Working with Classes and Objects

Creating a class

Description	Example		
	public class Gar {		
Create a Car class, which serves as a bitosprint for creating Car objects.			
	String order; String model; String model;		
Define articles of the Car class. The variables celes, and year store the car's valler, models, and year, respectively.			
	void displayInfe() {		
Bedsale the method display[afte]) to print or objects.			
	System.out.println["Car Madel: " = model]; System.out.println["Car Madel: " = coder]; System.out.println["System.out.println["Car Mars " = year]; System.out.println["System.out.println["Car Mars " = year];		
Print the cort details to the console using the System.out.gr(statlet) function.			
	3.3		
Close cody braces to end the Car class definition.			
	I .		

Creating an object					
Description	Example				
	public class Main {				
A Java class named Naio with a saxin method. The naio method is the entry point of the program.					
	public static void main(String() args) {				
The main mushed is declined using public static void main(String[] args). This method is majored for execution in Java programs.					
	Car myCar = new Car();				
Come and object of the Car class.					
	myCar.color = "Red"; myCar.model = "Topota"; myCar.year = 7220;				
Assign values to the objects are before.					
	myCar.displayEnfo();				
Call the designary Intell) method to print the object details.					
	,)·				
Close conly bronce to end the naits reached and close definition.					
Explanation: This campile declares a reference variable named typic of type Car. no. Car'() causes new object of the Car. class and assigns values to the object's arributer certar, restet and year. The step layerful () method priors the car details.					

Working with access and non-access modifiers Public access modifier

rubur access mouner				
Description	Example			
	public class Car {			
A less distanced used to define a closs named Car. which sees in a histogravity for creating Car objects. The verteble model is declared as paletter, resusing it con be accussed directly from outside the closs.				
	public String model;			
A live estement to delete a \$157/sq variable named match to mare the cut-of-condensate.				
	>			
Come confly frames to and fan classes distribute.				

Doorlytin	Example
	public class Car (
A love attenuate used to define a class reason Care, which acts in a blamption for creating Care objects. The vorbable model is declared so public, meaning that it can be accounted descript from consider the class.	
A lives statement to declare a private String variable samed exter to store the car's color. The private modifier ensures the exter variable can be accoused and modified only within the Car class.	private String color;

ire	tox

Description	Example		
		private void display(star() {	
Cell the displayed tors) madered with the primese access resolution. This reseases the marked can be called only within the Car class and not force where channels.			
	Syste	System.coc.grintle("Car Color: " + color);	
Nate docume color was the consults using that type color of the color			
	3 3		
One coulty braces to used the class deletions.			
Proteted access modifier Description		Example	
A have interested used the define a class assent Gar, which the in a histoprise for crossing Gar objects. The variable model is declared as partite, reseating that it can be accounted deathy from notation the class.		public class Car {	
A low nationance to declare a pursuanted sets windthe named paser to store the ear's year. The posteroid modifier amount the paser varietie is accomplish within the cases package (admit) package accords and by selectioners, even if they are in different packages.		private String year;	
		private void displayment) (
Colf the distipative() method with the presented access modifier. This messes the method can be colled within the same package and by subclasson, even if they are in different package.			
		System.out.printle("Car Year: " + year);	
Prior the cur's year to the console using the System.net.artest(s) function.			
		3	
Close carely braces to each the close definition.			
Default access modifier			
Secupio	Example		
A low neterment used to defear a class assessed Cor. which was a bitoprine for creating Ear objects.	class Car	class Car {	
	Strice	no model t	
A less entenents to declare a String variable named smith without any accoss modelles if no accoss modelles is considered described in considered defined. Definite variables are accounted only within their own purkage.		String model;	
	veid	void displayModel() {	
Cell the straptophole(1) method without any source modeline.			
	1	System.cod.println("Car Model: " + model);	
Point the card's model to the consorbe using the Egyptem, note, print title! I function.			
	}		
One coulty braces to set the class deletion.			
Static non-occess modifier Peorption	Example		
	public class Car (
A love determent used to define a class summed Car., which note as a bibupoint for creating Car objects. The varieties model is declassed as part Lie, resemble global in a second directly from models the class.			
		static int numberOPCars = 0;	
A lows attenuant to declar as state; not variable mound conducted Core to keep mode of the roof number of Core differen counsed. Since all is what in where the money of intenses of Core.			
		public Car() {	
A lara stemant to delice a constitute. Every time a new Car object to crossed, this constitute ratus.			
		nakeritars++;	
A law administ to increase the content officers would that large teach of these many can have been instituted.			
) Close only became used the clase delimition.		}	
Coll the distributioner() and but without counting an instease of the Car class. The model are only seem exists variables each an exact efforts are instease variables.	private void display	Count() {	

Description	Example		
	Syste	s.out.println("Total Cars: " + numberOfCars);	
Nist the total number of cars to the console using the System.estprioritely financies.			
	3		
	,		
Close cardy braces to end the class definition.			
Final non-access modifier			
Doorlytin		Example	
-		public final class Webicle {	
A low naternate used to define a final class named Whitele, which acts as a bidoprise for crusting Cut objects. The final class causes be extended (inherited) by any other class. This means no subclasses can be crusted from Whitele.			
A first transmission of the first a state of the first, the state date of a complete of the first transmission of the firs			
		final int maxSpeed = 120;	
A Java entenant to declare a final lets variable named navigened with the value 120. The final variable in a constant, meaning that its value cannot be changed once it is assigned. Trying to modely markpent later in the code will cause a complision error.			
		final void displayMaxSpeed() {	
A lives statement to declare a final method named step taplitus(gener). The final method cannot be overridden by subclassen. This cannot she behavior of stap taplitus(gener ormains the uses in all instances.			
		System.out.println("Max Speed: " + maxSpeed);	
		against a management,	
First the maximum cor quant to the console using the System. and, greatful finding.			
		3 3	
Close couly braces to cost the close definition.			
		1	
Abstract non-access modifier			
Noorlythe	-	Example	
		public abstract class Shape {	
A less naturement used to define an advance class named Stager. This is an advance class, measuring final it cannot be instantiated types connot create Stage objects depend players depend prices from which other classes can industri.			
		abstract void draw();	
A have neteriors used to define a final clean named white its, which sixt in a himperior for creating Gar object. The final clean cases the extended (pitherized by my other clean. This means no unbeliance can be consend from White Its.			
Clean cardy brace to read the clean definition.			
		public class Circle extends Shape {	
A law statement to donothe Cerc's finite extends the Stoper class and provides an implementation of the draw() method.			
		@Dwarside	
		governam	
A have assentiates to will the complete the dworld) matched in Currich is an evention of the abstract matched in Origen.			
		void draw()	
A five addressed soping the densel 3 modeled is now fieldy implementated.			
		System.out.println("Grawing Circle");	
First the using Drawing Carcite to the console using the System, out-geratrial () function.			
		,	
		}	
Close early three to use diffe close definition.			
		1	
Using encapsulation			
Creating an encapsulated class			
Description	Example	1	
	class Person (
	Liens Person (
Cross de Bross das shiels some as Monte for contin Ross ability			
Coate de Brans dans, which arrow as a Mappine for counting Parson objects.			
private forms man; private set age;			
Counte private intribution raws and age to shore the person's more and age. The rase and age stributes caused by access deathy force untited to class.			
	public Person(String name, int age) {		
TO SERVICE AND ADDRESS OF THE PROPERTY OF T	No da Jan commercia initialida de nom end apercaridas valan a Person dejund a comed.		
This beyond this rates to the contract digest in tentane variables. It differentiates instance variables that made of parameters.	this.come = name; this.age = age;		
The layword this orders to the control objects in theses variables. It differentiates instinces variables from norther parameters.	this.name = name; this.age = age;		
The keyword this radius to the centur object's instance variables. It differentiates instance variables from marked parameters.	this was a race; this was a way;		

Dectydia	1	Exemple
		1
Close cardy braces to and the close definition.		
		public String getName() {
Use the Jeva public method (Gotter) to obtain read access to private variables.		
Comment of prices and an analysis of the comment of		
		return name;
getthase() nimm the value of name.		
		3
Close castly braces to end the class definition.		
		public void setName(String name) {
Use the Jove public andread (Sistany to related write access to private variables.		
Construction of the second construction of the s		
		this.name = name;
setflese() updates name.		
		public int getAge() {
		positic int. getage() (
Use the Jeru public model (Ostray) to obtain read access to private veriables.		
		return age;
getSp(1) atoms the value of age.		
product in the state of the sta		
		}
Close carely houses to end the close defention.		
		public void metAgm(int agm) {
Use the laws public modes (Soites) to obtain write access to private variables.		
		if (age >= 0) {
Use the less 1st statement to convex age in not negative before aniquing.		
Contract of the Contract of th		
		this.age π age;
Update the ager-variable.		
) else {
Use the larves what estatement to openify what to do when the age is negative.		
		System_out.println("Age cannot be negative.");
Print the string days cannot the respective to the consolid using the Systems.ont.print[s] function.		
		,)
Close carly Trace to end the clase definition.		
Name to the state of the state	her clause to a	of the value of none and not settlems (String spec) and settled for analyses universelved the silver of none and not settlems (String spec) and settlems (String spec).
Explanation: This compile content Person Chair is which the team and apartitation are declared as privat, receiving they cannot be accessed directly from reside the Person Chair. The connector Person (String name, not app) initiation the arithmen when a new object of the chair is contend performed to more approximately as a supplier make.	value to read	nge - ne-comment and ange. The center for age includes validations that above other causes to modify the values of name and age. The center for age includes validations
Using an encapsulated class	ı	
Description	Example	
	public	class Main {
A lives clear sensed files with a section method. The seate method is the correy point of the program.		
	public	c static void main(String() args) {
The state of the s		
The main mathod is declared using public static waid main(fitting) mays). This method is reprinted for execution in Jenu programs.		
	Per	rson person = new Person("Alice", 30);
Course a new instance of the Person class. Aming this value "Also" to the came attribute and the value "All or of the approximation."		
	Sys	ttem.out.printle("Name: " + person_petName());
Use the profilment () getter to refusion and prior the value of the cases anti-free.		
	Sys	tem.out.println("Age: " + person_petAge());
Use the perhape () gener to obtain and print the value of the app attribute.		

Description .	Example	
	person.setName("Bob"); person.setAge(25);	
Use the newthern() nature to assign the value of same attribute to "Bib" and age attribute to "25".		
	Name());	
Use the perfinent) generate detains and print the updated white of the name attribute.		
	System.out.println("Updated Age: " + person.getA	-0.
	Agricultury and the apparent age. * person-gen	PAT,
The wetter(-) call stampes to set as invalid age. Since setter() has validation logic, a will print "Age cannot be supprior."		
) ·	
Cases early brace to use the class definition.		
Explanation: This campile contex an instance of the Person class with the name "Allot" and age "30". We call the gettianes() and gettags() grain methods to grint the values. We then update the name and age attributes usint the settlianes() and settags() softer methods. When we attempt to set a negative age with setAge(-5), it prints as error message because	of validation included in the setter method.	
Using constructors		
Creating a default constructor		
Docription		Example
		class Dog {
A Jewn statement used to disfine a class named Eog., which sets as a bisoprise for creating Eog objects.		
		String name;
A free naturement to dischere a Str ing variable named name without any access modifier. We no access modifier is used, the variable is considered default. Default variables are accessible only within their own package.		
		Dog() {
This is the default constructor. It takes no approach.		
		name = "Nebrone" -
		name = "Shkrown";
The default constructor institution the mass variable with the value "Unknown." This constructory were they object above he could never be constructed in the construction of the construc		
		}
Clina cutyly braces to eard the class defination.		
		void display() {
Call the dasplay() method without any secons modifier.		
		System.out.println("Dog's name: " + name);
		.yystem.out.printin("tog"s name: " + name);
Print the day's name to the console using the System. end. p. 1 of 1 (1) function. Since name was initialized in the constructor, it always has a value.		
The state of the s		
		} · }
Case carly brace to end the class definition.		
		public class Main {
A lives class summed Hain with a main method. The main method is the every point of the program.		
		and the state and another the same I
		public static void main(String[] args) {
The maxim ended in dictional using parties static useful maintifering [1] segs). This method is negative for execution in loss programs.		
		Dog myGog = new Dog();
Contra as instance of the Ding class using the default constructor. The same variable is automatically as to "Unknown".		
		myCog.display();
Cull the at suptay() method to prior the drug's assoc.		
		.)
	} ·	
One costly branco to used the class additions.		
Explanation: This example crosses an instance of the long close with a default constructor that installation the same archites to "Unknown". When we crost the instance, the default constructor is invoked astronomically.		
Creating a parameterized constructor		
Boorlytin	Example	
	class Dog (
A Java statement used to skiline a class named Sog, which acts as a biologists for crossing Sog objects.		
		String name;
		and any country
A live statement to dictor a String variable named rase witness any accoss modific. If an access modific is war, the variable is considered admit. Definib variables are accessible only within dear own package.		
This is the generatorial constraints that takes one appeared rightness.		
		Dog(String dogName) (
I and the second		ļ

