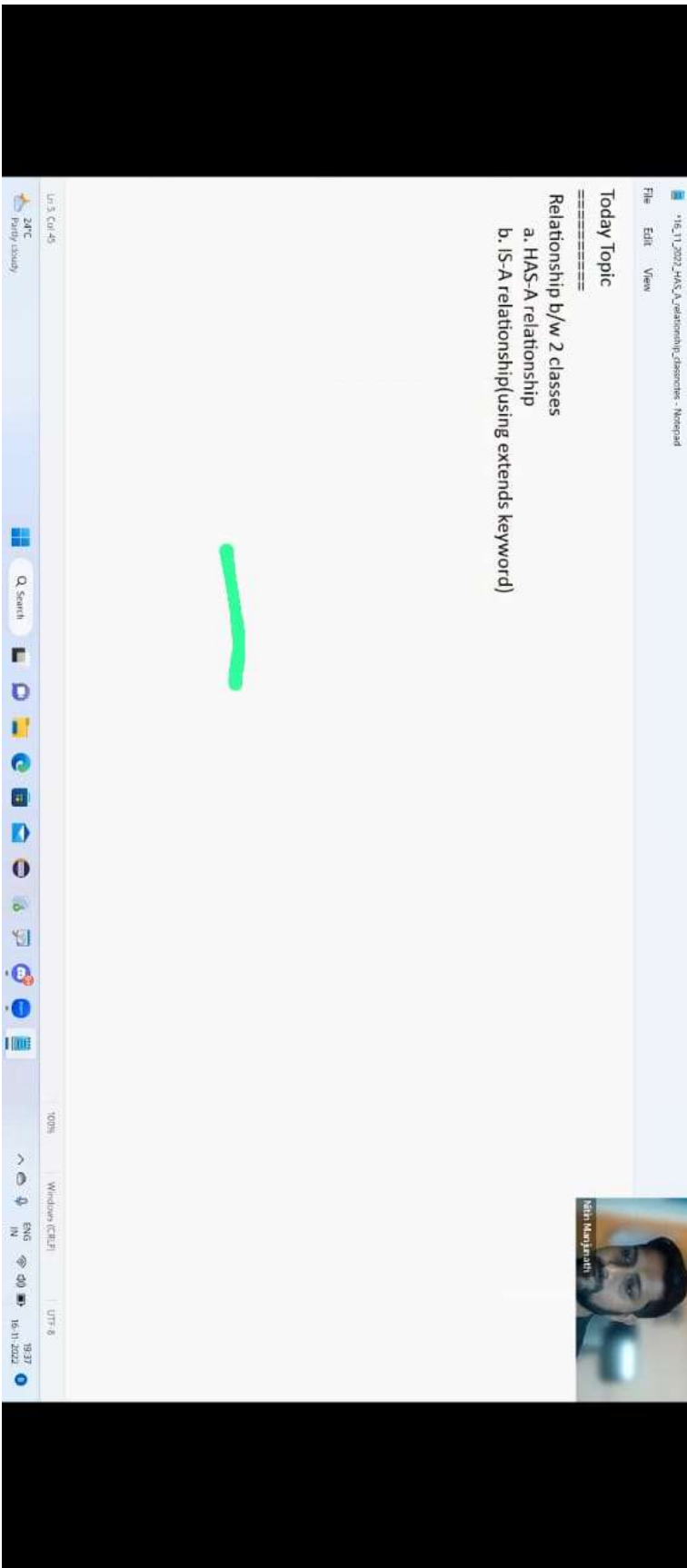


Has Relationship Dependency Injection



The screenshot shows a Notepad window titled "16_11_2022_Has_A_relationship_dependency - Notepad". The window contains a list of topics for a presentation. The text is as follows:

File Edit View

Today Topic

Relationship b/w 2 classes

- a. HAS-A relationship
- b. IS-A relationship(using extends keyword)

A green horizontal line is drawn under the text "Relationship b/w 2 classes".

The Windows taskbar is visible at the bottom, showing the date and time as 16-11-2022, 19:37. The system tray includes icons for network, volume, and battery. The language bar shows "ENG" and "IN". The window title bar indicates "Ln 3, Col 45" and "24°C Fairly cloudy".

eg#2

class Address{//Dependant Object

}

class Student{//Target Object

//HAS-A relationship

Address address;//instance variable

}

eg#3

class Account{//Dependant Object

}

class Employee{//Target Object

//HAS-A relationship

Account account;//instance variable

}

2



Dependency Injection

=====

The process of injecting dependant object into target object is called as "Dependency injection".

eg#1
class Engine { //Dependant Object

}

class Car { //Target Object

//HAS-A relationship

Engine engine : //instance variable

}

eg#2

class Address { //Dependant Object

}

class Student { //Target Object



The process of injecting dependant object into target object is called as "Dependency injection".

We can achieve dependancy injection in 2 ways

- a. Constructor dependency injection
- b. Setter dependency injection

a. Constructor dependency Injection
Injecting dependant object into target object through a constructor is called as "Constructor Dependency Injection".

b. Setter dependency Injection
Injecting dependant object into target object through a setter is called as "Setter Dependency Injection".

eg#1

```
class Engine { //Dependant Object
```

```
}
```

```
class Car{//Target Object
```

```
//HAS-A relationship
```

```
Engine engine : //instance variable
```

```
}
```

4



Relationships in JAVA

As part of java application development, we have to use entities as per the application requirements.

