Assignment No- 4

1) Write a program that demonstrates widening conversion from int to double and prints the result.

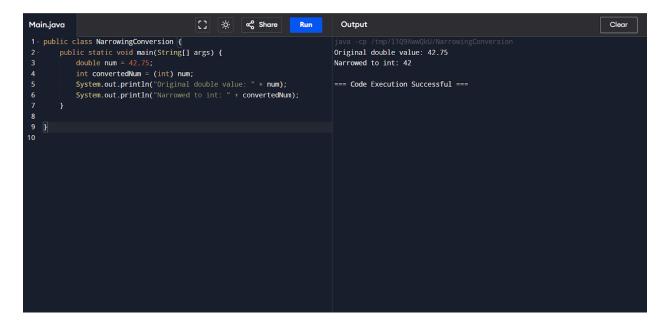
```
public class WideningConversion {
   public static void main(String[] args) {
      int num = 42;

      double convertedNum = num;

      System.out.println("Original int value: " + num);
      System.out.println("Widened to double: " + convertedNum);
   }
}
```

2) Create a program that demonstrates narrowing conversion from double to int and prints the result.

```
public class NarrowingConversion {
   public static void main(String[] args) {
        double num = 42.75;
        int convertedNum = (int) num;
        System.out.println("Original double value: " + num);
        System.out.println("Narrowed to int: " + convertedNum);
   }
}
```



3) Write a program that performs arithmetic operations involving different data types (int, double, float) and observes how Java handles widening conversions automatically.

```
public class ArithmeticOperations{
   public static void main(String[] args) {
      int intNum = 10;
      double doubleNum = 5.5;
      float floatNum = 2.5f;

      double result1 = intNum + doubleNum;
      float result2 = intNum + floatNum;
      double result3 = doubleNum + floatNum;

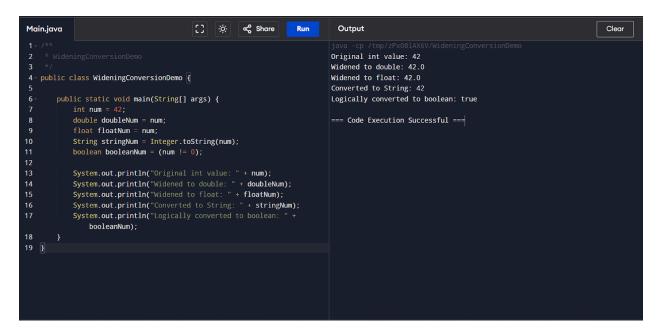
      System.out.println("int + double = " + result1);
      System.out.println("int + float = " + result2);
      System.out.println("double + float = " + result3);
   }
}
```

```
∝ Share
                                                                       Run
Main.java
                                                                                  Output
                                                                                                                                                          Clear
1 - public class ArithmeticOperations {
                                                                                 int + double = 15.5
     public static void main(String[] args) {
           int intNum = 10;
                                                                                 int + float = 12.5
            double doubleNum = 5.5;
                                                                                 double + float = 8.0
           float floatNum = 2.5f;
                                                                                 === Code Execution Successful ===
           double result1 = intNum + doubleNum;
           float result2 = intNum + floatNum;
           double result3 = doubleNum + floatNum;
           System.out.println("int + double = " + result1);
System.out.println("int + float = " + result2);
           System.out.println("double + float = " + result3);
```

4) Write a Program that demonstrates widening conversion from int to (double,float, boolean, string) and prints the result.

```
public class WideningConversionDemo {
   public static void main(String[] args) {
      int num = 42;
      double doubleNum = num;
      float floatNum = num;
      String stringNum = Integer.toString(num);
      boolean booleanNum = (num != 0);

      System.out.println("Original int value: " + num);
      System.out.println("Widened to double: " + doubleNum);
      System.out.println("Widened to float: " + floatNum);
      System.out.println("Converted to String: " + stringNum);
      System.out.println("Logically converted to boolean: " +
      booleanNum);
   }
}
```



Interview Questions

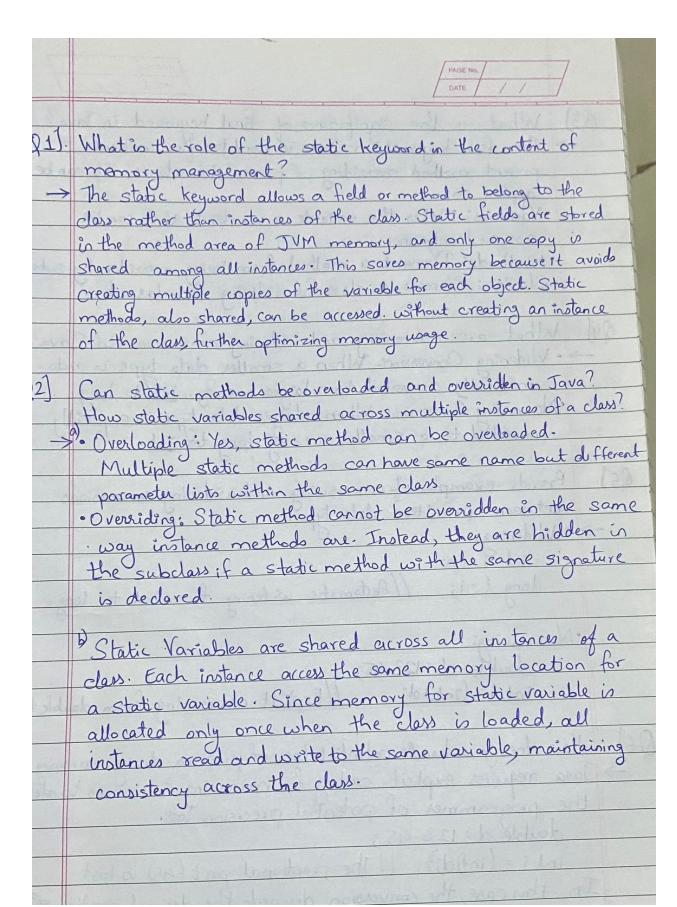
Note: Write down this interview question on your notebook ,Take a screenshort & Paste that SS in the word document & upload on your Github.