Description	Example	
When the Day object is created, the provided delphines value is assigned on the name variable. Personaterized constructors for you assign a savinger same to each Day object when it is created.		name e dogliane;
Close carely brances to and the close definition.		,
		void display() (
Cell the display!) method without any access medifur.		
First the design assess to the consoler using the System, and protection, and protection of the consonance of the design as a value.		System.cut.prietle("Dog's name: " + name);
Close such brazzo to and the close definition.	>	,
		lic class Main (
A Jers also samed finate with a main method. The main method is the entry point of the program.	pus	LIC CLAIR PRIME (
	publ	lic static vaid main(String[] args) (
The main method is declared using past its static vaid main(thring[] argo.) This method is nequired for execution in less programs.		
		Sing myColg = new Sing("Shuddy");
Code as instance of the Dep class. "Buddy" is a passed as an apparent to the commencion, entiring same to "Buddy".		
Cull the starylar(s) marked to print the skip's name.		$e_0\log_2 disglay\{1;$
Own early braces to and the class definitions.	>	}
One cody bears to used the class delimine.		
Explanation: This compile counts as instance of the log does with a presentational commitment that is a 1 ring presented regulator. When we compare the plantes with the same "Buildy" disc commences inclinates the same another with that wide.		
Equation: The complete cause as instance of the log dates with a parametrized constrainer that bake a string parameter displace. When we contin a big intense with the same "Buildy" disconstruction for same another with the value. Creating a no-arg constructor		
Creating a no-arg constructor	Example	
Creating a no-arg constructor	Example class Car {	
Creating a no-ary constructor Bactyline		
Creating a no-ary constructor Bactyline	class Car {	
Creating a no-arg constructor Bacragina A live seasonal used to defear a class usual Cor, which acts as a bisopoint for conting Cor objects.	class Car {	
Creating a no-arg constructor Bacragina A live seasonal used to defear a class usual Cor, which acts as a bisopoint for conting Cor objects.	class Car { String model; int year;	
Exercises Alors naturant to deline a foreign variable named teach and as not variable named pare without any second modifier. He assessment to deline a foreign variable named named as not variable named pare without any second modifier. He assessment to deline a foreign variable named named as not variable named pare without any second modifier. He assessment to deline a foreign variable named named as not variable named pare without any second modifier in most, the variable is consolated definite. Definite variables are accountly only within their own package. This is non-agreement constructor that take one parameters.	ctaes Car { String model; String model; String model; String model; String model; String model;	TO JAME RANK";
Exercises A low-statement to define a stirring variable samed four, which are in a histografie or counting Car objects. A low-statement to define a Stirring variable samed month and an jost youthle samed year widons any score modifier. If on score modifier to mod the variable in comidant definit. Definit variable are accomble only within their over purkage.	ctaes Car { String model; String model; String model; String model; String model; String model;	
Exercises Alors naturant to deline a foreign variable named teach and as not variable named pare without any second modifier. He assessment to deline a foreign variable named named as not variable named pare without any second modifier. He assessment to deline a foreign variable named named as not variable named pare without any second modifier. He assessment to deline a foreign variable named named as not variable named pare without any second modifier in most, the variable is consolated definite. Definite variables are accountly only within their own package. This is non-agreement constructor that take one parameters.	ctaes Car { String model; String model; String model; String model; String model; String model;	
Exercises A low-estimate to define a String variable some found and in jet variable some appears exercised as also as parameters. A low-estimate to define a String variable some found and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as an appears exercised as the second and and in jet variable some appears exercised as an appears exercised as the second as an appears exercised as an appear exercised as a part of the second as an appear exercised as a part of the second as a pa	thms Gar (String model; String model; Gard) (model; = 7.2 page = 26.	Terhols making
Exercises A low-estimate to define a String variable some found and in jet variable some appears exercised as also as parameters. A low-estimate to define a String variable some found and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as the second and and in jet variable some appears exercised as an appears exercised as the second and and in jet variable some appears exercised as an appears exercised as the second as an appears exercised as an appear exercised as a part of the second as an appear exercised as a part of the second as a pa	thms Gar (String model; set year; Gar() (model: " I pair" : 36	Terhols making
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Personal Personal Control Personal Con	these Car (Strong model) Gard (Gard (model = " pear " 26)	Total Next;
Part	these Car (Strong model) Gard (Gard (model = " pear " 26)	Total Next;
Personal processor contractors: Personal processor contractors and the final as the same for - which as the same for - whic	these Cer (String model; Str	Total Next;
Part	these Cer (String model; Str	Township Node**; () (
In the same of the factor of the same of the same of the factor of the same of the same of the factor of the same of t	these Car (String model; String model; Carcl (model; = 7. year = 26. Spetem.or pattir class Note	Township Node**; () (

Doscription	Example
Coast an interact of the Cor class. The me appeared commence is called, setting under 1 - Thirlind Model' and year - 200.	Car sydar = new Gar();
Call the draphy() method to prior the model and your of the car.	myCar-disp lay();
Chare cody brazon se and fine data definition.	, ,
Ephanton The comple constant accorded to Car class with two artifleness made and power. The Car() construction indicates the model to "Deleta Model" and you're 200". When we came as instances of the Car class with two Car(), the now generator is called antennativally, and the default values or assigned to the artifleness. The capitary() medical prints the model and your of the cut.	
Constructor overloading	
Description	Example class Dog {
A low automate used to define a class assemed thus, which such as a hilampoint for counting thus objects.	
	String mana; Ant aper
Also estimated to disclare a 15 rings weighth named now and as not weighth named age without any access modelle. If an access modelle is used, the weight is consistent default. Default weights are accessible only weight their every prolonge.	
	bog() (
This is the default construction to large contents.	
The dashed commenceria middlesh so the same variable with the value. "Valuences" and age variable with the value 0. This assessor every now they also always have a same and age, even if the now denoted provide one.	name = "Distance"; $\label{eq:special} aga = 0;$
Cons cody broces to and the claim Adminus.	3
	Dog(String dogName) {
This is the parametrized controlled that balon one appeared displaces.	
	name = deplace; $\label{eq:ap} ap = \theta c$
When the tage abjust is constant, the percented allegations which is inseigned for some which incepting the argue on the by default. Personnelisated constructors be given assign as unsign a sense to each they adjust when it is constant.	
Conc andly frecon on and fine claims administra.)
This is the presentational contractors that halos two arguments singless and singles.	Dog(Siring dogNome, int dagAge) {
	and Arthur
When the long object is constant, the constrainer allower the near to quartly both rane and ago-	name - displancy age + display;
	3
Close cody breen to end the close Admiron.	
	vaid display() {
Cell for Etaphy () mellinel wellsteat any access mellifore.	
	System.not.println("Sug"s rame: " + name + ", Age: " + age);
Dear the shop's name and age to the consorder using the Spyther, each, print (e) function. Since name and age were initialised in the constraint, they always have a vendue.	
	, 3
Clear early because and the clear administra.	
	public class Main (
A live does named fixto with a majo mathed. The majo method is the easy point of the program.	
	public static void main(Ströng[] args) (
The same medical in declarated using graduate attacket used an anti-Strengty surps). This medical is required for exacution in Jones purpsymme.	
Course due mag i object mining due default commencer Beggl. Sie, name v. Violencer's and que v. 6.	Dog dog1 = new Dog();
ı	ı

Description Could the step? object rating the one parameter constructor that ("Chart Lie"). So, course "Chartle" and age = 0 (default). Could the step? object rating the one parameter constructor that ("Chart Lie"). So, course "Chartle" and age = 0 (default). Course the step? object rating the one parameter constructor that ("Chart Lie"). So, course "Chartle" and age = 0 (default). Course the step? object rating the one parameter constructor that ("Chart Lie"). So, course "Chartle" and age = 0 (default).	
Cross the sign dright state on parameter constituted by Clarat Let's 30, some - 'Clarife' and ap - 0 (default). The single + not deeply;	
ting angle = non-freq();	Day day) = rev Boy();
	Deg deg3 = row deg();
Clean the stay object using the later presented constructive Build "Mar", 33, 36, pages = "Mar" and age = 3.	
	desp_desp_lesp_11; desp_desp_lesp_21; desp_desp_lesp_12;
Call the dissipling! I method on each object to print their details.	
, ,	
Close cardy branca to and the class definition.	
Explanation: The example has trace consenses of the Eng date. Depending on the number of parameters provided when counting an object, the corresponding constructor is called. **Inhances has no **Polymeration in Eng.** **Poly	
Indicates a lone Mynopplies in the Mynopplies in the Indicates and detend classes in lone Indicates and detend classes in lone Indicates and detend classes in lone Indicate classes in lone	
Inheritance in Java Creating a superclass	
Rompte Example Case Asian's (
Create a superform named defaunt, which were so as how cleam for other educes that might indust from it.	
String many	
Defines a String worlds nome to store the name of the animal.	
Eddina a String variable mass to state of the animal.	
Market a bridge variable hases to easter defen extend of variable and the second of t	
Excluse a Strong workshot means to state the same of t	
Market a bridge variable hases to easter defen extend of variable and the second of t	
Excluse a Strong workshot means to state the same of t	
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Mindus a Bring woulds have to more the same of the samed. work word () work word () work word () System.ord.printfoliams ** is noting.** System.ord.printfoliams ** is noting.** Close only become to see the samed is spirite. and printfoliams () is noting. Close only become to see the samed is spirite. and printfoliams () Close only become to and the Association definition.	
Thinks a bindy would be sent to ears of the sented. void ext()	
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Thinks a bindy would be sent to ears of the sented. void ext()	
Execute String workship trans to our fe same of the sa	
State a bining worlds to see for some of the second of the	
Each or Novemp on the annual own reads the annual date annual own reads and the formula own read	
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Name and a state of an internal course of the state of the stat	
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Section of the content of the conten	maniferring() argus (
Exercise to the second	maniferring() argus (

		myDog.bark();			
the tear() medical from the long class, which prints "Bankley upon words".		milmodiff reserved 5 h			
Close confry braces to cond that Males close definition.					
Sing millievel inheritance Deception Security of the Conference of					
		class Puppy extends Dog {			
The Puppy class inherito from the Day class. Since Day should produce the states Puppy indicately inherits all properties and methods from Action Low well.					
		void weep() {			
his outhout with a new behavior specific to the Paggy class.					
		System.out.println(na	me + " is weeping-");		
Third the encourage to the console unity the System.out., yes that I lancison. The animal rame is displayed dynamically.					
		3			
Does carly braces to end the Papty class of distance.					
splanting: This is a campio of multional siluctures. Assimal (Seportines) — Day (Selectines) — Day (Selectin		II.			
Description		Example			
		class Cat extends Animal {			
The Cart chine isherine from the fortnet chine. Since I cited contains the same variable and next() method, Cit isherine from properior.					
		void meow() {			
The notified able a new behavior specific to the Cet class.					
		System.out.println(name + " says me	nu(*);		
From the encause to the console using the System.out.printful) Seaccion. The animal same in displayed dynamically:					
)			
One carly breaso to end the Cet class definition.					
splaneties: This is a example of his credition is decision because multiple solutefrom (Eq. part Ceri solution from some source and soluted and (Eq.) from an of credition because, but each solid unique believiers. Buy added to text (I) marked and Ceri solid to wear (I) marked. Selected overrielling					
Description	Example class Animal (
Oracle a superflow control delates which wereas as a base class for other classes that might inherit from it.					
	veid sound	0 €			
lickeles a societ () whole? This model of an use to ensemble to your below that their more species below.					
	System	out.println("Animal makes a sound");			
the enemony. "Animal minior a remail" on the controls using the Spetters, sees, printed (1) function.					
	, ,				
Dow cuty braces to end the Assists' class definition.					
Description			Example		
			class Dog extends Asimal {		
The deep date is believe from the Arterial class.					
			(Siverida		
Sign enemakes the smooth) andhold to provide a specific implementation: "Day books" The 60 Denotes assessment the the complete that this method topicon that smooth probates the smooth probate the smooth probates that it.					
			void sound() {		
helakal a none() methad to prior the message "Dog helaks".					
			System.out.grietle("Dog barks");		
Print the encompts to the crossels using the System.cort.print to 1(s) function.					
Close cuty braces to end the Egg class defention.			, ,		
			,		

Northina .		Example		
Explanation to this example, they provide in one implementation of anoted (), explicing the new in Astract. Method counting specters when a wholise provide a specific implementation of a method industry defined in its supportune. Using overridden methods				
Shortpine		Example		
		public class Main {		
A live days small factor with seast method. The mater method in the carry point of the program.				
	<pre>public static void main(String[] args) {</pre>			
The main method is declared using public static world waste(Strings) weps). This method is required for execution in Jans programs.				
		Animal myAnimal m new Animal();		
Course an intense of default and some it is a variable aptoract.				
		Asimal myCog = new Dog();		
The log object is streed in an initiated restorance. Since Day countries the sensel) method, here new dynamic method slopes the scall the countries and their formation method in Day, see in Initiate I.				
		mpAnimal.sound();		
Notice replaced in a region fectors object, colling sphristst, reserved; executes the second;) resided from the fectors class.				
		mydog.sound();		
Since refine not a line object (seen though it's declared as Asimel), it calls the overridden usual() method in they also us polymerphism.				
		3 3		
Close cuty bream to end the Waster class definition.				
Ephantian: The trag date schemic from textual, rescaling a gas all non-private properties and methods of textual. Day contribes the neutral instead, providing a more specific implementation. Even though a sping is defined as not textual. Less determines the method to call a median, not complet time. When calling refore, asseed (), Less books or the neutral slope properties in Java Polymorphism in Java	ct type (Dog) and calls sound() from Dog, not	Animal.		
Compile-time polymorphism				
	Example			
	class MathOperations {			
Orace a class WithDigeretization the consists module methods for preference and addition.				
	int add(int a, int b) {			
Sociale as add method that accepts two int values (a and b).				
	return a + b;			
Add the values of a said a said name the seas to the colling method as as int.				
	>			
Close corly brown to ead the method.				
	int add(int a, int b, int c)	(
Backels on sett resolved that accepts of their accepts offerer act vishes (a.b., and c).				
	return a + b + c;			
Add the value of a, b, and c and nature the same to the calling method as an int; This method resorbank the first add [1] method because it has different number of parameters.				
)			
Close cody braces to end the method.				
	int add(double s, double b)	(
Suchada an meter merhood that accupits tree details to whose (a must be).				
	return a + b;			
Add the values of a and b and return the same to the calling marked as a situal in. This marked overdeads both of the previous safe!) and hode, but it works with deadle values instead of its.				
)			
)			
Close costly beacon to east the method and the first higher existence close defination.				
	public class Main {			
A less class ramed Naio with a nation method. The mair method is the entry point of the program.				
л. на мас замал и можу умен и на репунк				
	public static void main(Stri	ng[] arge) {		
The makes maked is declared using parties: tractic varied main(firsteg() args). This method is required for execution in Jose programs.				

