Assignment 1

CSCI 2010U - Principles of Computer Science

Due: 2 October 2015 at Midnight

Q1. [60%] Write a program that generates usernames. The program asks for the first and the last name of a person and uses this information to generate a unique 9 char long username. The first character of the username is the first character of the first name. The next 5 characters of the username are the first 5 characters of the last name, and the remaining 3 characters of the username are 3 digits to ensure the uniqueness of usernames when two individuals with similar first and last name use this system.

- User: John Smith – username: jsmith000
- User: Apple Seed – username: aseed0000
- User: Rick Grimes – username rgrime000
- User: George Richardson – username: gricha000

This information is stored in a text file called username.db. Every time the program executes it loads the contents of this text file to ensure that usernames are not repeated. The program will create a new username.db if none is found in the current directory.

```
java username
username.db not found. creating.
Enter first name: John
Enter last name: Mill
Your new user name is: jmill0000
```

```
java username
username.db found.
Enter first name: Adam
Enter last name: Sandman
Your new user name is: asandm000
```

```
java username
username.db found.
Enter first name: Jacob
Enter last name: Mill
Your new user name is: jmill0001
```

File username.db will look as follows:

```
3
John
Mill
jmill0000
Adam
```

```
Sandman
asandm000
Jacob
Mill
jmill0001
```

Submit a1q1.java

Q2. [25%] Write a program that prints the first n prime numbers. The program should also print the number of milliseconds it took to generate this list.

```
java genprime 3
1, 3, 5 (0.10 milliseconds)
```

Submit a1q2.java

Q3. [15%] Write a Temperature class that will hold a temperature in Fahrenheit temperature (as double), and provide appropriate methods to convert the stored temperature between Fehrenheit, Celsius, and Kelvin. The class should have the following methods:

- Constructor – accepts temperature in Fahrenheit
- setFahrenheit – sets temperature, temperature is passed as Fahrenheit
- getFahrenheit – reports stored temperature in Fahrenheit
- getCelsius – reports stored temperature in Celsius
- getKelvin – reports stored temperature in Kelvin

Write a program that demonstrates the behaviour of this Temperature class. The program should create an instance of the temperature class with the value entered by the user passed to the constructor. The program should then call the object's methods to display the temperature in Celsius and Kelvin.

Submit a1q3.java