Practical No. 9: Develop programs for implementation of explicit type conversion in Java.

I. Practical Significance:

Assigning a value of one datatype to another datatype is known as typecasting. When larger type of data should be assigned to smaller datatype explicit typecasting is required. Students will be able to implement assignment of explicit typecasting.

II. Relevant Program Outcomes (POs)

- **Basic knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problems.
- **Discipline knowledge:** Apply Computer Programming knowledge to solve the computer group related problems.
- **Experiments and practice:** Plan to perform experiments and practices to use the results to solve the computer group related problems.
- **Engineering tools:** Apply relevant Computer programming technologies and tools with an understanding of the limitations.
- **Individual and Team work:** Function effectively as a leader and team member in diverse/multidisciplinary teams.
- **Communication:** Communicate effectively in oral and written form.

III. Competency and Practical skills

"Develop Applications using Java".

The practical is expected to develop the following skills:

1. Develop a program to show use of explicit type casting.

IV. Relevant Course Outcome(s)

Develop programs using Object Oriented methodology in Java.

V. Practical Outcome (PrOs)

Develop programs for implementation of explicit type conversion in Java.

VI. Relevant Affective domain related Outcome(s)

1. Follow safety practices.
2. Practice good housekeeping
3. Demonstrate working as a leader/ a team member.
4. Follow ethical practices.

VII. Minimum Theoretical Background

Narrowing or Explicit Conversion

If we want to assign a value of larger data type to a smaller data type we perform type casting explicitly or narrowing.

- This is useful for incompatible data types.
- Here, target-type specifies the desired type to convert the specified value to.

Syntax:

```
dataType variableName = (dataType) variableToConvert;
```

Example:

```
float a =5.2;
int b = (float) a;
```

VIII. Resources required (Additional)

Nil

IX. Resources used (Additional)

Sr. No.	Name of Resource	Broad Specification	Quantity	Remarks (If any)
1	Computer system	i3 4/256 SSD		
2				

X. Program Code: Teacher must assign a separate program statement to group of 3-4 students.

Develop a program to show the use of explicit type casting.

```
class test {
    public static void main (string[] args) {
        double d = 100.04;
        long l = (long)d;
        int i = (long)l;
        System.out.println("Double value" +d);
        System.out.println("Long value" +l);
        System.out.println("integer value" +i);
    }
}
```

XI. Result (Output of Code):

Double value 100.04
Long value 100
Int value 100

XII. Practical Related Questions

Note: Below given are few sample questions for reference. Teacher must design more such questions so as to ensure the achievement of identified CO.

1. What is casting?
2. What is difference between implicit and explicit type casting?
3. What is narrowing?

(Space for answer)

1) Type casting is assigning ~~on~~ value of one type of variable to another type of variable.

2) If a conversion can not be made without risk of losing information then it is an explicit. If a conversion can be made without risk of losing information then it is an implicit.

3) Narrowing is passing higher size data type to lower size datatype.

XIII. Exercise:

1. Write Error/output of code in the given space.

Sr. No.	Program Code	Error/Output

1.	class Test{
	public static void main(String[] args) {
	double d = 100.04;
	long l = (long)d;
	int i = (int)l;
	System.out.println("Double value "+d);
	System.out.println("Long value "+l);
	System.out.println("Int value "+i);
	}
	}
		~~100~~
		Double value 100.04
		Long value 100
		int value 100

2.	class Test{
	public static void main(String args[]) {
	byte b = 50;
	b = (byte)(b * 2);
	System.out.println(b);
	}
	}
		100

3.	class Test{
	public static void main(String args[]) {
	byte a= 4;
	char b = 'z';
	short c = 102;
	int i = 5000;
	float f = 5.7f;
	double d = .124;
	double result = (f * a) + (i / b) - (d * c);
	System.out.println("result = " + result);
	}
	}
		50.151992237060555

2. Write a program to convert variable of basic datatypes and shows result of explicit typecasting.

(Space for Answer)

```
class Test {
    public static void main (String[] args) {
        double d = 14.5;
        long l = (long)d;
        int i = (int)l;

        System.out.println("Double value:"+d);
        System.out.println("long value:"+l);
        System.out.println("int value:"+i);

    }
}
```

```
Double value: 14.5
long value : 14
int value : 14
```

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XIV. References/ Suggestions for Further Reading

1. http://www.javainterviewpoint.com/type-casting-java-implicit-explicit-casting/
2. https://www.dyclassroom.com/java/java-type-casting
3. https://www.studytonight.com/java/type-casting-in-java

XV. Assessment Scheme

Performance Indicators		Weightage
Process related(35 Marks)		**70%**
1	Logic formation	30%
2	Debugging ability	30%
3	Follow ethical practices	10%
Product related (15 Marks)		**30%**
4	Expected output	10%
5	Timely Submission	10%
6	Answer to sample questions	10%
Total (50 Marks)		**100%**

List of Students /Team Members

1. .....
2. .....
3. .....
4. .....

Marks Obtained			Dated signature of Teacher
Process Related(35)	**Product Related(15)**	**Total(50)**	