Description	Example
	MathOperations math = new MathOperations();
Create an instance of the Test Operations class and assign is to the next object.	
	System.out.println("Sum of 2 and 3: " + math.add(2, 3));
Culls the method stiff its 4, 1 et 3) to add two images (2 + 3) and print the result to the console.	
Case in minors during to a set on suggest (a +) part per use round to the classics.	
	System.out.printls("Sum of 2, 3 and 4: " + math.add(2, 3, 4));
Culls the method addition u_s into u_s i	
	System.out.println("Sum of 2.5 and 3.5: " + math.add(2.5, 3.5));
Calls the method antif (matche +s, denotice b) to add two denotic values (C.5 + 3.5) and grine the result to the console.	
) ·
Clear couly frazes to and the Rest clear definition.	
Explanation: The stell method is continuing to the method is continued flower times in the With Diperset terms class. Different number of parameters (set a, int b) weren (set a) with a final of the contract of the method injusters, which includes the number and types of parameters. It does not depend on the ration type. The contract method is Using compile-time polymorphism	selected at compile time based on the arguments passed to the add() method. This is an example of compile-time polymorphism (or static polymorphism).
	Example
	class MathOperations {
Cours a class New Statement that countain multiple methods for preferring saldina.	
	int add(int a, int b) {
holded as add melled that accepts two set values (s and b).	
	return a + b;
Add the values of a and a and notice the sense the calling model as an leet.	
	}
One only brace to eat the method.	
	int add(double s, double b) {
heldeds as set method the accepts rose enable values (a set b).	
	return a + b;
Add the values of a and it and return the same to the ceiling method as a timele. This method overloads both of the previous settl() method, but it works with double-values instead of int.	
	}
	,
Clear cardy breast to ead the method.	
	int add(int a, int b, int c) {
Backels as and monthed that excepts these text values (a, b, and c).	
	return a + b + c;
And the value of a, k, and a corn the sens to the colling method as an int. This method invariants the sens to the colling method as an int. This method houses it has different another of personners.	
	3 3
Close cody braces to ead the method and the North-portet tons close definition.	
	public class Main {
A loss class named Patro with a main method. The main method is the entry point of the program.	
	public static void main(String[] args) {
The main maked is declared using pattic static word main(String) area. This method is required for execution in Java programs.	
	MathOperations math = new MathOperations();
Counts an instance of the PorthAppearst inter class and analogs it to the north object.	
	System.out.println("Sum of 2 and 3: " + math.udd(2, 3));
Calls the method stell (set a _i set b) to said two integers (2+3) and prior the result to the consolic.	
	System.out.println("Sum of 2.5 and 3.5: " + math.add(2.5, 3.5));
Calls the method additionable a, double to be add two double values (CS = 3.5) and print the result to the crossic.	
Culls due method satificate as, lett 2), lett 2) to sald these integers (2 + 3 + 4) and prior the reseals to	form of stablette of 1.3 and 5.5 cmb and 5.3 div
	System.out.printle("Sum of 1, 2 and 3: " + math.add(2, 3, 4));

Bescription		Example		
y beaut to and the Notes class definition.				
Explanation: In this example, the Workhowst Limit classified, the Workhowst Limit class between controlled and moderate, Depending on the number and type of arguments pound to and Livra determines which models to invoke at completions: This makes one code none facilité and maier to read. Using runtime polymorphism				
Doscription	Example			
class Action (
Courts a supportion is assent finish. *which warrow as a how-close for effor chouse that angle is leader from a.				
helidade a most (1) resoluted. This medical is most to be overstaken by infections that define more specific believers.				
	Syst	m.out.println("Animal makes a sound")		
Note the recompt "Animal radies a neural" to the consode using the System, and, printless) Sension.				
	> >			
Close cody biscus to end the Assault close definition.				
Description				Example
				class Dog extends Animal {
The log-down inheritor force the hoisest claus.				
			_	
				(Overida
Day countries the seared() method to provide a specific implementation: "Day backs", The 40-terride association tells the compiler that this method replaces the seared() method from Asian1.				
				void sound() {
holded a most() method to prior the message "Dog barks".				
				System.out.grintln("Dog barks");
Point du monage in the cannode using the System.co.t., per at a 't') funcion.				
				, ,
Case cody hazans a and the log date definition.				
Neartyllas .				Example class Cat extends Animal (
				Example class Cet extends Julius (
Description The Cet does taken to been the Accion's class.				
				class Cat extends Asian. (
The Cet does substitute from the Anneast class.				
				class Cat extends Asian. (
The Cet does substitute from the Anneast class.				class for extends delast (
The Cet does substitute from the Anneast class.				class Cat extends Asian. (
The Cet does substitute from the Anneast class.				class for extends delast (
The Cit class substitute from the Assistal class. Cot marriable the secont() marked to provide a quartic implementation. "Cor morre". The 4D based assessment with the compiler that this method replaces the secont() marked to provide a quartic implementation. "Cor morre". The 4D based assessment with the compiler that this method replaces the secont() marked from texture.				class for extends delast (
The Cit class substitute from the Assistal class. Cot marriable the secont() marked to provide a quartic implementation. "Cor morre". The 4D based assessment with the compiler that this method replaces the secont() marked to provide a quartic implementation. "Cor morre". The 4D based assessment with the compiler that this method replaces the secont() marked from texture.				class for extends delast (
The Cit class substitute from the Assistal class. Cot marriable the secont() marked to provide a quartic implementation. "Cor morre". The 4D based assessment with the compiler that this method replaces the secont() marked to provide a quartic implementation. "Cor morre". The 4D based assessment with the compiler that this method replaces the secont() marked from texture.				class Cate anthrood Advant (ghorrodo send model) (
The Cat does students from the Assault class. Cat controls the secont() method to provide a specific implementation: "Car mores", The 60 Controls association with the compiler that this method replaces the secont() method to print the message "Cat moress". Included, a smoot() resolved to print the message "Cat moress".				class Cate anthrood Advant (ghorrodo send model) (
The Cat does students from the Assault class. Cat controls the secont() method to provide a specific implementation: "Car mores", The 60 Controls association with the compiler that this method replaces the secont() method to print the message "Cat moress". Included, a smoot() resolved to print the message "Cat moress".				class Cate anthrood Advant (ghorrodo send model) (
The Cat does students from the Assault class. Cat controls the secont() method to provide a specific implementation: "Car mores", The 60 Controls association with the compiler that this method replaces the secont() method to print the message "Cat moress". Included, a smoot() resolved to print the message "Cat moress".				class for extensis delays (generals word smooth (System.ast.aristic("Cat mess");
The Cet class solution from the Assault class. Cet countries the assault) and had to gentile a specific implementation: "Cet manner," The 40 bentile assaultion hills the compiler that this method replaces the assault) and had from history. Included a sound() confined to print the message "Cet manner," Print the assault() and had solving the light team, and agricult () function.				class for extensis delays (generals word smooth (System.ast.aristic("Cat mess");
The Cet class solution from the Assault class. Cet countries the assault) and had to gentile a specific implementation: "Cet manner," The 40 bentile assaultion hills the compiler that this method replaces the assault) and had from history. Included a sound() confined to print the message "Cet manner," Print the assault() and had solving the light team, and agricult () function.			Exemple	class for extensis delays (generals word smooth (System.ast.aristic("Cat mess");
The Cet class solution from the Assault class. Cet countries the assault) method to provide a specific implementation: "Cet masser," The #O benefit assaultion tolds the complete that this method replaces the assault) method from totals. Included a sound() confided to print the consump, "Cet masser," Print the assault() confided to print the consump, "Cet masser," Print the assault() confided using the lightness, out, print (v) financiar. Closer config braces to and the Cet class definition.			Dampi	class for extensis delays (generals word smooth (System.ast.aristic("Cat mess");
The Cet class solution from the Assault class. Cet countries the assault) method to provide a specific implementation: "Cet masser," The #O benefit assaultion tolds the complete that this method replaces the assault) method from totals. Included a sound() confided to print the consump, "Cet masser," Print the assault() confided to print the consump, "Cet masser," Print the assault() confided using the lightness, out, print (v) financiar. Closer config braces to and the Cet class definition.			Dampi	Come for extends delaint (Generalia Void sound) (System-and-artistic("Cent excent")) 3
The Cet class solution from the Assault class. Cet countries the assault) and had to gentile a specific implementation. "Cet moure." The 40 bentile assaultion his the compiler that this method replaces the assault) and had from his tour. Included a sound() confined to print the consumpt. "Cet moure." Print the assault() confined to print the consumpt. "Cet moure." Print the assault() confined to spirit the consumpt. "Cet moure." Consecutify because on and the Cet class definition. Discription			Dampi	Come for extends delaint (Generalia Void sound) (System-and-artistic("Cent excent")) 3
The Cet class solution from the Assault class. Cet countries the assault) and had to gentile a sportile implementation. "Cet moure." The 40 bentile assaultion his the compiler that this method replaces the assault) and had from his tour. Included a sound() confined to print the consumpt. "Cet moure." Print the assault() confined to print the consumpt. "Cet moure." Print the assault() confined to spirit the consumpt. "Cet moure." Consecutify because on and the Cet class definition. Discription			Example public c	Come for extends delaint (Generalia Void sound) (System-and-artistic("Cent excent")) 3
The Cet class solution from the Assault class. Cet countries the assault) and had to gentile a sportile implementation. "Cet moure." The 40 bentile assaultion his the compiler that this method replaces the assault) and had from his tour. Included a sound() confined to print the consumpt. "Cet moure." Print the assault() confined to print the consumpt. "Cet moure." Print the assault() confined to spirit the consumpt. "Cet moure." Consecutify because on and the Cet class definition. Discription			Example public c	Class Care streamly delained; (Generalize Void move() (Sprinn.var.protein*Care mesor*);)) Jacobs Mark (
The Cit class solution from the Associat class. Cost contribute the associal methods to provide a spoulde implementation. "Cor necess." The 40 Costole constraine with the complete flue flow method replaces the second() method from textual. Included a sociated () method to privide a spoulde implementation. "Cor necess." The 40 Costole constraine with the complete flue flow method replaces the second() method from textual. Included a sociated () method to privide on sociage "Cot necess." The date are second to size of the System, and system () flue fluides. Conce cody because to red for class definition. Description Alters often social fluids with a section method. The saces method is the entry paint of the program.			Example public c	Class Care streamly delained; (Generalize Void move() (Sprinn.var.protein*Care mesor*);)) Jacobs Mark (
The Cit class solution from the Associat class. Cost contribute the associal methods to provide a spoulde implementation. "Cor necess." The 40 Costole constraine with the complete flue flow method replaces the second() method from textual. Included a sociated () method to privide a spoulde implementation. "Cor necess." The 40 Costole constraine with the complete flue flow method replaces the second() method from textual. Included a sociated () method to privide on sociage "Cot necess." The date are second to size of the System, and system () flue fluides. Conce cody because to red for class definition. Description Alters often social fluids with a section method. The saces method is the entry paint of the program.			Example public c	Class Care streamly delained; (Generalize Void move() (Sprinn.var.protein*Care mesor*);)) Jacobs Mark (
The Cit class solution from the Associat class. Cost contribute the associal methods to provide a spoulde implementation. "Cor necess." The 40 Costole constraine with the complete flue flow method replaces the second() method from textual. Included a sociated () method to privide a spoulde implementation. "Cor necess." The 40 Costole constraine with the complete flue flow method replaces the second() method from textual. Included a sociated () method to privide on sociage "Cot necess." The date are second to size of the System, and system () flue fluides. Conce cody because to red for class definition. Description Alters often social fluids with a section method. The saces method is the entry paint of the program.			Example public c	Generale Sprincesta-Field PCM meser*1; Sprincesta-Field PCM meser*1; **Sprincesta-Field PCM mese
The for dise shadou have to seasof a second particle separate equals implementation. "The #Owerlob association with the compile for this contribute of the second) and the point is equal to implementation. "The #Owerlob association with the compile for this contribute of the second) and the second particle sequence of the second particle second part			Example public c	Generale Sprincesta-Field PCM meser*1; Sprincesta-Field PCM meser*1; **Sprincesta-Field PCM mese
The for dise shadou have to seasof a second particle separate equals implementation. "The #Owerlob association with the compile for this contribute of the second) and the point is equal to implementation. "The #Owerlob association with the compile for this contribute of the second) and the second particle sequence of the second particle second part			Pample patite e	Generale Sprincesta-Field PCM meser*1; Sprincesta-Field PCM meser*1; **Sprincesta-Field PCM mese
The feet date absolute from the second class. Consecution the second control of a provide appealmentation. "Yet measure" The 40 (Amende amendes which the complete date to control regions the second) method from total as a control of a provide appealmentation. "Yet measure" Described as second() method to provide as exempty "Yet measure". The line for exempty to the control of the control of the provide as a control of the provide as a control of the			Pample patite e	ghverside ghverside send mand() (System.ast_print(n'Can mene*); System.ast_print(n'Can mene*); } blues Nade (interest word mand(Sring()) argo) (interest word mand(Sring()) argo) (
The for dise shadou have to seasof a second particle separate equals implementation. "The #Owerlob association with the compile for this contribute of the second) and the point is equal to implementation. "The #Owerlob association with the compile for this contribute of the second) and the second particle sequence of the second particle second part			Pample patite e	ghverside ghverside send mand() (System.ast_print(n'Can mene*); System.ast_print(n'Can mene*); } blues Nade (interest word mand(Sring()) argo) (interest word mand(Sring()) argo) (

Description		Example		
			mpAnimal.sound();	
Stoon op to insert in a supplier format rightyre, colling repolarization, travelly of concession for seasoff () months of the real column of the r				
		mpAnimal = new Cat();		
Cel disjust a moral in an Astral reliences. Since Cut or morales the second) models, low our objects in control and question of a second and the oversidate models of cut or an extra cut.				
Cut region is stated and actional section (a comman for contract adjusted in the comman foreign and action and action and action				
			myAnimal.sound();	
Since replates to a register fectual todayor, calling replatest, sound() courses the sound() mothed from the Anisant class.				
		, ,		
One costly fraces to read the Marie class of distribute.				
Close couly braces to and the Male class deductions.				
Explanation: In this countryle, Johnst in a superclass with a method called stanet(). Both Day and Cet classes extend features, providing their own implementation of the assent() method. When we create an Automat reference and using it to different subclasses (Day and Cet), the appropriate security) method is called a restinant to the object type. The				
Explanation in transport in the control of the cont	is allows for more dynamic and neutric	code.		
	Example			
execution.	class Animal (
Course a superclass samed Actions*, which serves as a house class for other classes that might inheard from it.				
	void sound() {			
lackda a smerif) melhad. This melhod is meast to be overridden by selections that define once aposite behaviors.				
	System.out.printle	("Animal makes a sound");		
Nair die message "Asiand makes a sons!" so the console using the System-set_printful) finetime.				
	, ,			
Close corelly Secure to coal tile Anticolat Classe delications.				
Doorgiptos			Example	
			class Dog extends Animal {	
The beg this salarite form the Asiant class.				
			(Sverride	
Sag overridos the sound() method to provide a specific implementation: They bette's The 60 verride assessments that the compiler that this method replaces the sound() method from Astant.				
			veid sound() {	
Include a soured () method to print the monoge "Dog Inclus".				
			System.out.println("Dog barks");	
Note the message to the consends using the System.eur.printfuls() discission.				
			3 3	
Close cardy braces to ead the Day class definition.				
		Franch		
Deciption		Example public class Main {		
A less class susmed fixes with a sun in method. The san in method is the entry point of the prospers.				
		<u> </u>		
		public static word main(ctring[] args) {	
The main mathod is declined using public static void main(String() args). This method is expired in excession in Jose programs.				
		Animal myAnimal = new Dog();		
Counters an interinence of declinat and determs it in a variable experients.				
		myAnimal.sound();		
Since updated in a regular detainst object, calling sylvinant, sound() execution the assent() method from the detainst class.				
		· ·		
Close cardy brocco to ead the Nain close definition.				
		<u> </u>		
Explanation: In this example, even though systems it is as totant, the second 1) method from the Eng class is called, demonstrating virtual method behavior.				
Designing interfaces and Abstract Classes in Java				
Creating an interface				
Berripties			Example	
			interface Animal {	
Decline as An East, instruction.				

