

# SOEN 6501 Example Programming Problems

## Basic Programming Problem Example: Customized Beverage Sizing

### Problem Statement:

To help drive sales up, CompHortons decided that it would offer customized beverage sizes (beer) based on the customer's height. Underage customers (less than 18 years) will only be offered water. After some consultation with their customer engagement team, CompHortons came up with a simple formula to map customer's heights to their new cup sizes. CompHortons' formula is as follows:

1. For the first 5 feet of a customer's height, the beverage cup size is computed as 10 units per foot.
2. For any height more than 5 feet, increase the cup size at a rate of 8 units per foot.

For example, for a customer that is 6 feet, you need to account for the first 5 feet at a rate of 10 units per foot and the remaining 1 foot

(i.e., from 5 to 6) increases the size at a rate of 8 units per foot. In the case of this 6 foot customer, the cup size would be 58 units.

3. The beverage itself is either water or beer depending on customer's age.
4. Currently, CompHortons has 4 cup sizes: ExtraSmall, Small, Medium and Large. The units limit for each cup size could change based on number of customers and their beer stock. For example if the limits are set as 25, 50, 75 then for cup sizes less than or equal to 25 units, use ExtraSmall, for cup sizes more than 25 units but less than or equal to 50 units, use Small, for cup sizes greater than 50 units but less than or equal to 75 units, use Medium and for cup sizes more than 75 units, use Large

Write a program that takes in as input the following:

Line 1: 3 integers (separated by one or more spaces) giving the limits for determining cup sizes.

Line 2: 1 integer giving the number of customers, say N

Next N Lines: 1 line for each customer giving customer name (string with no spaces), 1 integer giving age, 2 integers giving customer height in feet and inches. All items are separated by one or more spaces.

Your program should output the following:

N lines with each line containing the following:

Customer name (string as given in the input), Beverage type (Water or Beer), Cup Size (string), Customer Age (integer) and Customer Height (2 integers). Items should be separated by one single space between them. The customers should be listed in the same order as that given in the input file.

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Example Input:

```
25 50 75
3
Charles 29 5 0
Adam 56 6 3
Bob 11 4 6
```

Example Output:

```
Charles Beer Small 29 5 0
Adam Beer Medium 56 6 3
Bob Water Small 11 4 6
```

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**Advanced Programming Problem Example: Customized Beverage Sizing**

Problem Statement:

The problem statement is the same as for the basic example problem above. However your output must be in alphabetic sorted order for name as the first sort key, beverage size as the second key and numeric sorted order with height as the third key.

For the same input file above, the output should be:

```
Adam Beer Medium 56 6 3
Bob Water Small 11 4 6
```

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