Object Oriented Analysis and Design using Java
Self Learning: Java Serialization, Deserialization and HashMap

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Serialization is a mechanism of converting the state of an object into a byte stream. It is mainly used to travel object's state on the network (that is known as marshalling). Serializable is a marker interface (has no data member and method). It is used to "mark" Java classes so that the objects of these classes may get a certain capability.

Deserialization is the reverse process where the byte stream is used to recreate the actual Java object in memory.
The byte stream created is platform independent. So, the object serialized on one platform can be deserialized on a different platform.

HashMap<K, V> stores the data in (Key, Value) pairs, and the data can be accessed by an index of another type (e.g. an Integer).
One object is used as a key (index) to another object (value). If you try to insert the duplicate key, it will replace the element of the corresponding key.
HashMap allows to store the null keys as well, but there should be only one null key object and there can be any number of null values. This class makes no guarantees as to the order of the map. To use this class and its methods, **java.util.HashMap** package or its superclass needs to be imported.

Code:
```java
import java.io.*;
import java.util.*;

public class ConfigJava implements Serializable
{
    private HashMap<String, String> configJava;
    public ConfigJava()
    {
        configJava = new HashMap<String, String>();
    }
    public void setVal(String key, String value)
    {
        configJava.put(key, value);
    }
    public String getVal(String key)
    {
        return configJava.get(key);
    }
    public static void main(String[] args)
    {
        ConfigJava configJava;
        File fileconfig = new
File("/Users/vanshikagoel/Desktop/OOAD/Lab/Week 7/config.cfg");
        if (fileconfig.exists())
        {
            try
            {
                FileInputStream fileInputStream = new
FileInputStream(fileconfig);
                ObjectInputStream objectInputStream = new
ObjectInputStream(fileInputStream);
                configJava = (ConfigJava)
objectInputStream.readObject();
                objectInputStream.close();
            }
            catch (IOException | ClassNotFoundException e)
            {
                 e.printStackTrace();
                return;
            }
        }
        else
        {
            configJava = new ConfigJava();
        }
        configJava.setVal("Path",
"//Users/vanshikagoel/PES1UG20CS484/");
        configJava.setVal("Version", "12.3.1");
        configJava.setVal("SystemName", "PES1UG20CS484");
        configJava.setVal("Language", "English");
        configJava.setVal("Operating System", "macOS");
        try
        {
            FileOutputStream fileOutputStream = new
FileOutputStream(fileconfig);
```

```java
                ObjectOutputStream objectOutputStream = new
ObjectOutputStream(fileOutputStream);
                objectOutputStream.writeObject(configJava);
                objectOutputStream.close();
        }
        catch (IOException e)
        {
                e.printStackTrace();
                return;
        }
        System.out.println("config.cfg file has these values:");
        System.out.println("1. Path: " + configJava.getVal("Path"));
        System.out.println("2. Version: " +
configJava.getVal("Version"));
        System.out.println("3. System_Name: " +
configJava.getVal("SystemName"));
        System.out.println("4. Language: " +
configJava.getVal("Language"));
        System.out.println("5. Operating System: " +
configJava.getVal("Operating System"));
    }
}
```

Output Screenshot:


```
vanshikagoel@Vanshikas-MacBook-Air Week 7 % javac ConfigJava.java
vanshikagoel@Vanshikas-MacBook-Air Week 7 % java ConfigJava
[config.cfg file has these values:
[1. Path: //Users/vanshikagoel/PES1UG20CS484/
 2. Version: 12.3.1
 3. System_Name: PES1UG20CS484
 4. Language: English
 5. Operating System: macOS
vanshikagoel@Vanshikas-MacBook-Air Week 7 %
```

Config.cfg file:


```
 ~/Desktop/OOAD/Lab/Week 7/config.cfg        main
1      ¨Ì¿¿sr¿
2      ConfigJava9í¿%üW›á¿¿¿L¿
3      configJavat¿¿Ljava/util/HashMap;xpsr¿¿java.util.HashMap¿¿/i√¿`—¿¿F¿
4      loadFactorI¿    thresholdxp?@¿¿¿¿¿¶w¿¿¿¿¿¿¿¿¿t¿¿Patht¿#//Users/vanshikagoel/PES1UG20CS484/t¿¿Languaget¿¿Englisht¿¿Versiont¿¿12.3.1t¿
5      SystemNamet¿¿PES1UG20CS484t¿¿Operating Systemt¿¿macOSx
```