Decription		Example
lackable a multi-of secord(). Any class that implements this interface most provide an implementation of sacord().	wid smed();	
Conse confly brazes to and the interface definition.)	
Doctybin	Example	
Course a Dag claim that ineplacement this fact least interface.	class Dog implements Animal {	
	public void sound() {	
Include a most() method for the class.		
	System.out.println("Bark");	
Colling sease() prim 'Bat's to the console using the System.co.e., printle) Sension.		
	, ,	
Close codyly become loss of the large date infention.	3	
Deciples	Example class Cat implements Animal (
Course a Cast choss that implements the fact and iteratives.		
	public void sound() {	
healths a smootl) worthed for the class.		
	System.out.println("Meou");	
Calling taxaet(1) prints "Mores" to the console rating that System.exetprint(1s) function.		
	3 3	
Close early brecon to earl face of early definition.	,	
Decription	Example	
	public class Main (
A live class named fixes with a nation nethed. The nation method is the entry point of the program.	public class Main {	
A loss closs named Rain with a nation method. The mate method is the entry point of the program.		
	public class Nain (public visit valid validitions))	790 C
		rgal (
A first class stand fixes with a main models. The mass models in the every point of the program. The main models in declared using public static world main(Strang() areas.) This models is suspiced for constaller in Jerus programs.		rgs) {
	pakte etnic wai manttoongi;	opel C
The noise method is declared using public static used matelforcing [1 seeps]. This method is conjusted for execution in Jesu programs.	pakte etnic wai manttoongi;	rgo (
The noise method is declared using public static used matelforcing [1 seeps]. This method is conjusted for execution in Jesu programs.	public static was main(forcing)) of the state of the stat	rgo (
The natio mellical in declarad using public: static road main(String[] args). This mellical in response for exception in Jerus programs. Course the Thin physics and using it to the vanish desp.	pable visit void ministring(): Annat day o new Engl(); Annat day o new Engl();	rgo (
The main maked is declared using patter starter word main(\$tring() args). This maked is required for exception in Jean programm. Contex the thing object and usings it in the variable day. Contex the thin player and usings it in the variable care.	public static was main(forcing)) of the state of the stat	rgo) (
The natio mellical in declarad using public: static road main(String[] args). This mellical in response for exception in Jerus programs. Course the Thin physics and using it to the vanish desp.	pable visit void ministring(): Annat day o new Engl(); Annat day o new Engl();	790 C
The main maked is declared using patter starter word main(\$tring() args). This maked is required for exception in Jean programm. Contex the thing object and usings it in the variable day. Contex the thin player and usings it in the variable care.	pable visit void ministring(): Annat day o new Engl(); Annat day o new Engl();	rgs) {
The main maked is declared using patter starter word main(\$tring() args). This maked is required for exception in Jean programm. Contex the thing object and usings it in the variable day. Contex the thin player and usings it in the variable care.	pable state and maniforms(). Asiant day = one Eq(); Asiant day = one Cq(); Asiant day = one Cq();	rgo) {
The sain maked is disclosed using parties: whether social seasoftering [] seeps). This method is responsed for exception in Jero programs. Contex the log object and usings it to the transible desp. Contex the Cut object and usings it to the transible desp. Cold seasoft [in the day depict. The grains the reconsign Thank*.	paktic visits unid maniferring(). Account day = new day(); Account day = new Cat(); Account day = new Cat(); Account day = new Cat();	rgs) {
The sain maked is disclosed using parties: whether social seasoftering [] seeps). This method is responsed for exception in Jero programs. Contex the log object and usings it to the transible desp. Contex the Cut object and usings it to the transible desp. Cold seasoft [in the day depict. The grains the reconsign Thank*.	pable state and maniforms(). Asiant day = one Eq(); Asiant day = one Cq(); Asiant day = one Cq();	rgo) (
The same moded is declared using patter strates with months transported for execution in laws programs. Cover the top object and using a two the variable day. Cover the Cut object and using a two the variable day. Coll second to on the cut object and using a two the variable cut. Coll second to on the cut object. This grains the reconsign "Base".	paktic visits unid maniferring(). Account day = new day(); Account day = new Cat(); Account day = new Cat(); Account day = new Cat();	rgo (
The main method is decided using nation statute and main(strong) are go. The method is sequent for exceeding in low programs. Concer due that pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the state it is to the state it in the pulper and merge it is the versical to the state it is to the pulper and mercegap in the recomption. Coveraing and method and the intervention we considered to the state it is the state it is to the state it is to the state it is to the state it is the	public state and maniferracy(). Animal day = now Eqs();	rgs) (
The main method is decided using nation statute and main(strong) are go. The method is sequent for exceeding in low programs. Concer due that pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the state it is to the state it in the pulper and merge it is the versical to the state it is to the pulper and mercegap in the recomption. Coveraing and method and the intervention we considered to the state it is the state it is to the state it is to the state it is to the state it is the	paktic visits unid maniferring(). Account day = new day(); Account day = new Cat(); Account day = new Cat(); Account day = new Cat();	
The main method is decided using nation statute and main(strong) are go. The method is sequent for exceeding in low programs. Concer due that pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the versiche stag. Cold method in the pulper and merge it to the state it is to the state it in the pulper and merge it is the versical to the state it is to the pulper and mercegap in the recomption. Coveraing and method and the intervention we considered to the state it is the state it is to the state it is to the state it is to the state it is the	public shall word maniferring(): Asimal day = one Reg(1): Asimal day = one Reg(1): Oug.amond(): out.amond():) }	
The acts and only decided a disclored using parties is static used an exercise control in a sequent for recording to the properties. Control for the first dispert and using is to the variable eag. Control for the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert in the source of the control of the first disperties the first control of the control of the first disperties the first control of the first disperties the first control of the control of the first co	pable state and maciformi(): Asiant day = nor Eq(); Asiant day = nor Cq();	
The nate maked in disclorating patter states well matches (reg) sept. The model is required for recording in the properties. Colors the log diginal or ong is to the sealth to ag. Colors the for dispersal orange is not required to age state for stately to ag. Colors the for dispersal orange is not required to age state for stately to ag. Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and the state of the State Andrea Andreas. Exploration in the complex via deliver and the state of the state is the state of the state of the state of the State Andreas. Corporation and State of Colors and State Andreas	public shall word maniferring(): Asimal day = one Reg(1): Asimal day = one Reg(1): Oug.amond(): out.amond():) }	
The acts and only decided a disclored using parties is static used an exercise control in a sequent for recording to the properties. Control for the first dispert and using is to the variable eag. Control for the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert and using is to the variable eag. Cold assert! on the first dispert in the source of the control of the first disperties the first control of the control of the first disperties the first control of the first disperties the first control of the control of the first co	pable state and maciformi(): Asiant day = nor Eq(); Asiant day = nor Cq();	
The nate maked in disclorating patter states well matches (reg) sept. The model is required for recording in the properties. Colors the log diginal or ong is to the sealth to ag. Colors the for dispersal orange is not required to age state for stately to ag. Colors the for dispersal orange is not required to age state for stately to ag. Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and it is the stag origin. This patter for recording "Mate". Colors and the state of the State Andrea Andreas. Exploration in the complex via deliver and the state of the state is the state of the state of the state of the State Andreas. Corporation and State of Colors and State Andreas	pable state and maciformi(): Asiant day = nor Eq(); Asiant day = nor Cq();	

	System.out.or	rintln("This is a shape.");	
	System.out.println("This is a shape.");		
Calling the clays (ay) medical priors "This is a shape." to the console using the System.net.print(s) function.			
	, ,		
	,		
Close cardy braces to end the Ding class definition.			
Decription	Example		
	class Circle extends Shape {		
Create as Circite daws that extends the Shaper claus.			
	public woid draw	i0 {	
	, ***** ****		
Included a street I method for the class.			
	System.out.p	orintel@Tanadag Circle");	
Calling the draw() mathed prints "Darwing Circle" to the console using the System.out.print(1) function.			
	}		
Close conly broces to end the Dog class definition.			
Docriptios		Exemple	
		public class Main (
A less class named Nator with a nation method. The main method is the entry point of the program.			
		public static vaid main(String[] args) {	
The main method is declared using public static word main(String[] args). This method is required for execution in Jesu programs.			
		Shape shape = new Circle();	
The thage object is instantined from the Stappe class best it refers to a Circle object.			
		shape.draw();	
Calling dress() on the straps object points "Denning Creds".			
	-	shape.display();	
Calling storp tay() on the chape object priors "This is a shape."			
		}	
Close carly becan to end the Wais class definition.			
Explanation: In this example, we define an abstract class Deepe with an abstract motion of trac() and as execute method (signate). The Circle class extends the Deepe class and provides an implementation for the trac() method. In the Philo class, we create an instance of Circle using the Deepe reference type to close how it works. The trac() method execute the trac() method is the Philo class, we create an instance of Circle using the Deepe reference type to close how it works. The trac() method execute the trac() method of the Philo class, we create an instance of Circle using the Deepe reference type to close how it works. The trac() method execute the trace of the province of the Philosophical Conference to the Philosophic	e overridden version from Car	ctor. The display() method is inherited from Shape and is called as is.	
Inner classes in Java			
Creating inner classes			
Deciplie	Example class OuterClass		
	cuss OuterClass		
Create was their eClass that words as a container for the inner class.			
	int outerVen	table = 30;	
Set the value of the cet outer/fairable to 30.			
	class InnerC	Tass {	
	Cass Inner(
Create a classe DenerClass inside the Outer Class.			
	void dis	play(1);	
	vote dis		
backde a method display() that accesses between in the related from the contex class. Insur classes have direct access to the contex class's members (including private coses).			
	System.out.printle("buter variable value: " + outer@riable);		
	agete		
Calling the Esplay() method priors the exterior stable value to the connote using the System. not. print() function. The exterior stable value is generated dynamically.			
	3		
Close confly become to end the Outer-Class class definition.			
Explanation: In this compile, Outset Lass contains a variable outser/in-risk le. Insert Lass is defined inside duter-Class and has a method display(). This method can access outser/in-risk definedly.	-		
Using inner classes Description	Former		
Description Alors class named filter with a rate method. The nates method is the entry point of the program.	Example public class Main	-{	
I and the second	1		

No.		Francis	
Nocription .		Example	
		<pre>public static void main(String() args) {</pre>	
Provided to the first ship and a section of the sec			
The main method is declared using public static void main(fireing[] args). This method is required for execution in Jeru programs.			
		OuterClass outer = new OuterClass();	
		outerclass outer = new outerclass();	
Create an instance of the OuterClass. This is necessary becames too studic inter classes require an instance of the outer class to be created first.			
		OuterClass.InnerClass inner = outer.new	InnerClass();
Choude a classe Tener/Class inside the Outer/Class. Since Tener Class is a new-state inner class, it must be created using an instance of Outer/Class.			
		inner.display();	
Call the display() method isolds InnerClass:			
		, ,	
Close cardy braces to and the Nain class definition.			
Explanation: In this example, TowerClass is noted inside OuterClass and has access to all outer class's manthers. The ethystay method will print the value of the outer distribute. The code demonstrates encapsulation in June.			
Creating a static nested classes			
Description		Example	
	J	class OuterClass {	
Create an forter/Class that works as a container for the inner class.			
		static int staticVariable = 28;	
Set the value of the let outerfair in the 100.			
		static class StaticNestedClass {	
Create a classor Interest Lases inside the Outset Lases.			
		void show();	
Include a method stree() that accesses furtner/art able from the outer class. Inner classes have direct access to the outer class's members (including private ones).			
Section (1) and Actions to the form of the total case, the case of the case (1) and			
		System.out.println("Static variable value	: " + staticVariable);
Colling the stood) modes (print the contervirsable value to the conseleroing the System, out, print(n)) function. The extervirsable value is generated dynamically.			
)	
Close carly brace to ead the Outer Class class delay definition.			
Come contly braces to east the Outer-Class class definition.			
Explanation: In this example, Outer-Class, contains a static variable named static circuit about with a value of 20. Since the variable is static, it belongs to the class staff rather than an instance. Static consist classes do not exprise an instance of the outer class. It can access static circuit able without an instance of Outer-Class.	The nested class keeps related logic insi	ide OuterClass, improving organization.	
Using a static nested classes			
Douription	Example		
	public class Main {		
A lava class named Bain with a main method. The main method is the entry point of the program.			
	public static void mai	in(String[] args) {	
The state of the s			
The main method is declared using public static voted main(String[] args). This method is required for execution in Java programs.			
		<pre>iestedClass nested = new OuterClass.StaticNestedClass();</pre>	
	OuterClass.StaticN	messeurass nested = new OuterClass.StaticNestedClass();	
Create an instance of StaticBestofflass inside the Detectlass.			
	nested.show():		
	nested.show();		
Include a method nested, about) that prison the value of the statisticity rainties from Street Class.	nested.show();		
heddes a method westerfulned) that prime the value of the static terralidate from the vester class.	nested.show();		
Includes a method westerd. Attoo() that prints the value of the staticture table from SuterClass.			
healthed a mentional describer, other () their prison the value of the state of the			
Archaic a method sweeter, closed) that prints the value of the stretcherisation from Deterctions.	nested.show();		
heldeds a method westerf, otherd) they prion the value of the staticturalistic from liver-Class. Close cosh because to end the districture who administs.			
One cash brown to real the Outer-Class chees definition.			
Circum to seed the districtions class administration of the districtions and the districtions are class. Circuiting a method-local inner class			
One cash brown to real the Outer-Class chees definition.			Rompin
Circum to seed the districtions class administration of the districtions and the districtions are class. Circuiting a method-local inner class			Example Construction (construction (construction (
Chew early bream to and the State-Class school definition. Creating a method-local inner class Description			
Close early brane to read the distrections close definition. Creating a method-local inner class			
Chew early bream to and the State-Class school definition. Creating a method-local inner class Description			
Chew early bream to and the State-Class school definition. Creating a method-local inner class Description			
Chew early bream to and the State-Class school definition. Creating a method-local inner class Description			class desercion ()
Chew early bream to and the State-Class school definition. Creating a method-local inner class Description			
Chron couly brown to read the Sotter-Class school delimine. Creating a method-local inner class Invertigate			class Secretars {
Chew early bream to and the State-Class school definition. Creating a method-local inner class Description			class Secretars {
Chron couly brown to read the Sotter-Class school delimine. Creating a method-local inner class Invertigate			class Secretars {
Chese cash shows to cond the Destrictions cleaned definition. Creading a method-local inner class Beneription Conce on State-Class visit a method application of State will define and one a method local inner class. Chese on State-Class visit a method application of State will define and one a method local inner class. Chese on State-Class visit a method application of State will define and one a method local inner class. Chese on State-Class visit a method application of State will define and one a method local inner class. Chese on State-Class visit a method application of State will define and one a method local inner class. Chese on State-Class visit a method application of State will define and one a method local inner class. Chese on State-Class visit a method application of State will define and one a method local inner class. Chese of State			class Secretars {
Creating a method-local inner class Creating a method-local inner class Secretine Creating a method-local inner class Creating a method-local inner class Secretine Secretine Creating a method-local inner class Secretine Secretine Creating a method-local inner class Secretine Secr			class Secretars {
Chee celly bacco to each die Beter Class class definition. Creating a method-local inner class Benefigina Conte on heter Class with a coeffood applicated () that will define and one a method local inner class. Define a solution in the content of the content of applicated () that will define and one a method local inner class. Define a solution in the content of applicated () that will define and one a method local inner class. Define a solution in the content of applicated () that will define and one a method local inner class. Define a solution in the content of a method applicated () the content of a method applicated () that will define and one a method local inner class. Define a solution in the content of a method applicated () the			class Advisados () class Advisados () class Advisados () class Advisados () yerror () Synthetic de jurgentia " () Synthetic de jurgentia " () yerror

