PROGRAMMING ASSIGNMENT 2: MoreBurgers (50 POINTS)

This assignment extends the code of the BurgerBot assignment. A solution to the BurgerBot will be made available to you and you can use it as a starting point. You can also use yours, if you are confident in its quality. You will need to use *if-else*, *while* and *for* loops for this program.

PROGRAM SPECIFICATIONS:

In this program you will simulate setting up the BurgerBot machine by a manger, displaying details of the ordering process, taking multiple customer orders, and reporting usage statistics. The diagram illustrates the major components of your program; we will refer to these stages in the rest of the document:

Data and other parameters of the business:

A. **Costs** and **timing** of burger production process are the same as in the BurgerBot assignment.
B. You will need to use **MANAGER_CODE**, which is set to **0364a59-0**
C. There are two options for ordering:
    1. **Standard** burger, which includes all toppings and is priced accordingly. Client may order multiple standard burgers in one order.
    2. **Custom** burger, for which client selects the toppings, as in BurgerBot assignment. Each Custom order is only for one burger.

Input, Output, and Process Outline

The four major stages in this program's execution are as follows. Note that some inputs require *validation*[1], and some do not.

SET-UP by Manager: The program starts by asking for

1. the manager's code. This input must be *validated*, it must be equal to the MANAGER_CODE value.
2. the number of burgers for which the machine was preloaded.

Order options DISPLAY: Display ordering options, as shown here; all values are computed based on the BurgerBot rules. The alignment and formatting is important.

```
-------------------------------------------------
Welcome to Burger Bot!
We offer 2 kinds of burgers:
STANDARD, which has
   sauce, pickles, tomato, onion, lettuce, and cheese on it,
for $7.82 and
CUSTOM, for which you choose your toppings.

Cost of burgers with toppings (sauce is free of charge):
```

[1] Validation of input value means the program must reject invalid values and continue asking the user to provide the input value until a valid one is entered.

```
   with 0 toppings: $6.00
   with 1 topping : $6.33
   with 2 toppings: $6.66
   with 3 toppings: $6.99
   with 4 toppings: $7.32
Add cheese with any toppings for extra $0.50
-------------------------------------------------
```

Ordering: runs so long as there are still enough materials left to make burgers and the user hasn't entered manager code as the name.

3. Read customer name. If manager code value is entered, Ordering must stop and proceed to the Usage REPORT stage (described below).
4. Read what kind of burger (S for Standard, C for Custom) is ordered (*validated*).
   - For burger type S, ask and read how many burgers to make (*validated*), including in the prompt how many the machine can actually make at this time, as demonstrated in a sample run.
   - For C, proceed to ask for topping choices, just as done in BurgerBot.

   Display the amount due for the order and the time it will take to fulfill it. If the machine runs out of materials to make any more burgers, display a message `Machine must be reloaded.` Otherwise, proceed to the next customer name and order.

Usage REPORT: Display statistics of the machine operation, formatted and aligned as illustrated:

```
The latest statistics are:
       Total burgers ordered:        13
            of them Standard:        12
                  and Custom:         1
Total cooking time (hh:mm:ss)   0:53:39
```

SAMPLE RUNS

Consider two sample runs below. In the first one ordering stops because the manager's code is entered as a name. In the second one ordering stops when BurgerBot reaches its maximum capacity (the number of burgers it was preloaded for). Both runs demonstrate validation of some inputs, but not all of those that are required to be validated.
Values entered by the user are shown in boldfaced green font, as in: **abcd**. Inputs needing validation are **underlined**. For others, assume valid values will be entered.

