## Statistics collection framework

The purpose of this exercise is to practice how to use interfaces and generics to implement a dynamic pluggable application.

You will implement a simple framework to calculate statistics about Java objects of any type (String, employees, students, array of numbers).

You will be provided with two interfaces which defines the simple statistics calculation framework and you will need to implement your application depending on it. The interfaces are:

/\*\*

\* Defines the implementer as a statistics collector strategy. which accepts an

\* objects, collect required information (statistics) from it then returns a

\* list of all statistics calculated.

\*

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\*/

**public interface** StatisticsCollector<T **extends** Object, S **extends** Statistic> {

/\*\*

\* Return the name of this collector

\*

\* **@return**

\*/

**public** String getName();

/\*\*

\* Returns the description of this collector.

\*

\* **@return**

\*/

**public** String getDescription();

/\*\*

\* Collected statistics from <code>object</code>.

\* <p>

\* The implementation needs to collect information from passed object which

\* will be aggregated and returned latter by {@link #calculatedStatistics()}

\* method.

\*

\* **@param** object

\* the object to visit and collect statistics from

\*/

**publicvoid** visit(T object);

/\*\*

\* Returns an iterator for all statistics calculated through multiple calls

\* to {@link #visit(Object)} method.

\*

\* **@return** iterator for calculated statistics

\*/

**public** Iterator<S> calculatedStatistics();

}

/\*\*

\* Defines a holder for a single statistical information, like the numberof

\* people according to birth year, the total of prime numbers from an array.

\* etc...

\* <p>

\* Each Statistic instance has a unique identifier {@link #getKey()} and the

\* calculated value {@link #getValue()}, for example: a statistic for number of

\* peoples aggregated by birth year shall return the year as a key and the

\* number of births as a value.

\*

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\*

\*/

**publicinterface** Statistic {

/\*\*

\* The key of this statistic

\*

\* **@return** statistic key

\*/

**public** String getKey();

/\*\*

\* The aggregated value of this statistic

\*

\* **@return** aggregated value

\*/

**public** Object getValue();

/\*\*

\* A detailed description for this statistic or <code>null</code> if there

\* isn't.

\*

\* **@return** detailed description

\*/

**public** String getDetails();

}

# Requirement

You need to provide the following implementations for the framework:

* You need to implement a statistics collector(s) to calculate the following from objects passed to (visit) method:
  + Total number of upper case characters
  + Total number of lower case characters
  + Total number of non-word characters (like ? !, etc...)
  + Total number of words
  + Total number of numbers found in the strings
* You need to implement a Java bean (Employee) which contains the following fields:
  + First name
  + Last Name
  + Birth Date
  + Birth Place
  + Hiring Date
  + Resignation date (could be null if he is still employeed) // لااستقالة
  + Position
  + Salary
* You need to implement a collector(s) which calculate the following:
  + The statistics of how many employees according to birth year
  + The statistics of how many employees according to birth place
  + Statistics about salary ranges
    - Below 350 JOD
    - Between 350 JOD and 600 JOD
    - Between 600 JOD and 1200 JOD
    - And Above 1200 JOD
  + Statistics about how many employees resigned according to resignation year
  + Statistics about how many employees according to the position.
* The expected output to the console shall look something similar to the below:

Employees Statistics:

Statistic Name | Value

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Salary < 350 |20

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

350< Salary < 600 |20

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Birth in Kuwait |5

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Birth in Jordan |20

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Birth year 1990 |1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Birth year 1991 |4