In java application development, if we want to provide optimizations over memory utilization, code Reusability, Execution Time, Sharability then we have to define relationships between entities.

There are three types of relationships between entities.

1. Has-A relationship (extensively used in projects)
2. IS-A relationship
3. USE-A relationship (not popular)

Q) What is the difference between HAS-A Relationship and IS-A relationship?

Ans:

Has-A relationship will define associations between entities in java applications, here associations between entities will improve communication between entities and data navigation between entities.

IS-A Relationship is able to define inheritance between entity classes, it will improve "Code Reusability" in java applications.

Associations in JAVA

There are four types of associations between entities

1. One-To-One Association



There are three types of relationships between entities.

1. Has-A relationship (extensively used in projects)
2. IS-A relationship (achieved using extends keyword)
3. USE A relationship(not popular)

Q)What is the difference between HAS-A Relationship and IS-A relationship?

Ans:

Has-A relationship will define associations between entities in Java applications,here associations between entities will improve communication between entities and data navigation between entities.

1

IS-A Relationship is able to define inheritance between entity classes, it will improve "Code Reusability" in java applications.

Associations in JAVA

=====

There are four types of associations between entities

1. One-To-One Association
2. One-To-Many Association
3. Many-To-One Association
4. Many-To-Many Association

To achieve associations between entities,we have to declare either single reference or array of reference variables of an entity class in another entity class.

G



Ans:

Has-A relationship will define associations between entities(class) in Java applications, here associations between entities improve communication between entities and data navigation between entities.

IS-A Relationship is able to define inheritance between entity classes, it will improve "Code Reusability" in Java applications.

Associations in JAVA

There are four types of associations between entities

1. One-To-One Association (1:1)
2. One-To-Many Association (1:M)
3. Many-To-One Association (M:1)
4. Many-To-Many Association (M:M)

To achieve associations between entities, we have to declare either single reference or array of reference variables of an entity class in another entity class.

```
class Address{  
    .....  
}  
class Account{  
    .....  
}
```



Associations in JAVA

There are four types of associations between entities

1. One-To-One Association (1:1)
2. One-To-Many Association (1:M)
3. Many-To-One Association (M:1)
4. Many-To-Many Association (M:M)

To achieve associations between entities, we have to declare either single reference or array of reference variables of an entity class in another entity class.

```
class Address{  
    -----  
}  
class Account{  
    -----  
}  
}   
class Employee{  
    -----  
}
```

```
Address[] addr;//it will establish One-To-Many Association (1:M)  
Account account;// One-To-One Association(1:1)
```



File Edit Source Window Database Search Project Run Window Help

File Edit Source Window Database Search Project Run Window Help

File Edit Source Window Database Search Project Run Window Help

pgjgauranbeshah - C:\Program Files\Java\jdk-11.0.10\bin\java.exe -cp ...

Student.java

1 // Instance Variables
2 private String sname;
3 private Integer sage;
4 private Integer sid;
5
6
7
8
9
10
11 // Constructor to set a value
12 public Student(String sname, Integer sage, Integer sid) {
13 super();
14 this.sname = sname;
15 this.sage = sage;
16 this.sid = sid;
17 }
18
19 // setter and getter to set the values
20 public String getSname() {
21 return sname;
22 }
23 public void setSname(String sname) {
24 this.sname = sname;
25 }
26
27 public Integer getSage() {
28 return sage;
29 }
30
31 public void setSage(Integer sage) {
32
33 }
34 }
35 }
36 }
37 }
38 }
39 }
40 }
41 }
42 }
43 }
44 }
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99 }
100 }

Integer sage - in known main Student StudentString, Integer, Integer

Integer sage - in known main Student StudentString, Integer, Integer

23C

Search

Write

Smart Search

16:0 (136)

ENG

IN

2012

16-11-2022

File Edit Source Window Run Window Help

Project Run Window Help

Search Project Run Window Help

IDE System Library (libIDE-1.0)

Package Explorer

1. Inheritance

2. Account.java

3. Employee.java

4. TestApp.java

5. DemoApp (getter method)

6. generateObjectCode (getter method)

7. TestApp (getter method)

8. TestApp (getter method)

```
1 package in.neuron.bean;
2
3 //Dependent Object
4 public class Account {
5
6     String accNo;
7     String accName;
8     String accType;
9
10    public Account(String accNo, String accName, String accType) {
11        super();
12        this.accNo = accNo;
13        this.accName = accName;
14        this.accType = accType;
15    }
16
17 }
18
```


Write


Smart Insert

8/20/2022

20:36

16/11/2022





Programatically set One-Click Accounts mapping in ineuron-main-testapp.java - Eclipse IDE

File Edit Source Window Database Search Project Run Window Help

Package Explorer

1 package in.ineuron.main;
2
3 import in.ineuron.bean.Account;
4 import in.ineuron.bean.Employee;
5
6 public class TestApp {
7
8 public static void main(String[] args) {
9
10 Account account = new Account("ABC123", "sachin", "Savings");
11
12 // Constructor Injection
13 Employee employee = new Employee("IND10", "sachin", "MI", account);
14 employee.getEmployeeDetails();
15
16 }
17
18 }
19

2022
16-Nov-2022
18:23:77
Smart Insert
Writeable
Q Search
Family Cloudy
23°C

TestApp.java
in.ineuron.main
in.ineuron.bean
in.ineuron.bean.Account
in.ineuron.bean.Employee
in.ineuron.bean.EmployeeDetails
in.ineuron.main.TestApp

