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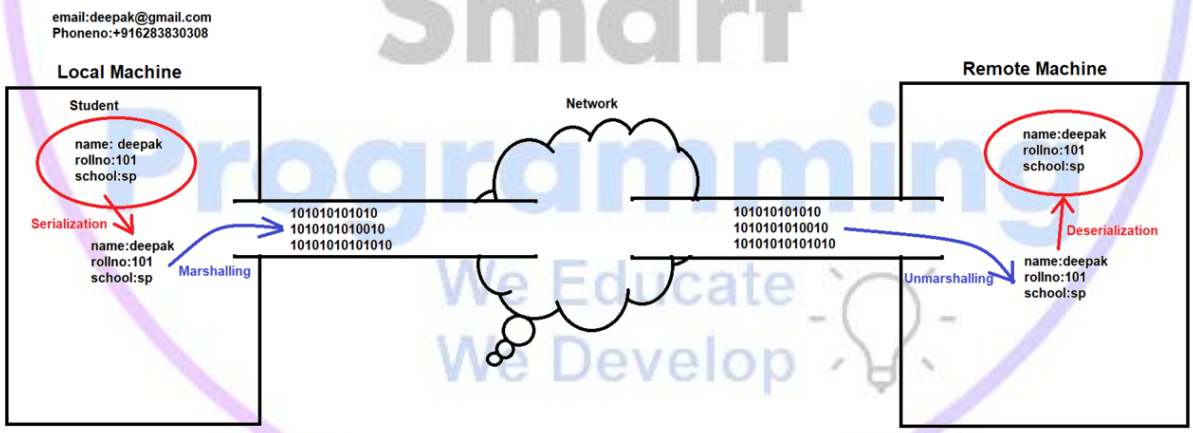
Serialization & Externalization in Java

=> Serialization & Deserialization :-

-> Serialization is the mechanism by which object state is converted into byte stream and converting byte stream into object state is known as deserialization

-> The byte stream created is platform independent, so the object serialized on one platform can be deserialized on another platform



-> Advantages of Serialization and Deserialization :-

1. We can save or persist the state of an object
2. Object can travel in the network

-> How to achieve Serialization & Deserialization

= We have to use following 2 points :-

1. Serializable Interface
2. ObjectOutputStream (Serialization) - writeObject()

   ObjectInputStream (Deserialization) - readObject()

-> Only those objects can be serialized which implements java.io.Serializable interface

=> Serializable Interface :-

-> Serializable interface is a marker interface (marker interface are those which does not have any data member and methods and marker interface does not have any "business logic")

-> It can be used to inject some abilities to the object at runtime

-> More examples of marker interface : Cloneable, Remote etc

-> All the wrapper classes and String class by default inherit Serializable interface

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=> transient keyword :-

-> If we dont want any variable to serialize then we can create that object as transient

=> Points to remember :-

1. If parent class implements Serializable interface, then we can serialize child class object

2. If we dont want to serialize any variable then we can create that variable as transient or static

3. Constructor of an object is not called when an object is deserialized

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=> Externalization :-

-> Externalization is when we need customized serialization

-> How to achieve Externalization :-

1. java.io.Externalizable interface

-> writeExternal(-)

-> readExternal(-)

Important points to remember for "Serialization" & "Externalization"

1. Serialization is the process of writing the state of an object to a file is called serialization, but strictly speaking, it is the process of converting an object from java supported form into a file supported form or network supported form.
2. Serialization can be implemented by using FileOutputStream and ObjectOutputStream.
3. For serialization, an object must be serialized. An object is said to be serializable if and only if the corresponding class implements a Serializable interface.
4. Serializable interface is present in java.io package. It is a marker interface thus it does not contain any methods.
5. If we try to serialize a non-serializable object then we will get Runtime Exception.
6. In serialization, everything is taken care of by JVM and the programmer doesn't have any control. In serialization, it is not possible to save a particular part of the object which may create performance problems. To overcome this problem we should go for externalization.
7. The main advantage of externalization is that the programmer has the control on object and JVM doesn't have any control. Based on our requirements we can save either the total object or part of the object which improves the performance of the system.
8. To achieve externalization we have to implement "Externalizable" interface.
9. Externalizable interface is not marker interface, it contains 2 methods i.e.
   - writeExternal(ObjectIOutput obj)
   - readExternal(ObjectInput in)
10. Externalizable interface is child interface to Serializable interface

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