

# ITM-411

## Intermediate Software Development

### MP2

Develop a Java SE Netbeans project using the sample data files contained in *data\_files.zip* as an input feed into an application that provides data analytics. The data was obtained from the United States Census Bureau at <http://www.census.gov/popest/data/datasets.html>

Create an abstract class called *Record* and a subclass called *PopulationRecord* employing instance variables for each of the fields in the data files. Provide default (*no-arg*) and (*full-arg*) constructors where required. Provide accessors(*gets*) and mutators(*sets*) for all of the instance variables/fields. Provide *toString()* methods to format object state.

Provide comparator classes implementing *java.util.Comparator* or *java.lang.Comparable* for comparing various fields in the application's data analysis requirements.

Locate the *Record*, *PopulationRecord* and comparator classes (or interface(s)) in a package called *domain*.

Provide the following functionality in the driver:

- Read input data into *PopulationRecord* objects.
- Collect *PopulationRecord* objects into an *ArrayList* called *populationRecords*.
- Encapsulate a *java.util.Date* object and the *ArrayList* object into a serializable class called *PersistentObject*.
- Create an instance of *PersistentObject* with the current timestamp and the *ArrayList* object.
- Serialize the persistent object to a file called *population-record.ser* relative to your project path.
- Make the application sleep for 5 seconds.
- Deserialize the persisted object into a date object and an *ArrayList* object called *deserializedPopulationRecords*.
- Display the time difference between serialization and deserialization.
- Display the following data analytics:
  1. population %increase based on estimate per region per year
  2. max and min births per state per year
  3. max and min deaths per state per year
  4. number of states with estimated population increase
  5. number of states with estimated population decrease
  6. state with most estimated population per year,
  7. state with least estimated population per year.
- Write all displayed data to a text file called *population-records.txt* in your project folder called *output*

Provide a portable test script that executes the application and writes all display data to a file called *mp2out.txt* in a portable file system location.

Comment your code and provide a detailed README (*pdf* only) file that includes:

- project description
- installation, compile and run-time requirements
- insights and expected results
- screen captures demonstrating **all** application capabilities

Generate project *javadocs* and relocate from *dist* folder to a new folder in your project folder called *docs*.

Submit a compressed file called **mp2.zip** (*zip only*) of all project code and documentation to the *Digital DropBox* link on *Blackboard* by 10/07/12, 23:59/CDT. *Note that a completed submission requires the use of **both** the Add File button and the Send File button. Late mini-projects will lose points. (50 points)*