TestApp.java
in.ineuron.main
in.ineuron.bean
in.ineuron.bean.Account
in.ineuron.bean.Employee
in.ineuron.bean.EmployeeDetails
in.ineuron.main.TestApp

TestApp.java

in.ineuron.main

in.ineuron.bean

in.ineuron.bean.Account

in.ineuron.bean.Employee

in.ineuron.bean.EmployeeDetails

in.ineuron.main.TestApp

TestApp.java

in.ineuron.main

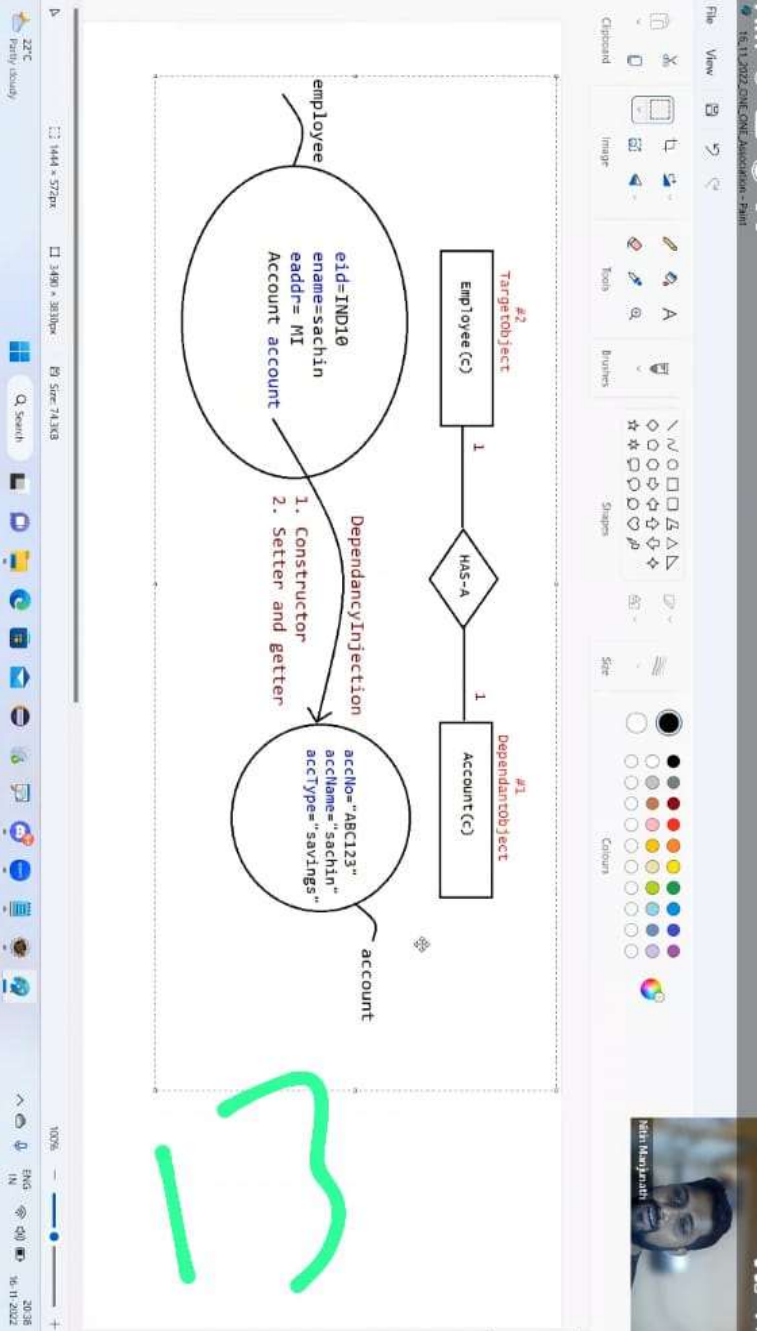
in.ineuron.bean

in.ineuron.bean.Account

in.ineuron.bean.Employee

in.ineuron.bean.EmployeeDetails

in.ineuron.main.TestApp





```
16.11.2022 JMS A relationship diagrams - Notepad
File Edit View
}
class Account{
}
class Employee{
    Address[] addr;//it will establish One-To-Many Association (1:M)
    Account account;// One-To-One Association(1:1)
}
```

1. One-To-One Association:

It is a relation between entities, where one instance of an entity should be mapped with exactly one instance of another entity.
eg: Every employee should have exactly one Account.

eg: 02-One-One-Association-mapping

14



File Edit Source Monitor Navigate Search Project Run Window Help

TestApp\src\main\java\ineuron\main\TestApp.java - Figure 01F

TestApp\src\main\java\ineuron\bean\Employee.java

TestApp\src\main\java\ineuron\bean\Department.java

1 package in.ineuron.main;

2

3 import in.ineuron.bean.Department;

4 import in.ineuron.bean.Employee;

5

6 public class TestApp {

7

8 public static void main(String[] args) {

9

10 Employee e1 = new Employee("10", "sachin", "MI");

11 Employee e2 = new Employee("18", "kohli", "RCB");

12 Employee e3 = new Employee("7", "dhoni", "CSK");

13

14 Employee[] emps = new Employee[3];

15 emps[0] = e1;

16 emps[1] = e2;

17 emps[2] = e3;