What does the static keyword mean in Java? Explain the difference between static and non-static methods.

- 1. What is the role of the static keyword in the context of memory management.
- 2. Can static methods be overloaded and overridden in Java?

 How static variables shared across multiple instances of a class?
- 3. What is the significance of the final keyword in Java?
- 4. What are narrowing and widening conversions in Java?
- 5. Provide examples of narrowing and widening conversions between primitive data types.
- 6. How does Java handle potential loss of precision during narrowing conversions?
- 7. Explain the concept of automatic widening conversion in Java.
- 8. What are the implications of narrowing and widening conversions on type compatibility and data loss?

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→ In	Java the + 1	scatic & non-static methods
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of t	or method) belongs to the class the class that these natures of the class. Static in	itself, rather than it
all i	notances of the class that thes	tatic member is shared
PITICI	once between station o	class.
	t Static Method.	method.
Delongs	to Class	Non-Static Method
Accessing	Can be called using the class	instance of the class.
A STATE OF THE PARTY OF THE PAR	Tarie Cy Cush ama matter	Can only be called on an
Memory	1 emory in allocated	TO TOUR THOUSAND
Allocation	Sharedar ross all phiests	allocated every tim
Access to	Cannot directly accessiontance	Can access both state and
" Worth Ca	riese. Variable.	instance variable.
Access to	Can access static variable	Can accesstatic variable
Static Varie	ble directly.	directly
Method	Cannot be overridden (but can be	Can be overriden by subcless
Overriding.	hidden in subclass.	Successive
Use Case.	Used for utility or helper	Used when behaviour is
	method.	dependent on bistation
Example	public static void show ().	dependent on object state public void show().
		Pasite VOIDES HOWEJ.



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(23)	What is the agnificance of final keywoord in Java? The final keywoord in Java is used to define constants, prevent method overriding, & prevent inheritance. It can be applied to:-
rather than	prevent method overriding, & prevent inheritance. It can be applied to:-
ard to	· Variables: Makes the variable a constant that can be assigned only once
254	· Methods: Prevent a method from being overriden by Subdu · Classes: Prevents a class from being subclassed
041.	What are named and widening conversions in Java?
A description	· Widening Conversion: When a smaller data type is auto- matically converted to a larger one eg. into long. · Narrowing Conversion: When a larger data type is emplicitly converted to a smaller one eg. long to int.
Q51	Provide examples of narrowing and widening conversions between primitive data types
· ->	Widening:
Aire	long 1=1; // Automatic widening from int to long.
N V	Narrowing:
7.4	double d=12345; int i= (int)d; // Explicit narrowing from double birt
	in Laboration deals and make a simple day to the life
Q6) -	How does gave handle potential loss of precision during narrowing?
	ava requires explicit casting for narrowing conversions to alest the programmer of potential precision loss.
	double d=123.45;
7	int = (int)dis 11 The fractional part (45) is lost. In this case, the conversion discards the decimal portion, of
	only the whole number part is retained.

1071	PAGE No.
971	Explain the care I a
	Java out oncept of automatic uniderson
	type: type:
	cost promoted to a larger type with t
	Explain the concept of automatic widening conversion in Java? Tava automatically handles widening conversions, where a smaller type is promoted to a larger type without requiring explicit inti=42; alouble d=i: //el
	int i= 42;
	clouble d=1; //int is out + 11
1001	casting. Casting. int i= 42; clouble d = i; //int is automatically widered to double. What are the implications of narrowing and widering
(20)	What are the implication
	Conversions on true of narrowing and widening
->	· Widening: Soly Compatibility & data loss?
	What are the implications of narrowing and widening conversions on type compatibility & data loss? Widening: Safe, no data loss, automatic conversion by the compiler. Narrowing: Requires a distant
	· Narrouse D
	· Narrowing: Requires explicit casting because it can lead to data-loss. Narrowing conversions can cause issue with type compatibility & precision, while
	action loss. Marrowing conversions can cause issue
	with type compatibility & precision while
	widening conversions are generally sake and
	with type compatibility & precision, while widening conversions are generally safe and automatically handled by Java.
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