# CS201 – Spring 2022-2023
## Homework 1
## – CS201 Course Restaurant Invoice Calculator –
## Due March 22th, Wednesday, 22:00 (Sharp Deadline)

## Introduction

You have been tasked with writing a C++ program that calculates the bill for a hamburger restaurant. The program should take input from the user for the items they have purchased and calculate the total price, including taxes and any extras. The program should also apply a discount for student customers and calculate a service charge based on the total price.

## Description

The restaurant sells the following items:

- Water (10.00 TL)
- Soda (30.00 TL)
- Hamburger (100.00 TL)
- Hamburger with cheese (111.00 TL)
- French fries (59.50 TL)

Cheese is considered an extra that can be added to the hamburger, it is not sold separately.

### Taxes and Discounts

The following value-added taxes(VAT) and discounts apply to the items sold at the restaurant:

- Hamburger and French fries have 10% tax
- Soda has a 50% tax
- Water has no tax

If the hamburger has cheese, the cheese will be added to all ordered hamburgers and the tax is calculated after the cheese price is added.
If the customer is a student, a 25% discount is applied to the total price with tax added.

**Service Charge**

The following service charges apply based on the total price of the items purchased, which includes taxes. If the customer is a student, the student discount will be applied to the total price before the service charge are applied;

- If the final total is less than 175, the service charge will be 10%
- If the final total is less than 375, the service charge will be 8%
- If the final total is more than or equal to 375, the service charge will be 6%

You may implement your algorithm all in the *main* function, i.e. you are not expected to write any user-defined functions, but of course you can write some, if you prefer to do so.

Your homework will be automatically graded using SUCourse, so it is very important to satisfy the exact same outputs given in the example test cases of SUCourse. Please submit your assignment by writing your main source (cpp) file content into the Answer field. You can utilize the **Check** button under the code editor at SUCourse to check whether your implementation is working in the expected way. After you check your solution code, you will see your grade with the example test cases used; however your homework will then be graded with **different** test cases.

To submit your homework, you must hit the **"Finish attempt..."** and **"Submit all and finish"** buttons. **Just a reminder a character ↵ which refers to a newline in your expected output.**

## Inputs, Flow of the Program and Outputs

The inputs of the program and their order are explained below. It is extremely important to follow this order with the same characters since we automatically process your programs. ***Thus, your work will be graded as 0 unless the order is entirely correct***.

At the beginning of your program, the user will be prompted to enter the quantity of each product they have ordered. The order should follow the exact order as specified below.

After the user enters the quantity of each product, the program will check if they have ordered hamburger(s). If yes, they will be asked if they want to add cheese to their hamburger(s). If the user enters 1, the program will add cheese to their hamburger(s). If they enter 0, the program will not add cheese to their hamburger(s). If the user did not order any hamburgers, the program will skip this step.

Next, the user will be asked if they are a student. If they enter 1, a 25% discount will be applied to the total price with tax added. If they enter 0, no discount will be applied.

The program will then calculate the total price, including taxes. It will also calculate the service charge based on the total price. The program will display an invoice showing the items purchased, the total price, any taxes or extras, the discount (if applicable), and the service charge.

You may assume that the user will always enter positive values or zero correctly for all inputs. Therefore, you do not need to perform any kind of input checks.

**IMPORTANT!**

If your code does not compile, then you will get **zero**. Please be careful about this and double check your code before submission.

**VERY IMPORTANT!**

Your programs will be compiled, executed and evaluated automatically; therefore you should definitely follow the rules for prompts, inputs and outputs. You can check the example test case outputs from SUCourse to get more information about the expected output.

- **Order of inputs and outputs** must be in the mentioned format.

Following these rules is crucial for grading, otherwise our software will not be able to process your outputs and you will lose some points in the best scenario.

## Sample Runs

Below, we provide only one sample run of the program that you will develop, for more sample runs please check the SUCourse example test cases.
The *italic*, **bold** and yellow highlighted phrases are inputs taken from the user. **NOTE THAT** these inputs and the newlines after the inputs are missing at SUCourse in the outputs expected from you, so please ignore this as you copy/paste your C++ code from VS/XCode to SUCourse, the same will happen to your code too.

### Visual Studio/XCode

***Sample Run***

```
Enter the quantity of each product you have ordered:
Water: 1
Soda: 1
Fries: 1
Hamburger: 1
Add cheese to your hamburger(s)? (1 for yes, 0 for no): 1
Are you a student? (1 for yes, 0 for no): 0

==================================
         Restaurant Invoice
==================================
Water (1): 10 TL
Soda (1): 30 TL
Fries (1): 59.5 TL
Hamburgers (1): 111 TL
Subtotal: 210.5 TL

VAT: 32.05 TL
Service fee: 19.404 TL
Total price: 261.954 TL
```

# General Rules and Guidelines about Homework

The following rules and guidelines will be applicable to all homework unless otherwise noted.

**How to get help?**

You may ask questions to TAs (Teaching Assistants) or LAs (Learning Assistants) of CS201. Office hours of TAs/LAs are at the SUCourse.

**What and Where to Submit**

You can prepare (or at least test) your program using MS Visual Studio 2019 C++ (Windows users) or using XCode (macOS users).

- Your code will be automatically graded using SUCourse. Therefore, it is essential that you ensure your output matches the exact same outputs given in the example test cases provided by SUCourse.
- After writing your code, use the "Check" button located under the code editor in SUCourse to see your grade based on the example test cases used. This grade will give you an idea of how well your code is performing.
- Note that the example test cases used for checking your code are not the same as the ones used for grading your homework. Your final grade will be based on different test cases. Therefore, it is important that you carefully follow the instructions and ensure that your code is working correctly to achieve the best possible grade on your homework assignment.
- To submit your homework, click on the "Finish attempt..." button and then the "Submit all and finish" button. If you wish to submit again before the due date, you can press the "Re-attempt quiz" button.
- Submit your work **through SUCourse only**! You will receive no credits if you submit by any other means (email, paper, etc.).

**Grading, Review and Objections**

Be careful about the automatic grading: Your programs will be graded using an automated system. Therefore, you should follow the guidelines on the input and output order. Moreover, It is important to use the exact same text as provided in the example test case outputs from SUCourse. Otherwise, the automated grading process will fail for your homework, and you may get a zero, or in the best scenario, you will lose points.

Grading:

- There is NO late submission. You need to submit your homework before the deadline. Please be careful that SUCourse time and your computer time may have 1-2 minute differences. You need to take this time difference into consideration.
- Successful submission is one of the requirements of the homework. If, for some reason, you cannot successfully submit your homework and we cannot grade it, your grade will be 0.
- If your code does not work because of a syntax error, then we cannot grade it; and thus, your grade will be 0.
- Please submit your **own** work only. It is really easy to find "similar" programs!
- Plagiarism will not be tolerated. Please check our plagiarism policy given in the Syllabus.

Plagiarism will not be tolerated!

Grade announcements: Grades will be posted in SUCourse, and you will get an Announcement at the same time. You will find the grading policy and test cases in that announcement.

Grade objections: It is your right to object to your grade if you think there is a problem, but before making an objection please try the steps below and if you still think there is a problem, contact the TA that graded your homework from the email address provided in the comment section of your announced homework grade or attend the specified objection hour in your grade announcement.

- Check the comment section in the homework tab to see the problem with your homework.
- Check the test cases in the announcement and try them with your code.
- Compare your results with the given results in the announcement.

***Good Luck!***
***E. Beyza Çandır & Sine Mete & CS201 Instructors***