18

19 // Constructor Injection

20 Department department = new Department("IPL16", "BCCI", emps);

21 department.getDepartmentDetails();

22 }

23

24 }

25 }

25°C

20:56

16-11-2022

Windows

Smart Input

17:22 (83)

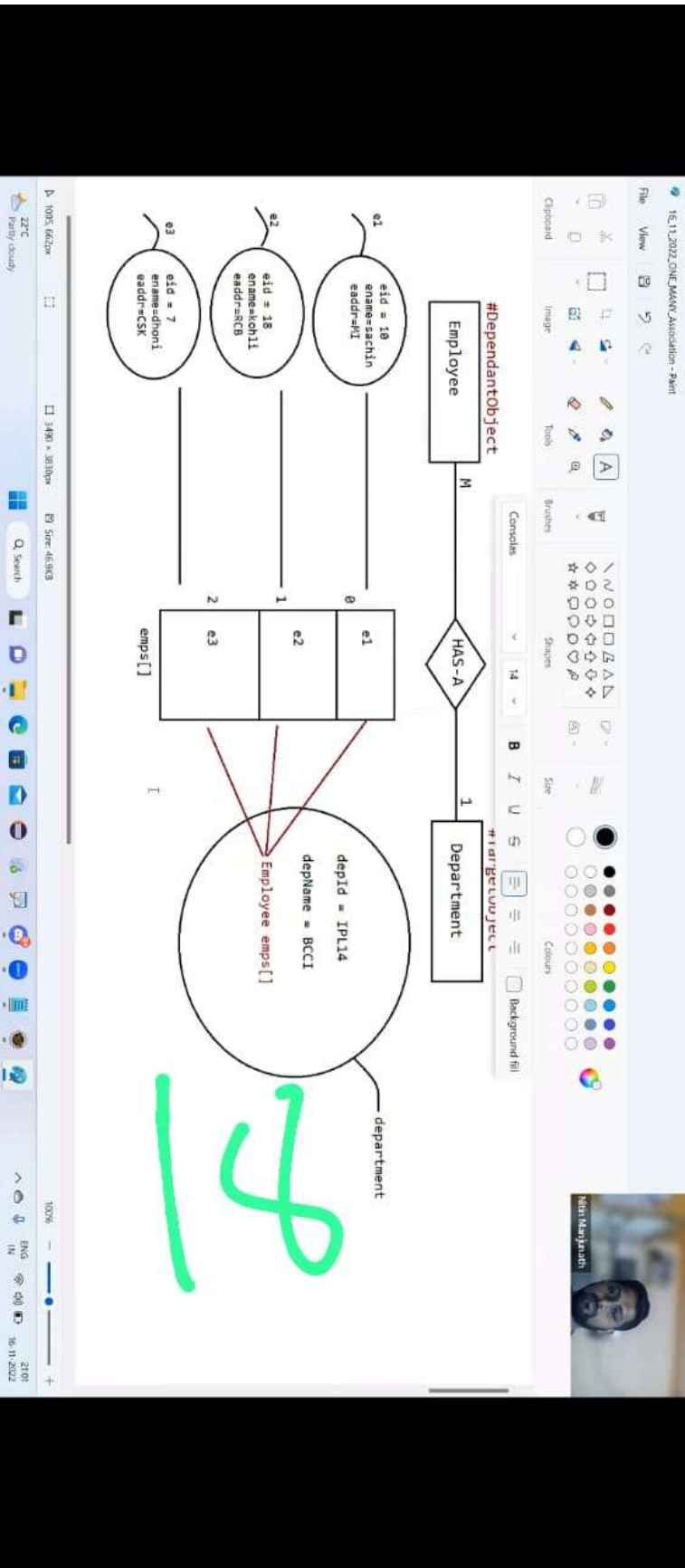
ENG

IN

20:56

16-11-2022

Neer Karjaneeth



File Edit Source Monitor Navigate Search Project Run Window Help

Package Explorer

Project Explorer

Test Explorer

Output Console

Variable Declaration

27°C
Family Cloudy

Q Search

Windows

Smart Input

3:12 [9]

ENG

27:25

16-11-2022

1 // Parameterization of MANY-ONE Association mapping with @ManyToOne
2
3 // Dependent Object
4 public class Branch {
5
6 String bid;
7 String bname;
8
9 public String getBid() {
10 return bid;
11 }
12
13 public void setBid(String bid) {
14 this.bid = bid;
15 }
16
17 public String getBname() {
18 return bname;
19 }
20
21 public void setBname(String bname) {
22 this.bname = bname;
23 }
24
25 }
26

27°C
Family Cloudy

Q Search

Windows

Smart Input

3:12 [9]

ENG

27:25

16-11-2022

Non-Majumdar



File Edit Source Monitor Navigate Search Project Run Window Help

Association-mapping\src\main\java\testapp\java - Eclipse IDE

Package Explorer

TestApp.java

1
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3
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31
32
33
34

```
1 // 01: TestApp.java: Injection
2 // 02: One-Of-One-Association-mapping
3 // 03: One-Many-Association-mapping
4 // 04: Many-One-Association-mapping
5 // 05: System Library (Javax)
6
7 // 06: TestApp.java
8
9 // 07: TestApp.java: Injection
10
11 // 08: TestApp.java: Injection
12
13 // 09: TestApp.java: Injection
14
15 // 10: TestApp.java: Injection
16
17 // 11: TestApp.java: Injection
18
19 // 12: TestApp.java: Injection
20
21 // 13: TestApp.java: Injection
22
23 // 14: TestApp.java: Injection
24
25 // 15: TestApp.java: Injection
26
27 // 16: TestApp.java: Injection
28
29 // 17: TestApp.java: Injection
30
31 // 18: TestApp.java: Injection
32
33 // 19: TestApp.java: Injection
34
```

public static void main(String[] args) {

Branch branch = new Branch();

branch.setBid("IND100");

branch.setName("bengaluru");

