Page No.:

Date:

Assignment-06

Q1 what is method overloading in Java? explain with an example.

→

method overloading

when a program contains more than one method with the same name but different parameters.

ex:-

```
public void sum (int a, int b){}
public void sum (int a, int b, int c){}
```

Q2 what are the rules of method overloading resolution in java? How does java determine which overloaded method to call?

→

rules:-

- The parameter of two method overloading should be different data type
- If method having same no. parameter then the data type should be different.
- method should not have repeted parameter.

java determines which overloaded method to call based on the number , type and order of the arguments passed to the method. this is known as method resolution.

Q3 what does static keyword mean in java? Explain the difference between static and non static methods.

→

In java, static keyword is used to declare class variable or method as belonging to the class itself, rather than any one instance of the class. static member are shared by all instances of the class & can be accessed without creating an instance of the class.

	Static	Non-static
scope	class	instance
Access	can be accessed without creating instance of class	accessed by methods that are called method
memory	allocated once, when class is loaded	Alloted each time an instance of class created

Q4. Can static methods can be overloaded and overridden in java ? How are static variables shared accross multiple instance of a class ?

→

Yes, static method can be overloaded multiple time with same name but different parameter.
But static method can not overridden in java. this means if you ~~written~~ declare static method in subclass with the same name and signature as static method in the superclass, the subclass method will hide the superclass method, not overridden it.

only single copy of the static variable is created and shared amoung all the instances of the class. Because it is a class-level variable, memory allocation of such variables only happens once when the class is loaded in the memory.

Q5. what is the role of static keyword in the context of memory management?

→ A static method belongs to the class and not the instance. It can be called without creating on instance of the class. there are several benefits of using 'static' keyword. It helps in memory management as static variables are shared among all instances, reducing the amount of memory required.

Q6. ~~What is the role of the static keyword in the context of memory management.~~

Q6. what is the significance of the final keyword in java?

→

In java, the final keyword is used to indicate that a variable, method or class cannot be modified or extended.

Final variable:-

when a variable is declared as final, it's value can not be changed once it is initialized.

Final method:-

when a method is declared as final, it can not be overriden by subclasses

Page No.:

Date:

final classes

when a class is declared final it can not be extended by subclass. This is useful for classes that are intended to be used as it & should not be modified & or extended.

Q7. can a final method be overridden in a subclass? How does the final keyword affect variables, methods and classes in java?

→

No, final method is not overridden. The final ~~keyword~~ can not modified or extended. ~~and~~ the so value is can not change.

Q8. what does this keyword represent in Java? How is the this keyword used in constructors and methods?

→

The this keyword refers to the current object in a method or constructor.

The most common use of the this keyword is to eliminate the Confusion between class attributes and parameters with the same name (because a class attribute is shadowed by a method or constructor parameter)

Q.9. What are narrowing and widening conversions in java?

Narrowing conversion.

It is a manual or explicit conversion that converts a larger data type to a smaller data type.

widening Conversion:

It is an automatic or implicit conversion that converts ~~a larger data type~~ smaller data type to larger data type

ex:-

byte to int conversion.

Q10. provide examples of narrowing and widening conversions between primitive datype.

→

ex. Narrowing Conversion.

-converting higher to lower data type

double → float → long → int → char

byte ← short

ex:- widening Conversion

byte → short → char → int → long

double ← float

Converting lower to higher datatype.

Q11. How does java handle potential loss of precision during narrowing Conversion?

→

despite the fact that overflow, underflow or other loss of info may occour, a narrowing primitive converssion never results in a runtime exception.

It gives an suggestion where we are narrowing from higher type to lower type this can cause data loss

Q2. Explain the concep of automatic widening conversion in java?

→

It occours when signing a value of smaller data type of large datatype ensure that data is promoted to large size to prevent loss of data.

eg:-

- Conversion of int to long ~~float~~.
- Conversion of float to double involves automatic widening conversion.

Q13. what are the implications of narrowing and widening conversions on type compatibility and data loss ?

→

widening conversion ensures type compatability these conversion are safe as there is no data loss occours.

when narrowing conversion ~~is~~ occoured it may lead to data loss & require explicit Casting to handle potential errors related to type compatibli & precision/ data. Converting double to float Can result is loss of data & may throw exception like InvalidCastException or OverFlowExceptio