and a swalling or boatterp treating
-	" Virtual Function commet be Static and also quinter be trie
-	The same of venewer closes while make an assessment of a contract with
1	Closs Sports Car : Public Car
-	Compile -+ ime (Early binding) - Vs Runs+time (Last) Stricking
+	void change-gear (Int gear)
-	1 (1 (gear > 5) sand sands
-	gear ++; 11 du
+	(Leaning Blow Bust Politics to the
-	THE RESIDENCE OF THE PROPERTY
	LinkedIn- Himanshu Kumar https://www.linkedin.com/in/himanshukumarmahuri/
	Pint main (3 words 319)
-	3 Sports Car 8C;
+	8c. Change-gear (4);
-	2
_	I ke kirch a class of the second control of the con
1	function of sports (ar Class Will be called. function of sports (ar Class Will be called. first it check if any fon
-	function of sports (ar class will be eat only for while calling change-gear (), first it check if any for
-	while calling change-gear(), with this name exist in be set colling closs, otherwite
-	it goes to base Class. for all except one car
1	It goes to have change-gear for all except one can
-	it goes to base Closs. Useful: Like we have change-gear for all except one car swhich have unique method of georchange.

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Virtual	Function
4111001	

A virtual function is a member function Which is declared with a 'virtual keyword' in the base class and redeclared (overridden) in a degived class. When you refer to a object of derived class using pointer to a base class, you can call a virtual function of that object and execute the derived class's version of the function.

- · They are used to achieve Run time Polymorphism.
- Virtual Function cannot be Static and also cannot be from function of another class.

Coss Sports Car : Compile-time (Early binding) Vs Run-time (Late Binding) שוני בות בות בחור מים ב

Class base LinkedIn- Himanshu Kumar

the compile from

public :

Virtual void print ()

couted " This is bose print" << end);

void Show ()

1 Cout ce " Bose show fun" ec endi; Sc. Change - gear (m);

class derived

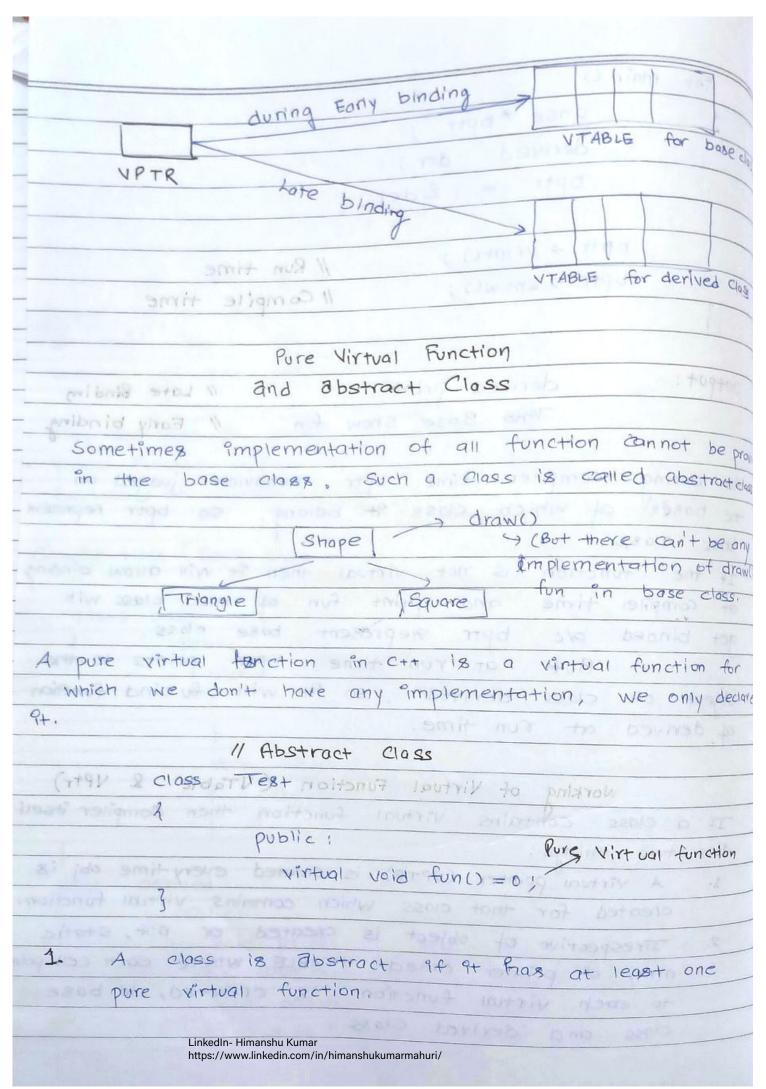
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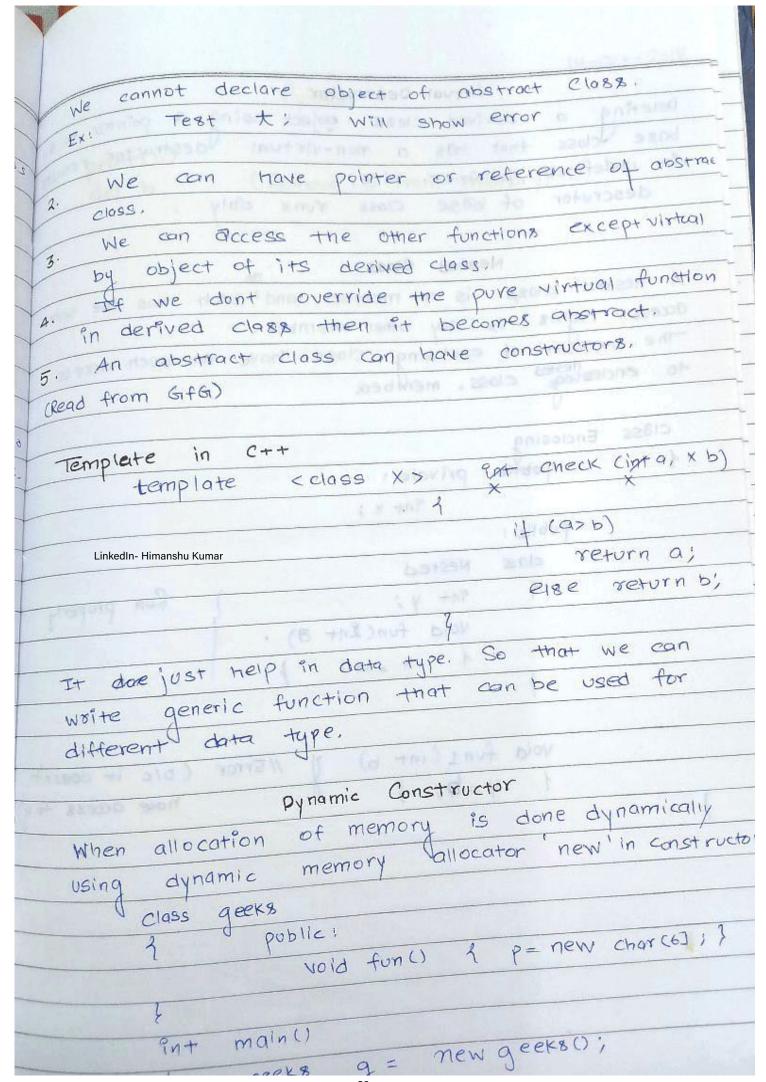
void print() ? cout << " derived Print" ecenal! }