Decrytin	1	Comple		
		inner.display();		
2000-r. display() calls the display() method, printing "bankh Method Local Insur Class".				
		>		
Clear cardy brazes to and the Deter-Clear school administra				
Creating an anonymous inner class	Example			
This Great top intention addition a single-method prost(1), which must be implemented by any class due more thin intention.				
	<pre>public class Main { public static void main(String[] args</pre>	ISI ISI IS		
This creates an among more these class that implements the Event trap intendies. The averagement class provides an implementation for the great 1) residend at the numeral of object creation.);			
	greeting.greet();			
The calls the occaridation preet() method in the anseymous inner class, printing "Mello from Asseymous hence Class.".				
	3			
Close cody braces in ead the fluid chui sk finish.				
Using inner classes in the real world				
Description		Example class Library (
		<pre>class Library { private String l public Library(S this.library }</pre>	thranyfalane; tring mame) { falane = name;	
The Literary class approxime a bilinary and the a private variable literary plane in ourse in some. A constructive inclinion titiers plane.				
		class Book { private String t	itte;	
		public Book(Stri this.title = this.author	ister, sther; quite, String author) { title; stather; author;	
		public void disp System.out.p System.out.p	<pre>author; updoalfre() { inits("Library: " + libraryName); inits("Library: " + libraryName); inits("Author: " + tuthe); inits("Author: " + author);</pre>	
Named marks (Library, disc then regression to beats, 3-bins responses a beats, 3-bins responses a beats, 3-bins responses a beats, 3-bins regression and the start class.		System.out.p	Intus("Author: - + authory;	
		public class Main { public static vo Library myLi Library.Book	id main(String[] angs) { prary = new Library("City Library"); pyBook = mpLibrary.new Book("1864", "George Grwell"); pyBooksifro[]; }	
This crusters a Lithrary instease amound "Chy Library" and crusters a took instease associated with that library. Sixes done is a non-static innex class, it must be crusted using an instease of Library. The Explosion Library is not be took in the took in more class prints on the name of the library shape with the book's title and and not.		Lainte y Lacob. Wighout in glacomy . men wood; seek , woodge orent; , myddod. ci uplayddod.cinfe();		
		3 3		
		,		
Class casify beans used the finite dates definition.				
Java Collections Framework (JCF)		•		
Using an ArrayList array				
Destriplies			Example	
			import java.util.ArmyList; import java.util.List;	
largest Acropt int and Lite from the journal package to use dynamic lies.				
			public class ListExample {	
			<pre>pablic_come intitaments / patients that seather and strong[] args { ListStrings fruits : new ArmyListCol]; fruits.add*(Tagle*); fruits.add*(Tagle*); fruits.add*(Tagle*); fruits.add*(Tagle*); System.adm.graintle(Fruits: * * fruits); System.adm.graintle(Fruits: * afficient : * fruits); System.adm.graintle(Fruits: * fruits.graint); System.adm.graintle(Fruits: fruits.graint); System.adm.graintle(Fruits: fruits.graint); System.adm.graintle(Fruits: fruits: * fruits); System.adm.graintle(Fruits: fruits: * fruits); System.adm.graintle(Fruits: fruits: fruits); System.adm.graintle(Fruits: fruits: fruits); System.adm.graintle(Fruits: fruits: fru</pre>	
			<pre>fruits.add("Cherry"); System.out.println("Fruits: " + fruits); String firstfruit = fruits.get(0); System.out.println("First fruit: " + firstfruit);</pre>	
Deline a done Little rangine that contains the laws nation exholed. Create a Litt of type Strying using the Array, int implementation. This let will now find name as using elements an displacement. "Apple", "Bassar", and "Cherry" to the lite critical lite, decrining in elements in the order they were added. Review the first element apple from the lat using index 0. Print for a little and the critical literature.	he retrieved element.			
			,)	
Close curly brance to east the Linttample class definition.				
Explanation: The low program demonstrate low to see the List incline with an irregistri implementation to one and mainplace a feel drivi mone. Irregistri is dynamic way-based implementation of List, allowing for feedble moling. Element are abled to order and account oring a now-based using a now-based using. The part (1984) method extricon elements a specific positive p	э.			
Decrypin		Example		
		import java.util.LinkedList;		
Import the ListedList class from the jornantil peckage to men a finish fin.				
		and the state of t		
		<pre>public class LinkedListCxamp public static void main(LinkedListCstring) a animals_add("Dog"); animals_add("Cxt"); animals_add("Etephan System_out.println("</pre>	om \ String[] args) { simals = new LinkedList->();	
		animais.add("Cat"); animais.add("Elephan System.out.println("	t"); knimate: " + animate);	
Debics a class Listens Listens (Listens Listens and the does not in method. Create a Listens List of type String to store united remove. Add elements "Day", "Cut", and "Elephane" to the Police Recommend of the Listens List, deploying all elements.				

Decription	Example	
	3	
	>	
Close contri bracca to cond the LintedE sixthample close definition.		
Nation Lawry (Indian to the lawrence and Lawry or American America		
	L	
Explanation: This how program demonstrates how to use a trivited list to wave and manipulates last of animal names. Listed list to only liked list implementation in Joron, meaning that elements are listed using pointers. In Listed list, incentions and deletions are further compared to Aerropic test (respectively for large lists).		
Using a HashSet collection		
Destjilis	E	xxmple
		import java.util.HashSet;
largori the Bartlett class from the jers at 25 package to serve a collection of unique demonsts.		
		<pre>public class HashSetExample { pablic teate void main(String) args) { pablic teate void main(String) args) { colors.add("See"): colors.add("See"):</pre>
		colors.add("Red"); colors.add("Green");
		colors.add("Red"); System.out.println("Colors: " + colors);
Define a class it its its fast fet Campin is that contains the laves main method. Create a National Contains the National Contains		
		, ·
Close cardy braces to end the Hankfert ample closes delimition.		
Equivariant: This lors program demonstrates the range of a tractivet, which is a part of the lows Chilections Framework and is used to store a collection of unique demants. Intellect does not minimis any specific order and approve deplicates. Is in said when you used a collection of distinct elements with find below inno.		
Using a HashMap collection		
Recription		Example
		import java.util.HashMap;
lampor the flanding class from the jers sail gackage to some key value pain.		
		<pre>public class NatMNapthample { public class NatMNapthample { public class coinciderrangl] argal { manufacture coinciderrangl] argal { manufacture coinciderrangle c</pre>
		massrup-String, Integer> ageMap = new HashMap<>(); ageMap.put("Atle", 30); ageMap.put("Bob", 25);
		ageMap.put("Charlie", 35); System.out.println("Age Map: " + ageMap); int al(""
Define a class transformation for international price as international forms as internation	andles set(1421114	<pre>int aliceAge = sgeMap.get("Alice"); System.out.println("Alice"s Age: " + aliceAge); Area</pre>
The second secon	-up-ges, water) and stone it in altice	
		3 3
Close curly braces to and the Nest-MingStrample closes definition.		
Explanation: This large regress demonstrates the stage of a tractivity, which is a part of the law Collection Framework and is used to store key value pairs. Keys are unique (if a deplicate key is added, it replaces the did value). Values on the deplicated, therething does not maintain any specific softer it provides for account to values using keys.		
Working with lists		
Creating an ArrayList		
Recription		Example
		import java.util.ArrayList;
lapon derząd, kt from do java and package to sou dynamic iden.		
		<pre>public class ArmyListExmple { public extile soid main(String[] mays) { fourth.modf() may its now ArmyListo(); fruits.modf() max its now ArmyL</pre>
		<pre>public static void main(String[] args) { ArrayList-String> fruits = new ArrayList->(); fruits_add("Assale").</pre>
		fruits.add("Banana"); fruits.add("Cherry");
		System.out.println("First fruit: " + fruits.get(0)); fruits.remove("Basses"); System.out.println("Fruits List: " + fruits);
Mode and two property of the controls of Person and Control of Per	e("Banana") to remove "Banana" from the li	id.
		, >
		,
Close the early brance to and the ker registrationaght et date delations.		
Ephantine: This less program domentoires the surge of no template, which is a part of the less Officient representation was abide in older and account using a non-bound index. The prit (inter) method retrieves channels a specific position. template in the principle of non-template position. template in the principle of non-template position. The prit (inter) method retrieves channels as specific position. template position template position.	ts).	
Creating a LinkedList		
Steeription	Ex	ample
	-	import java.util.LinkedList;
Import the A.1.54 of A.1.5		
		<pre>public class Linedistrates () public class (linedistrates () public class () linedistration () li</pre>
		LIMMOLIST-STring> colors = new LinkedList->(); colors. add("Ref"); colors. add("Green");
		animals.add("Blue"); System.out.println("First color: " + colors.get(0)); colors.remus("Crea");
Differ a clear Listed Listed Listed Listed Listed Listed age of the contains the Jim was an ended Coate a Listed List of type Strauge were a list of color sames of the Listed Li		<pre>colors.remove("breen"); System.out.println("Colors List: " + colors);</pre>
To the containing of the conta		
1		,
		3
Close the cardy brances to and the LinberListCompile eduse definition.		
Explanation. This lows a prepara disconnection the image of \$1.1000.01, (1.1, which is a part of the low of the interval in a part of the low of the interval in a part of the low of the interval in a part of the low of t	sizes traversing the list from the beginning. D	Suplicates are allowed, and order is maintained. Unlike ArmyList, elements are not shifted
HashSet and TreeSet		
Creating a HashSet		
Recription		Example
		import java.util.NashSet;
largest the treatment class from the jury and pulsages or one as collisions of neigns determine.		
Makes a class tradest trades in the first consists of the consists for the consist of the consist of the consist of the consist of the tradest depicts value. It is great. From the consist of the tradest depicts of the consist of the tradest depicts value. It is great. From the consist of the tradest depicts of the consist of the tradest depicts value. It is great. From the consist of the tradest depth value and the consist of the consist of the tradest depth value and the consist of the tradest depth value and the consist of the tradest depth value and the consist	. "Apple" is present in the set is printed. The	public class Nashesthouspie (representation of public class Nashesthouspie (public class Nashe
		HashSet-String-fruits = new HashSet->(); fruits.add("Apple"); fruits.add("apple");
		fruits.add("Cherry"); fruits.add("Cherry");
		System.out.println("Fruits in the HashSet: " + fruits); if (fruits.contains("Apple")) { System.out.orielln("Apple") {
		System.out.println("Apple is present in the set."); } fruits.remove("Cherry");
ı		1