Student s1 = new Student();

s1.setSid("10");

s1.setName("sachin");

s1.setSaddr("MI");

s1.setBranch(branch);

Student s2 = new Student();

s2.setSid("18");

s2.setName("sachin");

s2.setSaddr("MI");

s2.setBranch(branch);

Student s3 = new Student();

s3.setSid("10");

s3.setName("sachin");

s3.setSaddr("MI");

s3.setBranch(branch);

}

27°C

Family (Study)

Q Search

Writeable

Smart Insert

27:22:458

ENG

IN

27:23

16-11-2022

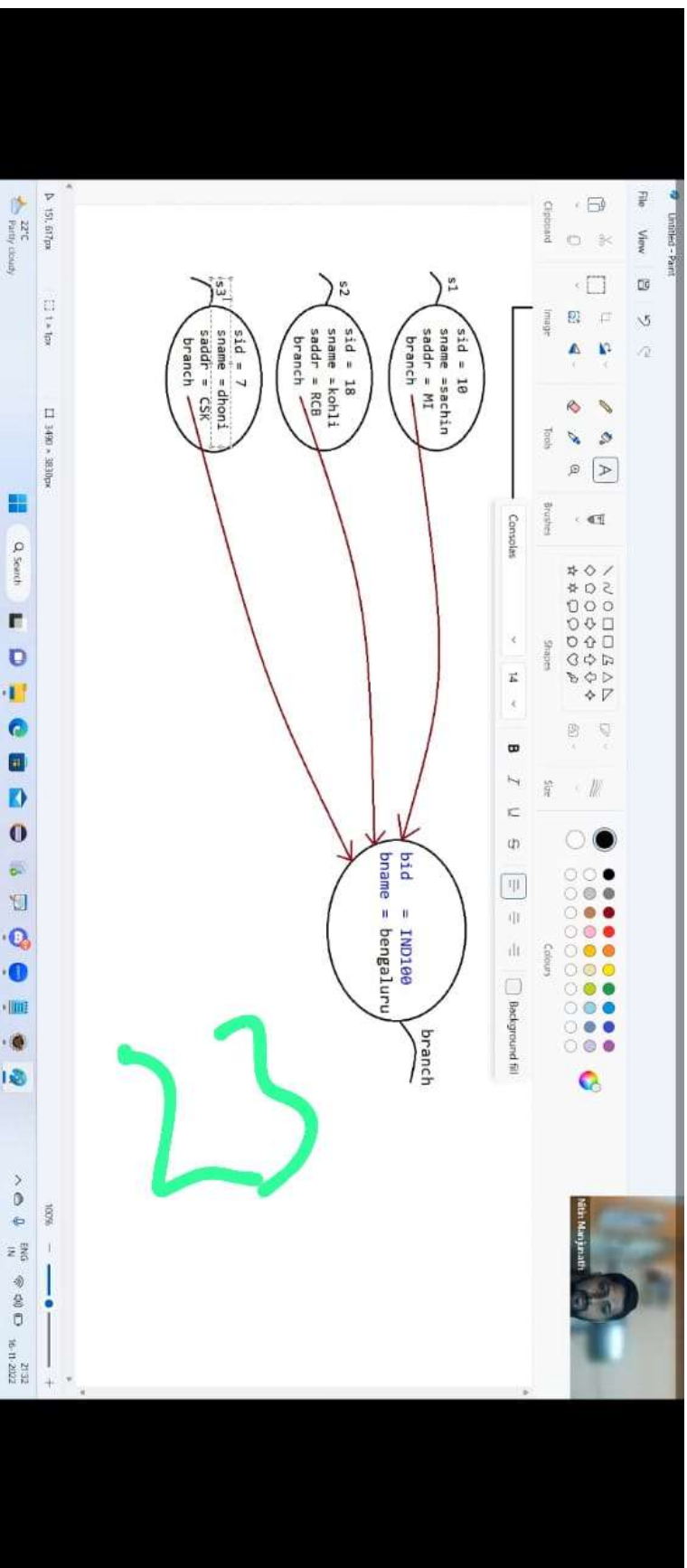
Nan Rajarath

Programmer's IDE showing code for a MANY-ONE Association mapping. The code defines two entities, `Student` and `Branch`, with a `OneToMany` association. The `Student` entity has attributes `id`, `name`, `addr`, and `branch`. The `Branch` entity has attributes `id`, `name`, and `branch`. The `Student` entity is mapped to the `branch` attribute of the `Branch` entity.

```
1 package com.manyone.association.mapping.manyone;
2 import javax.persistence.*;
3 import java.util.*;
4
5 @Entity
6 @Table(name = "student")
7 public class Student {
8     @Id
9     @GeneratedValue(strategy = GenerationType.IDENTITY)
10    private Long id;
11    private String name;
12    private String addr;
13    private Branch branch;
14}
15
16 @Entity
17 @Table(name = "branch")
18 public class Branch {
19     @Id
20     @GeneratedValue(strategy = GenerationType.IDENTITY)
21    private Long id;
22    private String name;
23    private Branch branch;
24}
25
26 @OneToMany(mappedBy = "branch", cascade = CascadeType.ALL)
27 public class Student {
28     // ... (attributes and methods)
29}
30
31 @ManyToMany(mappedBy = "branch", cascade = CascadeType.ALL)
32 public class Branch {
33     // ... (attributes and methods)
34}
35
36 @Test
37 public void testManyOneAssociationMapping() {
38     // ... (test code)
39}
40
41 @Test
42 public void testManyOneAssociationMapping() {
43     // ... (test code)
44}
45
46 @Test
47 public void testManyOneAssociationMapping() {
48     // ... (test code)
49}
50
51 @Test
52 public void testManyOneAssociationMapping() {
53     // ... (test code)
54}
```

