

# CS118 Exam Program

## Exam #1

Farmer Casein owns a dairy farm and decides he needs a computer program to assist him with his business. He decides to make it simple (at first) by computing the “efficiency” of his cows. “Efficiency” to Farmer Casein is the ratio of the mass of milk he obtains from a given mass of feed. So for example, if 1 kg of milk is produced and 15 kg of feed is used, the efficiency is 6.7%.

Even though he buys his feed in kilograms, he only reports his milk production in gallons. (Ironically, while Farmer Casein is ready to use modern technology, he refuses to switch from the use of English units.) For our purposes, assume that milk weighs 8.6 lbs per gallon.

Provide a Python program for Farmer Casein which will compute the efficiency of his cows. The program should ask for the total amount of milk produced (in gallons), the number of cows which produced that milk, the name of the top producing cow, and how much feed was used for all cows (in kilograms). The result should be reported as the average efficiency (to one decimal place) of the cows, along with the name of the top producing cow - follow the format in the examples below.

If any of the numeric inputs provided are negative or zero, provide an error message explaining which input was invalid and terminate the program. (If more than one input is faulty, you are free to choose which will display) If the efficiency is above 50%, report the result but add a cautionary message that the inputs may be faulty.

Store any constants in variables and use only variables in your calculations. Perform all calculations in the program – do not compute values outside of the program. Submit your .PY file using Blackboard.

```
How many gallons of milk? 100
How many cows produced this milk? 10
Name of the top producing cow? Elsie
How much feed (in Kg) was used? 1
CAUTION: Inputs may be faulty!

Efficiency was 39090.9%, led by Elsie
```

```
How many gallons of milk? 50
How many cows produced this milk? 12
Name of the top producing cow? Bessie
How much feed (in Kg) was used? 500
Efficiency was 39.1%, led by Bessie
```

```
How many gallons of milk? 10
How many cows produced this milk? 0
Name of the top producing cow? Amy
How much feed (in Kg) was used? -3
ERROR - not enough cows
```