			System.out.println("After removal: " + fruits);
			,)
Close conty braxes to one die frust-fett-tampi or close definition.			
Explanation: This low prepare demonstrates the ways of a Westfeet, which is a part of the low Officience Francescok and is used to store a collection of using exhausts. The certainty) method problem below to clear color. The remover) method efficiently remove clearant, Statistic does not minimize any quark order and ignores deplicate. It is would what Creating a TreeSet	you need a collection of distinct elements with fast lookup	times.	
Deciylin			Example import java.util.Tresset;
looper the Treatert class from the journal puckage to over a collection of unique demonsts.			
			<pre>public class TreeSetExample { public static void main(String[] args) { TreeSetExtInteger-numbers = new TreeSet<->();</pre>
			public class Tredestroughs { pablic static void main(fring[]) mysh { render void main(fring[]) mysh { render void main(fring[]) render void {
Define a clear Transfer Compile that contains the low not method. Control Transfert-Contragers named numbers to stress a set of integer values. Aid the numbers 5, 3, 8, and 1 using the netter) method. Ald 3 again to the Transfert. Since Transfert does not allow deplicate values, it is ignored. Print the contains of the Transfert, displaying all clements. Circle if 5 is in the set by colling neutron. Circle if 5 is in the set by colling neutron. Circle if 5 is in the set.	ers.contains(5). If found, the message "5 is present in t	he set" is printed. The method	<pre>if (numbers.contains(5)) { System.col.println("5 is present in the set."); } numbers.remove(8); System.col.println("After removal: " + numbers);</pre>
			}
Close carly braces to east the Westfeet Lamptize close definition.			
Explanation This low prepare demonstrates the usage of a Treative, which is used to now a collection of using advances. Treative demons are drops control in nanoling order. The certain() model provides fast boday toon a Balanced Tree encance). The remove() method efficiently deletes demons while minimizing order. Treative is used a busy as used as with a Tree-Seel versuas Haad-Seel; need for order	fast operations.		
Deciylin	£	TreeSet <integer> grades grades_add((5)):</integer>	n new TreeSet<();
		TreeSet <integer> grades grades.add(85); grades.add(80); grades.add(90); // Output: [70, 85, 90] System.out.println[grade</integer>	a);
Use Turket. When you need the elements to be served in a specific order. For example, if you want to store a lot of student grades and display them in seconding order, a Turket will automatically were them.			
		HashSet-String> userIds userIds.add("userI"); userIds.add("userI"); userIds.add("userI"); userIds.add("userI"); System.out.println(userI System.out.println(userI	new ManhSerto();
Due Haldele: When the order of elements does not matter for example: If you are storing unique user Dis and do not care about their order.		// Gutput: Order may var System.out.println(userI	γ ds);
HashSet versus TreeSet: Need for performance			
	Example		
	MashSet-String> collectedItems = new MashSet collectedItems.add("Sword"); collectedItems.add("Shield"); -doolean-boolean hasSword = collectedItems.o	contains("Sword"); // Fast o	theck
the Buddet: Fire future performance whom adding, removing, or scarching for elements. For Example: In a pass, if you need to quickly chack if a player has collected a unique into.			
	TreeSet <integer> scores = new TreeSet<>(); scores.add(300); scores.add(150); scores.add(200); System.out.println(scores); // [150, 200, 30</integer>	00)	
Use Tracker. When you can affered downer operations but need the elements worted. For Example 28 you are maintaining a landerboard that requires worted scores, a Tracker is untable even if it slightly downer.			
HashSet versus TreeSet: Avoidance of duplicates			
Doctypine		Example HashSet-S fruits.ad fruits.ad	trinps fruits = new HashSet ;<br ("Maple"); ("Apple"); ("Apple"); // Deplicate will not be added ("Apple"); // Deplicate Will (Banasa, Apple)
Using HankSet to resid deplicates. A Manthet efect rasp named fracts is created. "Apple" and "Bassan" are added. A deplicates "Apple" is added but ignored became function does not allow deplicates. The output may appear as Jillanous, Apple in Jepple, Bassand, but the rater is NOT generated, since therefore is monkered.		fruits.ad System.ou	d("Apple"); // Duplicate will not be added t.println(fruits); // Gutput: [Banasa, Apple]
		TreeSet <s< td=""><td>tring> sortedfruits = new TreeSet<(); iii.add("Acole");</td></s<>	tring> sortedfruits = new TreeSet<(); iii.add("Acole");
		sortedfru sortedfru sortedfru System.ou	trops extending in onew TreeSeto-(); its_sed("spell"); its_sed("spell"); its_sed("spell"); // Supplicate will not be added its_sed("spell"); // Supplicate will not be added it_sprintle(corted(ruits); // Supplicate will not be added its_sprintle(corted(ruits); // Supplicate will not be added its_sprintle(c
Using Tuckfer to most displaces. A Treafest-City sep-sumed surtest? routs is counted. "Apple" and "Bussens" are added. A displaces "Apple" in added but in power because Treafest abso does not allow displaces. Usible treafest, Treafest automatically were cleaness in according order. The comparis a deepy (Apple, Bussens), when Treafest emissions nowall order.			
Implementing queues in Java Creating a simple queue using LinkedList			
Bocriptio			Example import java.util.Linkedist; import java.util.Quaue;
loopen the javouted Linked Law and javoured Queen purkages to see the Queen interface with a Linked Law Implementation.			import java.util.Qumue;
			public class QueueExample { public static void main(String[] args) { // Creating a Gausse
			patic class Conscious; (class conscious; (class conscious; class conscious
Outs: as instance of Quess-Strings passed space using use \$1.15666, \$1.15551. Add Bree deceased ("Apple", "Bassars", "Cherry') in the queue using after(), which instent demons at the end of the queue. Print the queue to show in contents. The pat(1) reacted transvers and extent the bree demons ("Apple") from the queue. Print the removal demons at the content. The pat(1) reacted transvers and extent the bree demons ("Apple") from the queue. Print the removal demons at the content. The pat(1) reacted transvers and extent the bree demons ("Apple") from the queue. Print the removal demons at the content. The pat(1) reacted transvers and extent the bree demons ("Apple") from the queue. Print the removal demons at the content. The pat(1) reacted transvers and extent the bree demons ("Apple") from the queue. Print the removal demons at the content. The pat(1) reacted transvers and extent the bree demons ("Apple") from the queue. Print the removal demons at the content. The pat(1) reacted transvers and extent the pat(1) reacted transverses and extent	of the queue again after removing the front element.		/ Displaying the quoue System.out.println"(Ducus: "+ quoue); // Enquoue operation String removedfites = quoue.poll(); System.out.println"(Pamoved Item: "+ removedItem); // Displaying the Guoue after Decouse
			System.out.println("Queue after dequeue: " + queue);
) ·
One couly becau to and the inputed complete class administration.			,
Explanation: This lors program dimensions the use of a Queue data structure using the Listerfait clear. The method of the () adds an element to the queue (compane), politi) removes and nature the found element (despense). Listerfait is no a queue implement PHO (Few In Few Oct) behavior.			

Decription	Example
	import java.util.PriorityQueum;
happer die jans auch Bristotylgame geskage to we den Bristotylgkene class.	
	palis (time frest/phometomys) palis (time frest/phometomys) processor (time frest/phometomys)
	<pre>public static void main(String() args) { PriorityQueue<integer> priorityQueue = new PriorityQueue<>();</integer></pre>
	priorityQueue.offer(20); priorityQueue.offer(15);
	priorityQueue.offer(30); // Displaying the Priority Queue
	System.out.println("Priority Queue: " + priorityQueue); // Removing elements in priority order while (incincityQueue infemty()) /
Creat in ministrate of Prior Hydrones winds on we Prior Hydrones-OH. Add those clements: 20, H. and 30 wing the of Prior I) method. The Prior Hydrone ministran confidence them the half-loop priority). Prior the quarte, in order may not be in the exact inscriment order due to the hosp-based priority structure. Remove demonsts in priority restrators. Remove demonsts	System.out.println("Removed Item: " + priorityQueue.poll());
	·
	3 3
	,
Close confe Praces to send the Priesr's Spound Enquile class defination.	
Close curity braces to and the Prior trig/densed Compile close sidentiess.	
Ephanishne: This laws program demonstrates the usage of a Pricery/Quesa, which is a type of quase where channes are processed based on their pricery (sentend only by data for sumbors). The muthod of Ferr! Jadds as demonst to the quase (suppose,), partl)! removes and returns the densert with the highest pricery (sended number in this case). Howey-based implementation converse difficient insertions and deletions.	
Implementing a queue in the real world	
Boeription	Example
	<pre>import java.util.Linked.ist; import java.util.Queue;</pre>
Import the jovantil Linked list and jovantil Queen package to create and manage the queen.	
	mildir class Contemporaryinghous I
	policy class (coloreduces/colored) policy class (coloreduces/colored) policy (coloreduces/coloreduce
	Queue-String> customerQueue = new LinkedList<-(); // Customers arrive and join the queue customerQueue.ofer("Customer 1"):
	customerQueue.offer("Customer 2"); customerQueue.offer("Customer 3");
	<pre>// Displaying the current queue System.out.println("Current Customer Queue: " + customerQueue); // Serving the first customer in the num."</pre>
	String servedCustomer = customerQueue.pol(); System.out.println("Serving: " + servedCustomer);
State or in State of States (Fings counted of	<pre>// Displaying the queue after serving one customer System.out.println("Gustomer Queue after serving one: " + customerQueue); // Serving months</pre>
Same of the agence.	servedCustomer customer(usus.polt(); System.out.println"Servinc: " + servedCustomer).
	<pre>// Final state of the queue System.out.println("Final Customer Queue: " + customerQueue);</pre>
	3
	,
Close cody fraces to ead the Cartamer Feer vis Olymore class delimition.	
Ephasiate This has program similars a contour service quase using a Quase OFFO - Fork it, Fort Origin implement with a Listerfact X models have contained as a fine of the Control of the	
Using HashMap and TreeMap	
Creating a HashMap	
Noviglie .	Example
	import java.util.NashMap;
Import the Next/May class from the jern still package, velach is a part of Javo's Collection Framework.	
	public class MacNMMgdrampte (
	palic class Nachhaghampis { palic vettic unit mainfiring wmp) {
	pablic class NonDepCompile (pablic static used monitoring() orgo) { pablic static used monitoring() orgo) { pablic static used monitoring() pablic p
	public tion (manifestames () public tion (manifestames () public tractic and manifestames () public tractic and manifestames () public tractic
	public class imministratoric (
	paint: class insuffacturate (paint: class insuffacturate (paint: state: unra amount required) paint: u
	public class sharing-counts { public class sharing-counts { public class sharing-counts { public class sharing-counts { public service search souther-counts or sout
Addition is introduced trang. Support counted ago to suppose of the consequent factors are stated as consequent factors are colors. Add by value prior using depart content "Apply" is support to 1. There we shall a "Chary" to 3. Key we require If the conse key is dated again, in value pre-updated. The real-part "Apply" is noted deader and price de-value content of the large in the large in the large in the content of the large in	// Checking if a xoy state if (map.containKoy("Banama")) { System.cot.println("Banama exists in the map."); t
	politicities (manifogloscopic) politicities (manifogloscopic)
	// Checking if a xoy state if (map.containKoy("Banama")) { System.cot.println("Banama exists in the map."); t
	// Checking if a xoy state if (map.containKoy("Banama")) { System.cot.println("Banama exists in the map."); t
	// Checking if a xoy state if (map.containKoy("Banama")) { System.cot.println("Banama exists in the map."); t
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	// Checking if a xoy state if (map.containKoy("Banama")) { System.cot.println("Banama exists in the map."); t
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histins a history-triag. Tetragers amend say to regresse Fryst nees as keys and their corresponding nears: when a wides white Add by valler pairs using the part under Add by valler pairs using the part under Add by valler pairs using the new key is added again, to value gain regional. The new paper ("Apple") model desides and prints the value model with "Apple". The tap-feet () modeled means all to keys in the tap-feet, and for the large part means, key value gain, white gain applicat. The new paper ("Apple") modeled for the sear paper ("Apple") modeled means all to keys in the tap-feet () modeled m	(if the control of th
histins a history-triag. Tetragers amend say to regresse Fryst nees as keys and their corresponding nears: when a wides white Add by valler pairs using the part under Add by valler pairs using the part under Add by valler pairs using the new key is added again, to value gain regional. The new paper ("Apple") model desides and prints the value model with "Apple". The tap-feet () modeled means all to keys in the tap-feet, and for the large part means, key value gain, white gain applicat. The new paper ("Apple") modeled for the sear paper ("Apple") modeled means all to keys in the tap-feet () modeled m	(if the control of th
histins a history-triag. Tetragers amend say to regresse Fryst nees as keys and their corresponding nears: when a wides white Add by valler pairs using the part under Add by valler pairs using the part under Add by valler pairs using the new key is added again, to value gain regional. The new paper ("Apple") model desides and prints the value model with "Apple". The tap-feet () modeled means all to keys in the tap-feet, and for the large part means, key value gain, white gain applicat. The new paper ("Apple") modeled for the sear paper ("Apple") modeled means all to keys in the tap-feet () modeled m	(if the control of th
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Station is the satisfactories, between someting are compared go or composed of passing and the satisfactories, and the fact is supposed to the same large of the common large of the commo	(if the control of th
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	Bertylin		
Exercise the second and a secon	Import the Arragist cline from the jame, at II guidage, which is a part of Jean's Collection Framework and in male to mixe a dynamic Sec. Create the Liberry cline to exquest an effective of break to a price and section from the jame, at II guidage, which is a part of beauth on entiring and it cannot be accounted the cline. The Liberry clines mented and the break for whose a Liberry object in contact. The staff contract polyment in contact. The contract polyment in contact. The staff contract polyment in contact polyment in contact and in the design polyment in the state in contact to the state in contact the account described the cline. The Liberry clines mented and the state in contact the account described the th	ook () method adds a new book	making Literary() {
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	Bergins .		·
Exercise to the control and the following and production for the suppressed and the following and the	lagent the treating does from the jean, 411 pulsage, which is a part of zero Collection Processor and a south or most against in Create the Grant Response (Loss to Grant Resp	public class OrderMan private Nashback public OrderManag until orders new } public void addor orders.put(or) } public void disby public void disby for (int order System.out.pr System.out.pr } }	aspent {
Segment unitariatie in anaptive managenet quantum description of the control of t) [}]	
The second second and a second			
Exercise the second and a secon			Example
Consideration and factors and	loger the traction down to you, all pulsage, which is your of Jacci Collection Processors and send on time a dynamic line. Count the first injustment and a send on times a design of employer than with you into various most a send on times the send on the sent of employers and a send of times the sent of employers and a send of times and times to sent on the sent of times and times and times the sent of times and times the sent of times and times	() method adds an employee reaction. Calling	public (such Engloyedwayer (prices Manderstrope undipast; public public (such as a such as a s
Manging tanks in a task management system [Insert			,)
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the control of the co			I Samuel
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Close corfly breach to ead the seaso and Test-Monoger class deficition.	The continue with the continue	and the state of t	public static void main(string[] arms) { Tackman to main(string[] arms) { Tackman to main(string[] arms) { Tackman to main(string[] arms) { manager.ddfmain(string[] arms) { man
Explanation Wise less program impleasors a simple Tech Manager migr a Linkelfair to our and ranage made in apparent mention and the contract of the contract o	Close carbly braces to and the main and Trainflerenger class definition.		, ,
	Legislation With the tear purpose replicators a simple Teld Manager using a Lishalida to note and manage which. It supposes that instruction contained a third find of the difference of the contraction of		1