The code is written in Java and uses the JPA (Java Persistence API) framework. It defines two entities, `Student` and `Branch`, with a `OneToMany` association. The `Student` entity has attributes `id`, `name`, `addr`, and `branch`. The `Branch` entity has attributes `id`, `name`, and `branch`. The `Student` entity is mapped to the `branch` attribute of the `Branch` entity.

22



eg: refer:: 02-One-One-Association-mapping

2. One-To-Many Association:

It is a relationship between entity classes, where one instance of an entity should be mapped with multiple instances of another entity.
Example: Single department has multiple employees.

eg: refer:: 03-One-MANY-Association-mapping

Many-To-One Association:

=====

It is a relationship between entities, where multiple instances of an entity should be mapped with exactly one instance of another entity.
EX: Multiple Student have joined with a single branch.

eg: refer:: 04-MANY-ONE-Association-mapping

2X



Programs\hibernate-5.4\src\main\java\org\hibernate\course\java\Chapter10

File Edit Source Manager Database Search Project Run Window Help

Package Explorer

hibernate\src\main\java\org\hibernate\course\java\Chapter10

hibernate\src\main\java\org\hibernate\course\java\Chapter10\Course.java

```
1 package in.neuron.bean;
2
3 //Dependent Object
4 public class Course {
5     String cid;
6     String cname;
7     int ccost;
8
9     public Course(String cid, String cname, int ccost) {
10         super();
11         this.cid = cid;
12         this.cname = cname;
13         this.ccost = ccost;
14     }
15 }
16
17
```