Void Show()

3 cout << " derived Show fun" << and :)

```
ent main ()
        base * bptr ;
                                       STAN
         derived der;
         bptr = lder;
        bptr -> print(); // Run time
       bptr -> show(); // Compile time
             an Pure Virtual Principles
 output: derived printo tells both 11 Late Binding
            This Base show fun // Early binding
   sometimes implementation of an function connet i
As during compiler time bptr behaviour judged on
the base's of which class at belong, so both represent
If the function is not virtual then it will allow binding
base class.
at compiler time and print fun of base class will
get binded b/c bptr grepresent base class.
But at run time bptr points to the
object of class derived, so 9+ will Aubind function
of derived at run time.
                     // Abstract Class
        Working of Virtual Function (VTable & VPtr)
If a class contains virtual function then compiler itself
 1. A virtual pointer (VPTR) is created every-time obj is
does two things !
 created for that class which contains virtual function.
   Irrespective of object is created or not, static
 array of pointer called VTABLE where each cell point
    to each virtual function 18 created, in bose
    closs and derived class.
```





Virtual Destructor Virtual Destructor philost using a pointer to
the state of mon-visited in the state of the
a la
- descriptor of base class roms
- Individual source of the state of the stat
Nested Class OB
- A mested class is a member and such has the some
- access rights as any other member.
- The member of enclosing class have no such access
- to enclosing class, members (0) more than
- class Enclosing ++5 of 3+18/qm3
- 1011 (m) was position private; early stolemost
int x;
- Public !
- 10 my 97 class Nested
- 20 mross 3011 ant y; Kon properly
roid fun(Int a).
- new >W +off of 1 . 29 x = a; m }900) 720/ 300 FT
- waite deneric function that can be used for a
STATE
Void fun1 (in+ b) 11 // Error (b/c i+ deesn+
1 y=b; and have access to y
When allegation of memory is dent dynomically
Methor terms of went setting warmen were rudger
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A Sildon Day
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