Partitio.	Example
	import java.util.HashSet;
	<pre>public class SocialMedia { private NashMap-String, NashSet-String>> userFollowers; public SocialMedia() {</pre>
	<pre>public SecialMedia() { userfollowers = new NushMap<-(); } public void addfollower(String user, String follower) {</pre>
	<pre>public void addfollower(String user, String follower) { userfollowers.putf#Absent(user, new HashSet<-()); userfollowers.get(user).add(follower); }</pre>
	public void displayfollowers(string user) { System.out.println'followers of "+ user + """; System.out.println'followers of "+ user + """; if (followers in unll { for (String follower: followers) { for (String follower: followers) { System.out.println(follower); } }
Input the Battlett class from the june, still package, which is a part of Java's Obliction Framework and is used to store a special following framework and is used to store a special following framework and is used to store a special following framework and is used to store a special following framework and is used to store a special following framework and is used for the special following framework and is use) else (
	, ,
	<pre>public static void main(String[] args) { SecialWedia socialWedia = now SocialWedia(); socialWedia additoure("Alice", "Soba"); socialWedia.addfollower("Alice", "Charlie"); socialWedia.diabrfollower("Alice", "Charlie");</pre>
	socialMedia.displayFollowers("Alice");
	3 3
One carly becan to and the sext and fight sperimenery class definition.	
Epitamine. This loss propus implements to the contribution following contribution for the contribution of	
Java File Handling / Working with File Input and Output Streams Using the File class	
voing the rate class	Example
	import java.io.File;
Segent for Trix days, which provides monthods for life and discussory operations.	
	<pre>public class FileExample { public static void main(String[] args) { File myFile = new File("example.txt"); }</pre>
	<pre>// Check if the file exists if (myfile.exists()) { System.out.prist("File exists."); } clue { System.out.prist(n'file does not exist."); }</pre>
This capture that centarion the Lorensate reduced to the centarion the Lorensate reduced Content of Tail chapter that centarion the Lorensate reduced Content of Tail center reduced to the center of	System.out.println("File does not exist."); }
) ·
Close early become to eard the Fill-decarging date who definition.	
Epplaneties: This laws program demonstrates how to check whether a file caids in the filesymm using the FIIe dates from the jers in puckage.	
Writing to Files	
Sacription	Example
	<pre>import java.io.BufferedWriter; import java.io.TilmWriter; import java.io.IOException;</pre>
Super-die 7 (Merit Ster dans for willing duement dan to 4 Min, the for Forestitt Ster dan for word of 1 Merit Ster dans for willing duement dan to 4 Min, the for Forestit Ster to provide of foliation willing operations, and the 1880 region to chan to handle apprintinger comprises.	
	<pre>public class WriteTofile { public static wold main(String[] args) { try {</pre>
	try { FileWriter writer = new FileWriter("output.txt"); BufferedWriter bufferedWriter = new BufferedWriter(writer); bufferedWriter.write("Wello, World!");
	<pre>buffereddriter.write("Hello, Werld!"); buffereddriter.emw.line(); // Adds a new line buffereddriter.write("This is a Jawa file handling example."); buffereddriter.close(); // Always close the writer</pre>
There is a few parties of the constant for the constant f	<pre>bufferedWriter.close(); // Always close the writer System.out.println("Data written to file successfully."); } catch (IDException e) { System.out.println("An error occurred: " + e.getMessage()); }</pre>
	3
One can be brown to well due of the CHINATO Line due de Administration of the CHINATO Line due de Administration of the CHINATO Line due due to the CHINATO Line due to the CH	
Explanation: This dras program denominates how to write tend to bit using the l'Intérêter and the l'errether interpretage, it writes multiple lines to the life, hadden exceptions properly, and closes the life to present economic leads. Reading from Files	
boriyin	Example
	import java.io.BufferedRmader; import java.io.FilmRmader; import java.io.TOException;
	years (amin. no. nonempt 1886)
largered the PT Vallenative classes that results channels besseld date from a Sile, the Net TerroResulter class that provides efficient resulting capabilities by beliefing input, and the UlBromption class to benefit comes that may occur thring the operations.	
	<pre>public class Readfronfile { public static void main(String() args) {</pre>
	try { FileReader reader = new FileReader("output.txt"); BufferedReader bufferedReader = new BufferedReader(reader);
	String line; while ((line = bufferedReader.readLine()) != null) { System.out.println(line); }
This can close the affirm of the fact or main the law main makes to make a find the state of the file. The loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file the loop continues will read taste() note men that file that the loop continues will read taste() note men that file the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that file that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men that the loop continues will read taste() note men tha	bufferedReader.close(); } catch (IOException e) { System.out.println "An error occurred: " + e.getMessage());
	,
)
	,
Close cush baccos to east the FI telescopia eclass definition.	
	i l
Explanation: This less propose modes this loss by the using 47 inflanter and further offender and point in connect to the console. It much and point lines the life loss by lose, handles exception properly, and choose the life to prevent moneta balls.	
Using Java Byte Streams	
Using Java Byte Streams Reading bytes	
Using Java Byte Streams	Example sport jou.in.Fildipublicase
Using Java Byte Streams Reading bytes	Example Sport (sea. h.f.) Life modificate Sport (sea. h.f.) Life continue Sport (sea. h.f.) Life
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Using Java Byte Streams Reading bytes Reception Reception Request for 1's lating retirense class for making one byte data from a life and the 155 copy time does to bandle impainturput exceptions.	Separt John Lot Flatiguette rees, Separt John Lot Flatiguette rees, Separt John Lot Recognition;

Decription		Example
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Olmo confly brancas to used the F11-of-complex class administration.		3 3
Explanation: This have prepare reads a file byte by byte using PlateSuperStream and grinn in constants to the cannole. Writing bytes		
Deception		Example
		<pre>import java.io.FileOutputStremm; import java.io.IOException;</pre>
longers the Tristotrapest former class for writing care byte date to a file and the Efficient class to the made it application of the Tristotrapest former class to the writing care byte date to a file and the Efficient class to the same of the Tristotrapest former class to the tribute class to the		
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Byte streams example		
Description Import the P1 indepentative are class for making for hyse data force a file. F1 indepentative actions for residing care hyse data to a file. All independent acceptances are also file applicative actions to be independent acceptance.		Names to a set the section of the se
Decker 17 bilepost trave input 11 to read data from country and 17 bilepost trave any at 18 to write data to desiminate the single country of the size	n 'File copied successfull	paties (the filedom) { particular filedom) { particula
Close confty branco to conft the F linkage class shifted time.		, ,
Epigenties (In the low progress requires a content of this content to this con		
Managing Directories in Java Creating a directory		
	Example	
	import java.io.F	file;
langers the grava. In 711 produces to represent this and directory parks.	palite than Connectivency [] palite than Conn	
Dates a clear Created French of Section of Section Sec		
	,	
Close cashy branca is ead the Crested circuttery class abilitation.		
Egilandius. This less propose montes a finanza y lichelling mond discussivi il è date sur shouly ciri. I bandon mons and labite conse practifiy.		
Listing directory contents		
		import jaww.io.File;
langues due para, in, 1714 punkago to represent like and directory pedis.		

The second of th	ne directory does not exist or	making chan (californium/canins) { public chair and majellotrougly marriage public chair and majellotrougly marriage public directory = marriage interfaces public public directory = marriage interfaces public public directory = marriage public directory
Explanation: This loss prepara live all files and admirances inside a discussive and handles cases where the discussive in a discussive and handles cases where the discussive interest discussive construct efficiently. But the Tail List List of the discussive discussive construct efficiently. But the Tail List List of the American discussive construct efficiently.		
Deleting a directory		
Description		Example import java.io.File;
langent the jorn. in, T14 gradage in represent file and discourcy parlie.		
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Chow ceally bascon to and the Little rectary Contracts a data definition.		, ,
Epidominia: This lot as propers we are for Fit. An detail 1) suched to delate a specified directory of a cain. The proposa bandles reacces and faither cases greatedly. Constitute and directors with NIO.		
Creating a directory with NIO Becupita	Example	
	import java import java import java import java	.nio.fite.Fites; .nio.fite.Path; .io.10Exception;
Support from classe (spece, size, 1736, P.S. law for file, and discovery operations; pere, axis, 1736, Path to suppose the and discovery paths in a platform independent way; pere, size, P.S. law, Frie, Paths to cross-Peth intensece, and pere, in IEE creat size to leading patenths 100 cross-		
Define a class Crastellivetery the crassine law summands. The while from, get?*Project, third capple? causes a bit object suppossing the density the content. The try block wer? I.m. crastelliveterize it is instead of Tile, addited the content of they don't ensure yours denotes of they don't exist. It show set from as over if the density shouly exist and seas the content discovery public content. The project content of they don't exist. It show set from as over if the density shouly exist and seas the content discovery public content. The project content of they don't exist. It show set from as over if the density shouly exist and seas the content discovery public content. The project content is a fine of the content of they don't exist. It show set from as over if the density shouly exist and seas the content discovery public content. The project content is a fine of the content of the public content is a fine of the public content	// F11 // 1f	Consideration (content and anisotropic steps) { content and anisotropic steps) { content and anisotropic steps) { content anisotropic steps) content anisotropic steps) content anisotropic steps) content anisotropic steps) (content anisotropic steps) (distinct production steps) (di
	3 - 3 - 3	das (hydmact.printle/Bovectory already exists: " « director/felb);
Close coulty binome to send the Created directory chose delimition.	,	
Equation: This low prepare creates a directory using low NO (New Input/Output) issued of the radional File class. It handes success and failure cases produlty and works cross-plations. Real World example of Document Management System	1	
Deception	Example	
laquest dess class - tits. Files for life and discovey oppositions, jons. state Files. Ports to represent file and discovey position in a philiferent independent way, jons. stat. Files. Ports to create Ports indiscover, jons. in. IEE completes to handle phaseful IO comm., and jons. set II. Scareer for handling user input.	import java.mio.file import java.mio.file import java.mio.file import java.mio.file import java.mitil.Sca import java.mitil.Sca	Cristian Company Company Meser;
This is a few leasant Plangament System that contains the larra nature method. All discovery operations will cover within the "December," "P shine a specified discovery," Advisor a specified discovery, "P shine a specified discovery," and "P contains are a see discovery inside." The contains the program of the contains the larrange and the discovery-discovery and "P contains are of shine program."	public static vo Scanner scan String comma while (true) System.o command switch (case case	"Suppose of the text of the suppose
	} · F	
The created/crectory) method creates a new discovery and mode discovery more from new input. It now Then, created/crectories (path) to create the discovery (studying mining ground discovering). If measured, it prints "Created path", If me error encous, it prints "Time: transapt".	} `	sid considerative(lower cases) { sid considerative(lower cases) { sid considerative(lower) considerative(l)} sid considerative(lower) considerative(l) sid considerative(lower) considerative(lower) sid considerative(l
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The deleted core-tray () medical deleters of descrivey and medic deletersy and medic deletersy passer from our impact. It won't live, deleter(path) to delete the specified discovery. If necessorial, it prime "Deleteral path". The filter, deleter(path) will find discovery to not compy. It only words on compy of medicines.	private static v System.out.p Path path =: try { Filen. System. } catch (IDE	uid dalatdfurctory(Samour scanner) { rint("Girectory to delate: "); rubs, upithEdC_SDECTORY, scanner.nextLine()); leter(path); out.print("Welsted: " + path); reception o { reception o {