26

Write

Smart Insert

11:24:20

ENG

IN

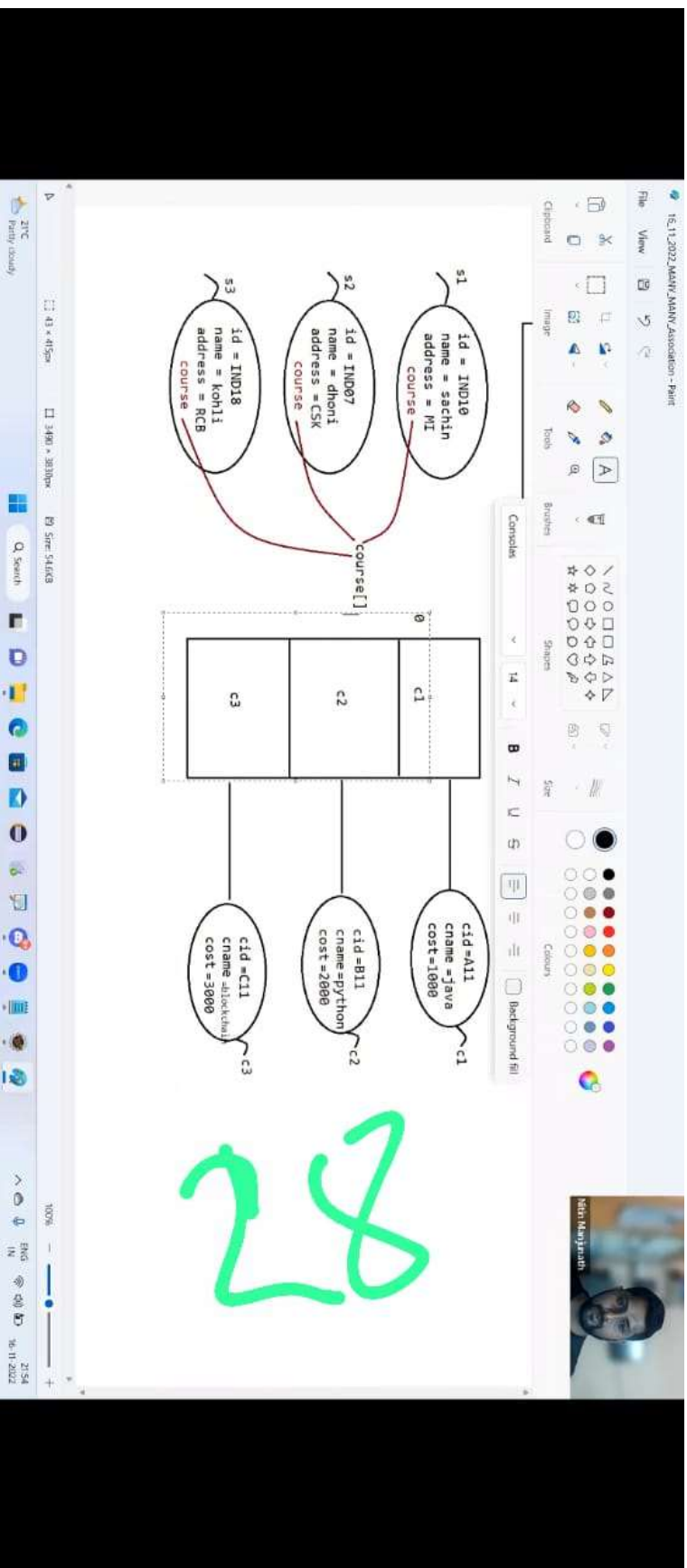
27:40

16-11-2022

Zoom

Non-Display





16_11_2022_clipper_discussion - Notepad

File Edit View

publ. stat. vol. 111(1) 1981

```
final int I1 = 1;
```

final integer is -1, // memory will be freed at the runtime becoz it is wrapper class object

```
final String s1 = "ONE";
```

```
String str1 = "I + S.I.// Compiler :: I + :ONE ==> I:ONE
```

```
String str2 = i2 + s1; // Compiler :: i2 + :ONE
```

```
System.out.println(str1 == "1:ONE");//true
```

system:0.0.0-primitive(s) == 1.0NE //idise

{

What will be the result of compiling and executing `TestClass`?

- A. true
true
B. true
false
C. false
false
D. false
true

Answer: B

Ln 6, Col 3D

Q>

Consider below code:

```
//Test.java  
public class Test {  
    public static void main(String[] args) {  
        String javaworld = "JavaWorld";  
        String java = "Java";  
        String world = "World";  
        java += world; // JVM => java = JavaWorld(heap area)  
        System.out.println(java == javaworld);  
    }  
}
```

What will be the result of compiling and executing Test class?

- A. JavaWorld
- B. Java
- C. World
- D. true
- E. false

Answer: E

or



Q>

```
public class Test {  
    public static void main(String[] args) {  
        String s1 = "OCP";  
        String s2 = "ocp";  
        System.out.println("/*INSERT*");  
    }  
}
```

Which of the following options, if used to replace /*INSERT*/, will compile successfully and on execution will print true on to the console?
Select 2 options.

- A. s1.equals(s2)
- B. s1.equals(s2.toUpperCase())
- C. s1.equals(s1.toLowerCase())
- D. s1.length()==s2.length()
- E. s1.equalsIgnoreCase(s2)

Answer: D,E

3



FileView

Clipboard

Image

Tools

Brushes

Shapes

Size

Colors

Console

14

B

I

U

S

Background fill

100%

ENG

IN

22:33

16-11-2022

```
String text = "ONE";
System.out.println(text.concat(text.concat("ELEVEN ")).trim());
```

"ONE".concat("ONE".concat("ELEVEN"))

HeapAreaSCPONEtext (String)

52

Nan Madhavan

FileViewToolsBrushesShapesSizeColors

ClipboardImageToolsBrushesShapesSizeColors

16/11/2022Project: images - Paint

27°C

770x1020px

528x99px

3490x3010px

Size: 62.4 KB

Search

100%

FMG

IN

22:13

16/11/2022

```
String text = "ONE";
System.out.println(text.concat(text.concat("ELEVEN")).trim());
```

"ONE".concat("ONE".concat("ELEVEN"))

Heaparea

SCP

ONE

text (String)

Runtime data going to heaparea

Q>

Consider below code of Test.java file:

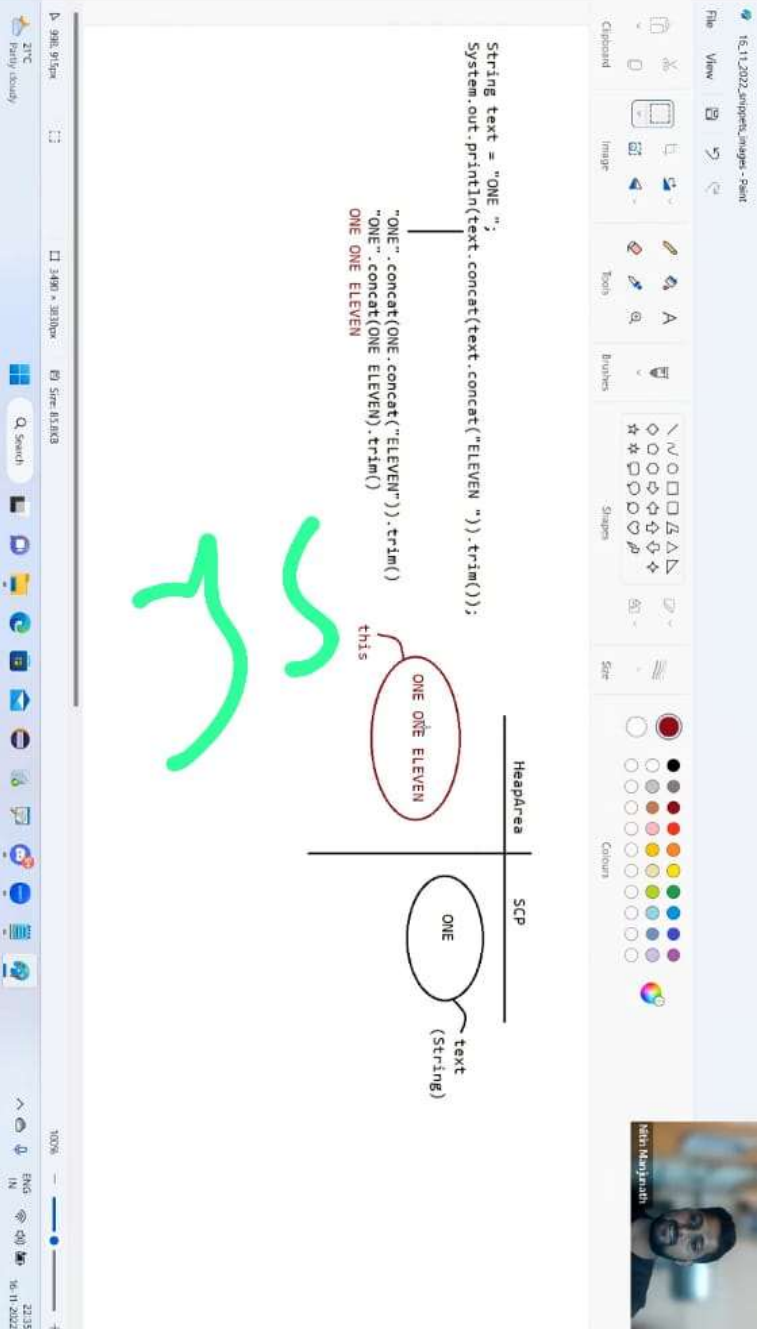
```
public class Test {  
    public static void main(String [] args) {  
        String text = "ONE ",  
        System.out.println(text.concat("ELEVEN ").trim());  
    }  
}
```

