Practical No. 7 and 8: Develop programs for implementation of implicit type casting in Java, Part –I and Part – II.

I. Practical Significance:

Assigning a value of one type to a variable of different type is known as Type Casting. When you assign value of one data type to another, the two types might/ might not be compatible with each other. Students will be able to understand implicit type conversion between data types.

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.

IV. Relevant Course Outcome(s)

"Develop Applications using Java".

The practical is expected to develop the following skills:

1. Develop a program to show automatic conversion between various compatible data types.

V. Practical Outcome (PrOs)

Develop programs for implementation of implicit type casting 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

1. Widening or automatic type conversion: Possible when two types are compatible and target type is greater than source type.
2. Narrowing may result in loss of information.

Following table shows the casts that result in a loss of information.

Sr. No.	From	To
1.	byte	short, char, int, long, float, double
2.	short	int, long, float, double
3.	char	int, long, float, double
4.	long	float, double
5.	float	double

VIII. Resources required (Additional)

Nil

IX. Resources used (Additional)

Sr. No.	Name of Resource	Broad Specification	Quantity	Remarks (If any)
1	Computer System			
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 implicit typecasting.

```
class Typecasting {
public static void main (String[] args) {
byte p=10;
System.out.println("byte value:"+p);
short q=p;
System.out.println("Short value:"+q);
int r=q;
System.out.println("integer value:"+r);
long s=r;
System.out.println("long value:"+s);
float t=s;
System.out.println("float value"+t);
double u=t;
System.out.println("double value"+u);
}
}
```

XI. Result (Output of Code):

byte value : 10
Short value : 10
int value : 10
long value : 10
float value : 10.0 double value : 10.0

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. List different data types according to storage capacity.
2. State need of typecasting.
3. State the data types to which boolean datatype is implicitly casted.
4. Write two examples of implicit type casting.

(Space for answer)

i) i) Byte ii) Short , iii) Int , iv) long v) float vi) Double vii) String viii) Boolean.

ii) Type casting is required to ensure variables are correctly processed by a function.

iii) We cannot type cast boolean variable.

iv)

i) int a = 5 ;
long b = a ;

ii) byte c = 2 ;
float k = c ;

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) {
	int i = 100;
	long l = i;
	float f = l;
	System.out.println("Int value "+i);
	System.out.println("Long value "+l);
	System.out.println("Float value "+f);
	}
	}
		Int value 100
		Long value 100
		Float value 100.0

2.	public class Test{
	public static void main(String[] argv) {
	char ch = 'c';
	int num = 88;
	ch = num;
	}
	}
		Incompatible types
		possible loosy conversion.

3. Write a program to implicitly typecast lower range data type to larger storage size datatype.

```
class Test{
public static void main (string[] args){
    int a = 200
    long l = i;
    float F = l;
     System.out.println("integeer value" + a);
     System.out.println(" long value" +l);
     system.out.println("float value"+f);
     }
}
```

XIII. 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

XIV. 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)**	