Assignment 4

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

```
package org.example;
import java.util.Scanner;

public class Que1 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter an Integer : ");
		int integer = sc.nextInt();
		double d = integer;

		System.out.print("Integer convert to double using widening : "+ d);
	}

}
```

```
Enter an Integer : 67
Integer convert to double using widening : 67.0
```

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

```
package org.example;
import java.util.Scanner;

public class Que2 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter an double : ");
		double d = sc.nextDouble();
		int integer = (int)d;

		System.out.print("Double convert to Integer using narrowing : "+ integer);
	}

}
```

```
Enter an double : 345.678
Double convert to Integer using narrowing : 345
```

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

```
package org.example;
import java.util.Scanner;
```

```
public class Que3 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter integer : ");
		int i = sc.nextInt();
		System.out.print("Enter double : ");
		double d = sc.nextDouble();
		System.out.print("Enter float : ");
		float f = sc.nextFloat();

//			short sum = i+d+f;  //cannot convert from double to short
//			short sum = i+(short)d+f;  // cannot convert from float to short
//			short sum = i+(short)d+(short)f;  //cannot convert from int to short
//			short sum = (short)i + (short)d + (short)f; //cannot convert from int to short
		short sum = (short) ((short)i + (short)d + (short)f);
		System.out.print("Enter float : "+sum);
	}

}
```

```
Enter integer : 32
Enter double : 345.543
Enter float : 34.3
Enter float : 411
```

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

```
package org.example;
import java.util.Scanner;

public class Que4 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter integer : ");
		int i = sc.nextInt();

		double d = i;
		System.out.println("Int to double : " + d);
		float f = i;
		System.out.println("Int to float : " + f);
//			boolean b = i;
		System.out.println("Int can not convert to boolean." );
		String s = Integer.toString(i);
		System.out.println("Int to String : " + s);


	}

}
```

```
Enter integer : 56
Int to double : 56.0
Int to float : 56.0
Int can not convert to boolean.
Int to String : 56
```

Interview Question:

Q: What does static keyword mean in java?

→

- The static keyword is used for memory management.
- The static keyword in java is used to share some variable or method of a given class
- Static keyword is applied with variables, methods, blocks, nested classes.
- Static variable belongs to class not instance
- Static keyword is used for variable or method that is same for all the instance

Q.2

Static	Non-Static
- gets memory one per class	- gets memory once per instance
- can be accessed in both static & non static block.	- only accessed in static block.
- get memory in method area	- gets memory in heap
- less memory usage.	- more memory usage.

Q. Explain Automatic widing:-

→ - Automatic widing takes place when two data types are ~~automa~~ automatically converted.

- This takes place when two data types are compatible.

- And when we have ~~to~~ to assign value of smaller datatype to bigger data type.

Ex:- int a = 15;
~~double b =~~
long b = a;

Q. What are the implication of narrowing & widening conversions on type compatability & data loss

→

- Widening conversion in Java, is like converting from int to long are safe & automatic because the larger type can hold the value without any data loss.

- Narrowing conversions are like long to int which requires explicit casting because they can lead to data loss or errors.

Q.6 narrowing
- It means converting the datatypes with higher memory to lower memory data type

widening
- It means converting the data types with lower memory to higher memory data type.

Q.7 narrowing example :-

```
int a = 10;
short b = (short) a;

long c = 2357;
int d = (int) c;
```

widening example :-

```
int a = 10;
long b = a;

float c = 3.56;
double d = c
```

Q.8 how does java handle potential loss of precision during narrowing conversion.

-> - by explicit type casting
Ex:- long A = 1234;
int B = (int) A;

Q.3 What is role of static keyword in context of memory management.

→

- Static keyword assigned variables gets memory once per class
- which stored in the method Area.
- As it gets memory only one time while execution of program, it takes the less memory.

Q.4 Can static methods be overloaded & overridden in java? How static variables shared across multiple instances of class?

→

- Static methods can overloaded but not override.

- static variables are exist only once in the entire program. Thats how they shared across multiple instances of class.

Q.5 What is significance of final keyword in java?

- The variables with final keyword are initialized only once means there value can not be changed later.
- It is used to create constant variable, prevent method overriding & prevent inheritence