Decription	Exam	aple	
		System.e }	rr.println("Error: " + e.getMessage());
) ·	
Close early Prace to and the natio class definition.			
Explanation: The laws prepure previous a simple consumed line simulation for managing determine inside. "Decements" fields it allows more to come, lot, and delan discussion using low NSO (New Input/Opper)			
Using Java Date and Time Classes			
Using the LocalDate class			
Description	Example		
	in	port java.time.LocalDa	ie;
Respons the Lieuxillate claus, which is part of the Janu Dies and Time API.			
	pu	public static void m LocalDate today	<pre>ample { sin(String[] args) { !- LocalBate.now(); n(Today's date: " + today);</pre>
		System.out.print	in("icaly's date: " + teday);
Define a public class Less different angle finder contains the Joon nature marked. Use Less different new() to sention the content date and print it in the "YYYY MAN EXP formats, which is the default former of Less different ring().			
)	}	
	,		
Close costy branco to end the Lectilate factory for close addition.			
Explaints: This lives prepare demonstrate the war of the teactifiest class from the year, there pulsage to get and douby the consust date.			
Using the LocalTime class			
Description		Example	
			time.LocalTime;
Jasper das Laucs Time chan, which is pert of the Zero. Date and Time AFA.			
		public class	LocalTimeExample { table vaid main(String[] args) { ITIME correctTime = LocalTime.new(); m.out.println("Current time: " + currentTime);
		Loca Syst	<pre>lTime currentTime = LocalTime.now(); em.out.println("Current time: " + currentTime);</pre>
Define a public data Least Transfungs in their contains the loss nais method. Use LeastTrans, need to be seen and the LeastTrans, need to be a see			
		>	
Close couly branco to each the Least Til and			
Explanation: This leave program demonstrates the two of the Laca-Line class from the juve. Line package to get and display the current time.			
Description Description			Example
			Example sport junction-insulinteline;
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Destylin			
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Decription		Example	}
		,	
		publ	ic static void main(String[] args) { Scanner scanner = new Scanner(System.in);
			Scanner scanner = now Scanner(System.in); // Imput event obtails System.out.println("thirt event name:"); String mane = canner.nextine();
			system_out_print(m/tmter event name:"); String name = scanner.nextLine(); String name = scanner.nextLine(); String name = scanner.nextLine();
			<pre>System.out.println("Enter event date (YYYY-88-20):"); String dateImput = scammer.meatline(); SocialDate date = localDate.posare(esteImput);</pre>
			<pre>System.out.println("Enter event time (00:000):"); String timeEnput = scanner.neutline[]; LocalTime time = LocalTime.prave(timeInput);</pre>
			yyttem.out.println("Inter time zene (e.g., America/New_York):"); fring zonelppu: scanser.extLine(); Zoneltime.ez = Zonell.of(zonelpput);
			Zoneld timeZone = Zoneld.sf(;zenelzput); // Create the sevent Vent event = new Eventiname, date, time, timeZone);
Tables a polic class with the form as a modulat onless it to except sever input for even datable. This class expenses man, data, thus, and timelous performance imput. The modulat portion may report. The modulat performance imput. The modulated interests a count object from the report. I tended on the man. The modulated interests is the form the report of the report of the report of the report of the form the report of the report of the report of the report of the form the report of	nbod ZonedDateTime converts eventDateTime to		
			<pre>// Display event details System.out.println("Event created: " + event.mame); ZoomodataTime eventitateTime = event.getTventBateTime(); System.out.println("Event Date and Time: " + eventBateTime);</pre>
			// Display in system's default time zore Zoreddatelime defaultZoneddatelime : eventhatelime.withZoneSameInstant(ZoneId.systemDefault()); System.out.print("Yout date and 'Time in your local time zone: " + defaultZoneddateFime);
			System.out.println("Event Date and Time in your local time zone: " + defaultZonedDateTime); scanner.close();
		, ,	
Close cardy houses to and the EventManagement close definition.			
Exploration: The Less programs in a simple cream management system that allows some to contra as execute dutable, including in some, class, class, and time some. It then contrast and displays the event time in both the specified time some and the system's default time some.			
Formatting Dates in Java			
Formatting a date using LocalDate			
Boorjohn			Example
			<pre>import java.time.LocalDate; import java.time.format.DateTimeFormatter;</pre>
Impost the Leas Miles of Column to represent a date (year, mosted, day) without time or a time, most and distribute from the Column time or a time, most and distribute from the Column time of the Column			
			<pre>public class DateFormattingExample { public static vaid main(String[] args) { // Get the current data LocalDate currentDate = LocalDate.now[); }</pre>
			// Get the current date LocalDate currentDate = LocalDate.now();
			<pre>// Define the format DateTimeFormatter = DateTimeFormatter.ofPattern("dd/MM/yyyy"); // Format who fine</pre>
			<pre>// Format the date String formattedGate = currentDate.format(formatter); // Delia by formatted date</pre>
Dallow a public class better/event trags(unspix that commiss the Jerus makes). Use Lessables a-mod 1 to anxieve the commer date in the "YYYYMM DP" forms, which is the default forms of Lessables (1). Defau a date forms using blot limit from the state of Lessables (1) to default forms of Lessables (1). The lessables (1) to default forms of Lessables (1) to default forms of Lessables (1). The lessables (1) to default forms of Lessables (1) to default for	e current date into the specified format and print t	he formatted date to the console.	<pre>// Print the formatted date System.out.println("formatted Date: " + formattedDate);</pre>
			,
			3
Close cardy house on send the Batterbrenattingshapp in class additions.			
Explanation: The Jets program decrements here to forms a date using DataTendFormater from the jets time package. It ferment dates into a laterate desirably forms.			
Real World example of formatting birthdates in a User Registration System [Bocrition		T ₁	
Real World example of formatting hurthdates in a User Registration System Beorgian		I I	
		8	Commungle Support java.time.incollining: Support java.time.incollining: Support java.time.incollining: Support java.time.incollining: Support java.time.incollining:
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Decription			oper1 Ame. time. destilled;
Decription			operal place time described; special place time described; special place and special place; special p
Decription			Spari Janus lime Amerikada; State State
Theory dark Leas Shark e-down to represent a date (your, month, day) without time or a time zone, due these Emericant for section as adding a content for deploying dates, and the Sciencer-class to get mort report.	22. MMM dd. yyyy' pisturu, whore EEEE a the		Sparid Same Limit Associated Sparid Same Limit Associated Sparid Same Statistics Sparid Sam
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Theory dark Leas Shark e-down to represent a date (your, month, day) without time or a time zone, due these Emericant for section as adding a content for deploying dates, and the Sciencer-class to get mort report.	EE. MAM dd. 3335° patens, where EEEE is the		open's face time described; open's face time described; open's face officiency; public class therefore face of the face of
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Restricted the interpretation of the policy class and the second of the	EE. MMM til. yyyy* paters, where EEEE is the		open's face time described a proper state of the control of the co
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Inspect the Leavillet school to represent a data (year, month, day) without time or a time one, the literal instrumentary class to deduce a content formed for displaying dates, and the Scener class to get more require. There a politic, from the requirer state the contained to low and to content. Classes a display of the content of th		felf weeking name, such as	open's face time described a proper state of the control of the co
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Registed in conclusion to transpose or date (cons. amend. day) whether does not seen as an ab information where we assess the adjunction of the seem does by the see of the constraint of the co) in the second of the second	Add working mane, such as Sample Spain 1 Jan. 1 Int. 2 State of the Maney Spain 3 State of the Maney Spain 4 S	open's James Northead and Tolland Promoting State of the Control o

Docription	Example	1
	milder class Zonethet-Ventures to	
	public class ZoondDateTimeExample { public static void main(String) args) { // Setting the current date and time in New York ZoondDateTime newVertime > ZoondDateTime new York System.out.println(*Current Date and Time in New York:	("America/New_York")); nonfortIme);
Cheate a since some object for New York by calling Zenerle, of V-Mear-leapNew_Work's and notions the current date and time in that since some. Eliquip the current date and time in New York.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,
) ·	
Close conly braces to end the Zorodottel Santample close definition.		
Explanation: This laws program demonstrates how to conte and display a time area ID using the java. I too package.		
Real World example of Scheduling Meeting across Time Zones		
Docription		Example
		import java.time.Zomediatelime; import java.time.Zomedi; import java.time.formati.datelimeFermatter;
Import the Zenedites Fine, Zenedit, and Detel Intelligent terrelater classes which are part of the less Date and Time API class to represent a date time with a time area and format the date-time in a custom pattern.		
		mblic class ConferenceSchoolser J
		<pre>poblic class ConferenceScheduler { public static cold main(cfring) argun {</pre>
		// Define participant time zones String[] participantinachine : String[] participantinachine : "Expendinachine", // Expendinachine (EST) "Expendinachine", // Expendinachine (EST) "Asia(A)Cabara", // Indian Standard Time (EST) "Asia(A)Cabara", // Indian Standard Time (EST) "Asia(A)Cabara", // Indian Standard Time (EST) **Asia(A)Cabara", // Indian Standard Time (EST) **Asia(A)Cabara", // Indian Standard Time (EST)
Datin the manning time in UTC. Zenother-Time, agented "Tible-12-20TIS-10-12-20	custom formatter for displaying the date and time in the pattern:	<pre>// format for displaying the date and time DataTimeFormatter formatter = DataTimeFormatter.oFPatters("yyyy-NM-dd MMInm:ss z"); // Print the meeting time in each participant's local time zone</pre>
	unag ua tatom manana.	<pre>// Print the meeting time in each participant's local time zone System.cut.println("Meeting Time in URC." * meetingTimedUC.format(formatter)); for (String timeZone : participantTimeSCone); { ZenedGuteTime tocalTime : meetingTimeSUC.withDooksmaleTextet(Zond.of(timeZone)); System.cut.println("Meeting Time in " + timeZone ": " * localTime.format(formatter)); }</pre>
		,
		3
One only breas to end to Contenentational Contenentation and the Contenentation of the C		
Explanation: This Irra program simulates exhelisting a meeting across different time nones. It convents a food UTC meeting time to the head times of participants in various time nones and displays it in a formated way.		
Parsing Dates from Strings in Java Parsing dates with DateTimeFormatter		
Parsing dates with Dale LimeFormalter Decription		Example
·		import java.time.localDate; import java.time.format.DateTimeFormatter;
Import the Localibet and RetalTendFormatter chance, which are part of the Jose Date and Time API class and constrained drines awthour a time zone and define a pattern for garding and formatting dates.		
Import the Local Date and Date! Instifurent tree classor, which was part of the John Date and Time API class and soud to represent dates without a time zone and deline a patient for proving and formatting dates.		
		public class designation (and the public static code maniferring) argu) (public static code maniferring) argu) (// Define a date string to parce String dataString ">222-28-22";
		String dateString = "2825-81-20"; // Create a DateTimeOrmatter to define the expected format DateTimeOrmatter formatter = DateTimeOrmatter_efPuttern("pypy-RM-dd");
		<pre>// Parse the string into a LocalDate object LocalDate date = LocalDate.parse(dateString, formatter);</pre>
Come a public class bett/bertingthough that contains the laws make method and define a mining variable detectoring to represent date in the format '1999 MM Aff'. Come a date formation using the best Time/ternetter a 4P settern("3999-MH-Aff') method. Use Leavillete, permeterizing, formatter is convent the detectoring into a Leavillete object.	ect and print the parxed date.	<pre>// Output the parmed date System.out.println("Parmed date: " + date);</pre>
))
		5
Close confy bacon to end the distribut ringtomple close detailion.		
Explanation: This here program demonstrate how to give a state citized into a Local Date object noise the distributed resulter class.		
Using custom date formats Description		Example
		Example import java.time.localDate; import java.time.formsf.OntelEmmformatter;
Import the Lace Short and Sort Timef remotiver choses, which are part of the Jens Date and Time APF chose and one to represent dates without a time zone and defau a pattern for pussing and formatting dates.		
		<pre>public class CustomdateParxing { public static void main(string) argu) { String dateString = "21/88/2405"; }</pre>
		<pre>// Define the pattern for parsing DateTimeFormatter = DateTimeFormatter.ofPattern("dd/MM/yyyy");</pre>
Costs a polisic dans Contradente devicing that contains the lows make method and define a ceing varieble destricting to represent due in the formal VERMAN 1999. Costs a destrumber mining the loted in advanture of the tent	ct and print the pursed date.	LocalDate date = LocalDate.parse(dateString, formatter); System.out.println("Parsed date: " + date);
a ma manu wawayyyy Amar san manu mag ma man arawan ang ma man arawan ara		
		3-3-
Close cuty braces to end the CustombartoPressing class definition.		
Explanation: This less propose decrementals how to proce a date sining with a casson former into a Localitate object using the latest Interventer class.		
Daphanism: The low program dimensions how to great sides energy with contain from a test callest object using the lateful referentest class. Parsing LocalDateTime		
Description		Example
		import java.time.LocalUnteTime; import java.time.Format.DateTimeFormatter;
Import the Local Detect Town and Detect Townformatter choice, which we part of the Jose Date and Time AFF, class and soud to represent dates without a time zone and define a passens for parting and formating dates.		
		public class StateTameDersingExample (public static void manicString[] args) { String dateTimeString = "202-02-21 25:28"; (/mfrom the matters for the most time.
		<pre>// Define the pattern for date and time DateTimeTownsatter formatter = DateTimeTownstor.orFattern("yyyy-404-dd HSt.mm"); LocalDateTime dateTime = LocalDateTime.parxe(dateTimeString, formatter);</pre>
Contex a public class Best Class Participation Description Descrip	rring into a LocalDateTine object using the formater and print the pursed date.	System.out.println("Parsed date and time: " + dateTime);
One cody boxes to and the Datel Energy stage and the Code of the C))
		}

Explanation: This loss program demonstrates from the proof of the critique this a control format sizes a Least Excellent from the control format sizes a Least Excellent from the control format sizes from a simple sentence.		
Description	Example	
Depos the size likes to the finant waveter, and interfrant/waveter, and interfrant/waveter point clause, which are part of the face has not Time AFT claus and most to represent done without a time arms, define a particular for pointing and formating data, and handle orners if the date formed is incurrent.	import jaw. import jaw. import jaw.	n. Sins. colonial (1) n. Sins. Colonial (1) n. Sins. Colonial (1) n. Sins. Colonial (1) n. Sins. Sin. Sins. Si
Once, a policy class 12 restrictive frestrance that contains the locus made and after a source containing a few formula of "ye" yet Mild". Except the data solvening using sentence, solvenity "e" 1 - 3, source, point of "e" 1 - 3, source, point of "e" 2 - 3 and of links the point of "e" and source these chances formula in "ye" with the quest, asserted; except and of source of the point of "e" and source the control finds the point of "e" and source the control finds the point of "e" and source the control finds the point of "e" and source the control find of source the control find of the point of "e" and source the control find of source the control find of the point of "e" and source the control find of source the control find of the point of the control find of source the control find of source the control find of the point of the control find of source the control find	pablic class Colorated Fundamentars (First Colorated Fundamentars (First Colorated Fundamentars (First Colorated Fundamentary (First Colorated Fundame	
Chose certly braces to east the Extracesthetal resident research date definition.	, ,	
Equination: This less program contents a due from a given southone, pouve it into a Leas Hafest object, and display it in a structured format. It also grandelly handles potential proving errors. Example of extracting multiple dates from a text string		
Berriptie		Example
Impure the installants, there'l land'erastive, and their limb'erastive option classes, which we part of the low Date and Time API Class and must response done without a time sense, define a primare for proving and formating dates, and handle convex if the date formed in incorract.		Deposit Data Cont. Localities Deposit Data Cont. Localities Deposit Data Cont. Localities Deposit Data Cont.
Cheer spadic date for restrict trivialists the common de low size updated of defens a text critiq comming flow date in the '777 MM of format "low date on upperally common and the west" "left for from a ring flow flow date format using flow flow or flow or flow of the format using flow flow or	his extracts the	makin (rube forumbinishing (gra) pilot makin ana marihing (gra) // Seline the anarihing (gra) // Seline the daily pittle // Seline the daily pittle Seline (gra) // Seline the daily pittle // Seline (gra) // Seline the daily (gra) // Seline the dail
One carly brace to ead for Estractive trap lideters class of distinct.		, ,
Departure. This, here propers corrects moligic data times given text; more than into instantial text depose, and point than in a constant format. It also builder potential error of any part of the act is set as the expected data format.		
Example of extracting dates from mixed content		
Decription	Example	
Support the Lace State Constitute, Dark Constitute, State Constitu	Amender Janus Line Amellinen Smert Janus Line Amellinen Smert Janus Line Amel American Line (Smert Janus Line Amel American Line)	
Come y policy dates for resilient front state common the law against the seal passed on t	pakis the treatment/outsate/see (pakis the treatment/outsate/see (pakis texts und mainterpl() with (treatment/outsate() visua on the saw deadlines are on 205-61-23 and 205-62-28.7 birthamments from the same and the same of the sam	
One costs broads to cost the Extract Deletes Frantises attended class definition. Description of the Cost of th		
Author(s)		
Remenyin Kiricana		

Skills Network

28 of 28