UNIVERSITY OF KWAZULU-NATAL

SCHOOL OF MATHEMATICS,

STATISTICS & COMPUTER SCIENCE

Computer Programming

COMP 102 Practical Exam

Test date:	**15th December 2020**
Total marks:	**100 marks**
Venue:	**CS LANs**
Time limit:	**3 hrs**

Examiners

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Instructions:

- There is ONE question. Answer all parts of the question.

- Log in to the online chat room every 10min for announcements.

- You may use the API documentation ONLY.

- **Save your work regularly.**

- It contains two Java files, **UserProfile.java** and **TwitterReport.java**. Write your Java code in these files. There are also two data text files containing data to use in testing your code – **profiles.dat**, and **tweets.dat**. There is also a PDF file called **API.pdf**, which contains useful Java API method definitions.

Question – Most Famous and Most Active Twitterers

Twitter is an American microblogging and social networking service on which users post and interact with messages known as "tweets".

In this exam, you are required to develop a Twitter analysis tool that will analyse a file of **Twitter User Profiles** (profiles.dat), and a file containing a dataset of **tweets** (tweets.dat). The program will report the **Most Famous Tweeter**, their tweet list, and the **Most Active Tweeter**, along with their tweet list.

There are two classes, to implement (see mark breakdown per method in the code files):

1. UserProfile.java – 30 marks
2. TwitterReport.java – 70 marks

These files are provided in the zip file on the moodle (**COMP102W2PracTest2020.zip**), and are incomplete. You must replace all instances of the tag – **// CHANGE ME** – to complete the classes.

UserProfile.java

1. Complete the constructor so as to initialise all fields. The **noOfTweets** should be initialised to 0, and the **tweets** String array should start with a size of 2 cells.

2. Implement the method **public void addTweet(String t)** – if the tweets String array runs out of empty cells, the contents should be copied into a new array twice the length of the array that is full. Otherwise, add the tweet to the first empty cell in the array.

3. Implement the method **private String printTweets()** to help the **toString()** method – return a String that contains each tweet on a new line.

TwitterReport.java

1. Implement the **private static UserProfile maxFollowers(UserProfile[] users)** – return the UserProfile with the largest number of followers. (return the last one in the case of a tie).

2. Implement the **private static UserProfile maxTweets(UserProfile[] users)** – return the UserProfile with the largest number of tweets. (return the last one found in the case of a tie).

3. Implement the **public static void main(String[] args) throws IOException**
   - Load UserProfile objects from the **profiles.dat** file into an array (e.g. users).
   - Load tweets from the **tweets.dat** file, and for each tweet, add it to the correct user in the profile array using the **addTweet** method.
   - Print out the most famous tweeter (using **maxFollowers** method), their details, and their tweets.
   - Print out the most active tweeter (using **maxTweets** method), their details, and their tweets. A sample output would be:

```
TWITTER REPORT

MOST FAMOUS:
ID: 214507283
First Name: Jadin
Last Name: Jayram
Country: ZA
Followers: 4988
# Tweets: 2
Tweets:
Tweet number one
This is another tweet

MOST ACTIVE:
ID: 216009680
First Name: Lamiz
Last Name: Anwar
```

```
Country: ZA
Followers: 4130
# Tweets: 8
Tweets:
Hello twitter world
IThis is my second tweet
I am so loving twitter
#twitterrules
I love tweeting
I really do
Goodbye whatsapp
Goodbye facebook
```

Data Files

The user profile data is stored in a file called **profiles.dat**. Each User Profile is listed as a set of space-separated values on a single line: *The first line of the file contains the size of the population.* For example, if the file had 5 user profiles:

```
5
216009680    Lamiz  Anwar  ZA     4130
217011628    Oyama  Bilana ZA     2568
217079284    Mohammed Chauhan ZA 2828
217069353    Aaron  Daniels ZA    2470
217027128    Shankar DayalZA      3931
```

The tweet data is stored in a file called **tweets.dat.** Each tweet is on a line, with user ID, then the string ":*:", with the rest of the line taken up by the tweet itself. A snippet of the file:
```
214523028:*:https://www.youtube.com/watch?v=nL2KyKgYqFY Cloud Engineer With Python
216018336:*:"How much can Diane impact in @google cloud business against AWS loud
216009670:*:Multiple conversations at this new years party about Amazon Web Services
216027541:*:RT @docker: Deploy Docker on AWS via Marketplace
217067552:*:Building a Serverless Dynamic DNS System
```

Test your application by generating the report – SAVE THE OUTPUT to a text file.

Don't forget to save your work regularly!

When done, make sure you submit all your java files and the output to the moodle site.

FIN