MO. Atif Rahman Rudno JT-22002

Abstraction code

importjava.io. Printstream // reeded when to create on use a Printstream object explicitly.

11 Intenface: Defines engine behaviour that all vehicles must implement for start Engine and end Engine method.

intenface Engine {

Printstream o= System.out; void stant Engine; void En end Engine();

3

llabstract class: Server as a base class for all vehicles.

abstract class Vehicle { String band; intyean, 11 Constructor: To set valuer of brand and year since some variable is used for instantiation this keyword is used as a neference, public Vehicle (String bandsint year) That sort broad and Heart this brand=brand gounts) not silded this years years you bound) no go 3 11/Abstract methodi: Must be implemented by all subclasses. Abstract methods don it print anything abstract void drive (); 11 Concrete method: Shared behaviour for all vehicles. . Datupol solly way public void display Info () { Engine.o.printin ("Brand: "+ brand +", Yean: "+ yeam)

3 abother well vehicle 11 subclass: Class Can is inhanited from Vehicle that implements Engine. class Can extends Vehicle implements Engine keywood is used as a netenence. 11 Constructor: Calls superclass constructor that sets brand and year; public Can (straing brand inty dan) { super (brand-year) it = most and 11 Overnide: instructs the compiler that you intend to overnide the method in superclass. abstract void daire() @ ovennide 11 stant Engine: implements stant Engine method from Engine intenface. · chickes. Public void stant Engine () & box silling Engine copie ofter ("Bright ; " & briend + " ((moze

orpnintle ("Can Engine is stanting"); class B. He extends Vehicle implements legal @ ovennide 11 and Engine implements end Engine from Engine that sets brond and year. intenface. public void end Engine () (42) 318 31d-9 o.p. lotto ("Can Engine is sinding...) 3 @ Ovennide @ovennide 11 Drive: Implements abstracted live method from vehicle class. train angent mont bodbom public void drive O(Baltrots biovaldag o.pninHn ("Can is being dairing ..."); @ Ovennide 1/subclass: Bike is inherited from wehicle that Implements the Intenface Engine

Public void end Engine () &

class Bike (String brand int year) class Bike extends vehicle implements Engine 11 Constructor: Calls superclass constructor that sets brand and year. public Bike (Strang brand intyean) 69 (super (Brand year) 20) ") altaing o @ Ovennide bodt Mistant Engine: implements stant Engine method from Engine interface Public vold stant Engine () { inh blows ilduq Opnintla ("Bike Engine is stanting."). @ Ovennide and alollend Fraire implements and Engine method from Engine intenface it domotomi public void end Engine () {

o. println ("Bike Engine is ending. troop Engline intentoco Qovernide 3 () might biov sldug 11 Drive: Implements abstract drive method from Vehicke class. public void dalve () { o.pnintin ("Bike is being driving ...") Head Englist: implements and Englist method from Engine intentace. 3 111/ Subclass: Boat is inhanited from Vehicle that implement the Inter Face Engine. class Boat extends Vehicle Implements Engine { 11 Constructor: Calls superclass constructor that sets brand and year public Boat (String brand, in Lyear) { super (brand year) @ Ovennide

```
11 stant Engine: implements stant Engine method
       From Engine Intenface
  public void stant Engine () {
                         11 Drive: Implements ab
         Opnintin ("Boat Engine is stanting ...");
                           3 () avinb biox sildug
    @ Overnide
     Mend Engine: implemente end Engine method
      from Engine intenface,
IIII subclass: Bood () & and Engine () & sooladas IIII
         O. printin ("Boat Engine is ending : 1)
   class Boat extends vehicle implements Enfine
    Ocennide salangus ellas inotauntanos II
     11 Dalve: Implements abstract drive method from
      Shoot de goung Burnes ) toog signed
       Public void drive Of broad manus
            opnintln ("Boat is being dais
         3
                               @ Ovenmide
```

public class Abstraction Coldo all Dolon public static void main (string to angis) { Engine. O. printin ("I am MD. Att Rahman Rudrobod on ala My Id 18 17: 22002 "Jolga bodd Engine. o. printin(); ((Engine) bite). stant Engine: // cost to E 11 Create a can object using a vehicle reference (poly morphism) Vehicle can = new Can ("X-Conolla", 2002); can. display Info(); // calls concrete method from ((Engine) can) stant Engine ()://cast to Engine to access stant Engine Engine. Opnintlo () (1) ust a line break can-dalve()://calls overalder daive method Il Cocade a Boad objects and a vehicle relations (polymomyleg) ((Engine) can) rend Engine ():// Cast to

((Engine) can) rend Engine (); // Cact to

Engine to access stop Engine;

Engine . o. println (); // Tust a new line.

11 (neate a Bike object using a vehicle reference)
3 ((polymorphism))

Vehicle bike = new Bike (4 tel Hero-Honda "2001);
bike, display Info (): // calls concrete method from
Vehicle.

((Engine) bike). stant Engine! // cast to Engine to

bike. dalve (); // calls overalden dalve methodin ((5000), ollono)-x.,) ubbreau= 1000 apiden

((Engine) blke). end Engine (): // cast to Engine.

enibuzzasassaparteudine

Engine. O. printin (); // Justaline break

can dalve Oillealle ovennide

11 Cheate a Boat object using a vehicle reference (polymonphism)

Vehicle boatsnew Boat ("Osprey", 2022);

boat-display In fo(); // calls concrete method

Double on the little concrete method

((Engine) boat), stant Engine () il/cast to Engine

boot-drive (); Healts overfilden drive method in

((Engine) boat). end Engine () // Cast to Engine to access end Engine

3

Ontont:

I am MD. Atif Rahman Rudno. My IDIs IT-22002

Brand: X-Conolla, Year: 2002

Can Engine is stanting ...

Can to being driving ...

Can Engine is ending ...

Brand! Heno-Honda, Year: 2001

Bike Engline is stanting ...

Bike Is being (dairing a trade (tood (angul))

Boat Engine is stanting ...

Boat Engine is ending...

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I am MD. Atif Pahman Rudno. My ID 11 IT-2

Brand: x-Conolla, Year: 2002

Cun Engine is standing ...

Contiboing dairing...