Sample run 1

```
Please enter the manager code to start the machine: abcd
Please enter the manager code to start the machine: 1234
Please enter the manager code to start the machine: 0364a59-0
Enter how many burgers has the machine been preloaded for? 12

-------------------------------------------------
Welcome to Burger Bot!
We offer 2 kinds of burgers:
STANDARD, which has
      sauce, pickles, tomato, onion, lettuce, and cheese on it,
```

```
for $7.82 and
CUSTOM, for which you choose your toppings.

Cost of burgers with toppings (sauce is free of charge):
   with 0 toppings: $6.00
   with 1 topping : $6.33
   with 2 toppings: $6.66
   with 3 toppings: $6.99
   with 4 toppings: $7.32
Add cheese with any toppings for extra $0.50
-------------------------------------------------

Please enter your name: Tony
Tony, please enter details of your order.
What kind of burger are you looking for: Standard[S] or Custom[C]?
Please enter S or C: C
Sauce? 1 for yes, 0 for no: 1
Pickles? 1 for yes, 0 for no: 1
Tomatoes? 1 for yes, 0 for no: 0
Onion? 1 for yes, 0 for no: 1
Lettuce? 1 for yes, 0 for no: 1
Cheese? 1 for yes, 0 for no: 0

Tony, your order will be ready in 199 seconds, which is 3 minutes and 19
seconds.
The cost is $6.99
Enjoy your burger, Tony!
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-

Welcome to Burger Bot! Please enter your name: Clara
Clara, please enter details of your order.
What kind of burger are you looking for: Standard[S] or Custom[C]?
Please enter S or C: S
How many would you like to order? Enter a number 1..11 or 0 to cancel order 3
Clara, your order will be ready in 756 seconds, which is 12 minutes and 36
seconds.
The cost is $23.46
Enjoy your burger, Clara!
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-

Welcome to Burger Bot! Please enter your name: 0364a59-0
The latest statistics are:
      Total burgers ordered:        4
           of them Standard:        3
               and   Custom:        1
Total cooking time (hh:mm:ss) 0:15:55
```

Sample run 2

```
Please enter the manager code to start the machine: 0364a59-0
Enter how many burgers has the machine been preloaded for? 10

------------------------------------------------
Welcome to Burger Bot!
We offer 2 kinds of burgers:
. . . [OUTPUT OMITTED FOR BREVITY, SEE SAMPLE RUN 1]
   with 3 toppings: $6.99
   with 4 toppings: $7.32
Add cheese with any toppings for extra $0.50
------------------------------------------------
Please enter your name: Amy
Amy, please enter details of your order.
What kind of burger are you looking for: Standard[S] or Custom[C]?
Please enter S or C: k
Please enter S or C: S
How many would you like to order? Enter a number 1..10 or 0 to cancel order 12
How many would you like to order? Enter a number 1..10 8
Amy, your order will be ready in 2016 seconds, which is 33 minutes and 36
seconds.
The cost is $62.56
Enjoy your burger, Amy!
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-

Welcome to Burger Bot! Please enter your name: Shrini
Shrini, please enter details of your order.
What kind of burger are you looking for: Standard[S] or Custom[C]?
Please enter S or C: S
How many would you like to order? Enter a number 1..2 or 0 to cancel order 2
Shrini, your order will be ready in 504 seconds, which is 8 minutes and 24
seconds.
The cost is $15.64
Enjoy your burger, Shrini!
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-

Machine must be reloaded.
The latest statistics are:
        Total burgers ordered:       10
             of them Standard:       10
                 and   Custom:        0
Total cooking time (hh:mm:ss)   0:42:00
```

HINTS

1. You will need to maintain counters for values reported in statistics. For each order entered, update the burger counters as well as the total time counter.
2. To determine how many Standard burgers can still be made, use the preloaded burgers number and number of burgers made so far.
3. The **Order options DISPLAY** is easily implemented with a for-loop.
4. Validation and ordering need a while loop because they are terminated based on a condition.

REQUIREMENTS

For full credit, you must follow these requirements in addition to those already stated:

- It is important that the order of inputs and outputs match the sample output.
- Use of language components not covered in class will cause reduction in grade.
- Do not hardcode, compute where possible.

Programming Style requirements: refer to assignment 1 and apply these to all your code.

SUBMISSION AND GRADING

Submission instructions are the same as in assignment 1, BurgerBot. Grading criteria are below:

#	Criteria	Points
1	Intro (docstring) and program comments	2
2	Proper use of symbolic constants	2
3	Meaningful variable names	2
4	Correct number, order, and validation (where required) of inputs	10
5	Correct implementation of Set-up by Manager	2
6	Correct implementation of order options DISPLAY	5
7	Correct implementation of ORDERING	14
8	Correct computation output values in usage REPORT	7
9	Correct format of all output values	6
	Total	50

REMINDERS

When working on a project always make sure you understand the program requirements first, and then think about the algorithm that you will use and write out the steps. Only after you have thought through the details of the algorithm and verified it on a few test cases, should you start working on its implementation in Python.

Be sure to test your program to ensure the output matches the assignment. When working on the program it is important to learn to develop it gradually by **implementing one logical step of the algorithm at a time and testing the program after implementing each step**.