What will be the result of compiling and executing Test class?

- A. ONE ELEVEN
- B. ONE ONE ELEVEN
- C. ONE ELEVEN ONE ELEVEN
- D. ONE ELEVEN ONE

15





D. ONE ELEVEN ONE

Answer: B

Q>

Consider below code of Test.java file:

```
public class Test {  
    public static void main(String[] args) {  
        String str = "PANIC",  
        StringBuilder sb = new StringBuilder("THET");  
        System.out.println(str.replace("N", "sb")); //line n1  
    }  
}
```

What will be the result of compiling and executing Test class?

- A. PATHETIC
- B. PANIC
- C. Line n1 causes compile time error
- D. Line n1 cause runtime error.

Answer: PATHETIC

36



- C. Line n1 causes compile time error
- D. Line n1 cause runtime error.

Answer: PATHETIC

Q>

Consider below code of Test.java file:

```
public class Test {
    public static void main(String[] args) {
        boolean flag1 = "Java".replace('J', 'j');//Line n1
        boolean flag2 = "Java".replace("j", "J");//Line n2
        System.out.println(flag1 && flag2);
    }
}
```

What will be the result of compiling and executing Test class?

- A. Line n1 causes compilation error.
- B. Line n2 causes compilation error.
- C. true
- D. false

Answer: C



What will be the result of compiling and executing Test class?

- A. Line n1 causes compilation error.
- B. Line n2 causes compilation error.
- C. true
- D. false

Answer: C

Q2

Consider below code fragment:

```
String place = "MISSS";
```

```
System.out.println(place.replace("SS", "T"));
```

What is the output?

- A. MIST
- B. MITS
- C. MISSS
- D. MIT

Answer: B

38



Answer: B

Q>

Consider below code of Test.java file:

```
public class Test {  
    public static void main(String[] args) {  
        String str = "ALASKA";  
        System.out.println(str.charAt(str.indexOf("A") + 1));  
    }  
}
```

What will be the result of compiling and executing Test class?

- A. A
- B. L
- C. S
- D. K
- E. RuntimeException

Answer: L



37

Answer: B

Q>

```
public class Test {  
    public static void main(String[] args) {  
        StringBuilder sb = new StringBuilder("TOMATO");  
        System.out.println(sb.reverse().replace("O", "A")); //line n1  
    }  
}
```

What will be the result of compiling and executing Test class?

- A. TOMATO
- B. TAMATO
- C. TAMATA
- D. OTAMOT
- E. OTAMAT
- F. ATAMAT
- G. Compilation Error

Answer: G

40



16.11.2022, images - Paint

FileView

Clipboard

Image

Tools

Brushes

Shapes

Size

Colours

String[] strings = {Neuron_Technology_privatelimited_Known_For_Java".split("-", 3);
for (String string : strings)
System.out.println(string);

012

NeuronTechnologyprivatelimited_Known_For_Java

how many index it should have
for an array?

I

16.11.2022

22:09

ENG

IN

16.11.2022, images - Paint

FileView

Clipboard

Image

Tools

Brushes

Shapes

Size

Colours

String[] strings = {Neuron_Technology_privatelimited_Known_For_Java".split("-", 3);
for (String string : strings)
System.out.println(string);

012

NeuronTechnologyprivatelimited_Known_For_Java

how many index it should have
for an array?

I

16.11.2022

22:09

ENG

IN

All of the above

51.

```
String[] strings = {"Neuron_Technology_privatelimited_Known_For_Java".split("_", 3);  
for (String string : strings)  
System.out.println(string);
```

Answer:Neuron
Technology
privatelimited_Known_For_Java

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G. Compilation Error

Answer: G

Q>.

java.lang.String class implements which of the following interfaces?

Serializable

CharSequence

Comparable

All of the above

Answer: All the above

51.

```
String[] strings = "iNeuron_Technology_PrivateLimited_Known_For_Java".split("_", 3);  
for (String string : strings)  
    System.out.println(string);
```

Answer: iNeuron
Technology

privateLimited_Known_For_Java

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