

CS 1101 – Introduction to Computer Science

Spring 2022

Comprehensive Lab 2



Due Date Details:

Check-In: Check-in must be done by **April 6 by 5:00pm**.

Java Program: Java program is due by **April 10, by the end of the day**. You will receive a Microsoft Bookings Link to demo to a designated Instructional Team member. You may only demo once you've turned in the program.

Objective: Students will be able to use their problem-solving skills by implementing variable declaration, conditional statements, loops, file reading, user input, and methods.

Background:

CS 1101 Theme Park

Featuring thrill rides, food, live music, it is the top destination for thrill-seekers and families alike. You will create a program that will allow a user to buy tickets, reserve rides, and buy food. In addition, your program will have a sign-in/sign-up feature.

Important: Before you get started, read this entire document. If anything is unclear, do not hesitate to come to your instructor, TA, or IAs for help or clarification. We will be happy to help you.

Your program should have the following features:

Sign in / Sign up / Authentication Modules

Display a Welcome message to the user, then ask if user is already signed up.

- If the user responds yes, continue with the sign in module
- If the user responds no, continue with the sign up module

1) Authentication Module

The authentication module will be responsible for allowing the user to enter the program if the requirements have been met in the following modules.

- Sign in
- Sign up
- If the sign-in module is successful, display the main menu.
- If the sign-up module is successful, display the main menu.

2) Sign in Module

If the user selects the **sign-in** option, the program will ask the username to enter their username and password.

- Then, your program will read from a given text file (**authenticateFile.txt**) that holds existing emails and passwords accounts.
- Check if the username and password entered by the user is an equal match to one of the existing emails with the corresponding password of the file.
- If the sign-in module is unsuccessful, keep asking the user to sign in.

3) Sign up Module

If the user selects the **sign-up** option, the program will ask the user for an email, and a password twice.

- The email must contain the '@' character in it.
Additionally, the password must have the following requirements:
- At least 8 characters
- At least one uppercase and one lowercase
- At least one digit and one special character

Reminder to ask the user for the password twice.

Menu

After authentication is successful, display the following menu

- 1-Buy ticket
- 2-Reserve a ride
- 3-Buy food
- 4-Show the orders
- 5-Check out
- 6-Clear the cart

- 7-Exit

1. Buy Ticket

If the user selects option 1, do the following:

- Display all available tickets from a given text file (`tickets.txt`)
- Ask the user to select a ticket number from the list
- Ask the user once if they are an adult, kid, or student
 - s - student
 - a - adult
 - k - kid
- If the user is a student, apply a discount of 8% per ticket
- If the user is an adult, do not apply a discount
- If the user is a kid, apply a discount of 9% per ticket
- Ask the user how many tickets they want to buy
- Add tickets to cart, and display current balance
- Display menu

2. Reserve a Ride

If the user selects option 2, do the following:

- Check if the user has a ticket, otherwise send them back to the main menu
- For the last ticket added by the user, charge an extra fee for each ticket
 - If the user is a student, charge \$20.00
 - If the user is an adult, charge \$30.00
 - If the user is a kid, reservation is free

For example, if the user last added 5 tickets, and the user is a student, then the ride cost reservation is \$20 per ticket

- Display the current balance
- Display menu

3. Buy Food

- Check if the user has a ticket, otherwise send them back to the main menu
- Read the available foods and prices from a given text file (`Foodmenu.txt`)
- Display them to the user and ask the user to select an option by typing the entire word
- Display the current balance
- Display menu

4. Show the orders

- Display in a table format, all orders made by the user and their prices
- Display menu

5. Check out

- Display list of all orders
- Display total before tax
- Ask user location and read the given text file (`StatesTaxRate.txt`) to find the tax rate on that location

- Display Tax rate
- Display total cost after tax
- Prompt the user to enter a credit number with 16 digits
- Check if the credit number has only integers and has exactly 16 digits
 - Payment successful if credit card requirements are met
 - Empty cart
 - Display main menu
 - Payment unsuccessful if credit card requirements are not met
 - Display error to user
 - Go back to the main menu

6. Empty Cart

- Remove all orders from the cart
- Display main menu

7. Exit

- Display goodbye message to terminate the program

Extra credit:

[5 points] Implement a recursive function.

[10 points] In the sign-in module, limit the user try for username and password for maximum three times.

[10 points] In the sign-up module, store the new username and password in the dataset file.

Sample Output:

Welcome

```
*****
***** welcome to Akbar Park *****
*****
Already signed up? [y/n]
```

Sign-in

```
Already signed up? [y/n]
y
Enter your email address:
Bianca@miners.utep.edu
Enter your password:
jd@6767gFd
```

Sign-up

```
Already signed up? [y/n]
n
Enter your email address..
utepcs@miners.utep.edu
Enter your password: (At least 8 characters, uppercase and one lowercase, and one digit and one special character)
Utep2022!
Enter your password again:
Utep2022!
```

Menu

```
Choose an item [1-7]
1- Buy a Ticket
2- Reserve a Ride
3- Buy Food
4- Show The Orders
5- Check Out
6- Clear The Cart
7- Exit
```

Option 1- Buy Ticket

```
1
+-----+
|      -- // Akbar's Theme Park // --      |
+-----+
| Ticket | Time      | PriceForEach | Date      |
+-----+
| 1      | 11AM-1PM  | $13.99       | 4/4/2022  |
+-----+
| 2      | 1PM-3PM   | $13.99       | 4/4/2022  |
+-----+
| 3      | 3PM-5PM   | $18.99       | 4/4/2022  |
+-----+
| 4      | 5PM-7PM   | $18.99       | 4/4/2022  |
+-----+
| 5      | 11AM-1PM  | $13.99       | 4/5/2022  |
+-----+
| 6      | 1PM-3PM   | $13.99       | 4/5/2022  |
+-----+
| 7      | 3PM-5PM   | $18.99       | 4/5/2022  |
+-----+
| 8      | 5PM-7PM   | $18.99       | 4/5/2022  |
+-----+
```

Select a ticket from the list [1-9]

```
1
Are you a student(s), an adult(a), or a kid(k)? [s/a/k]
```

```
s
How many tickets do you want?
```

```
1
The tickets have been added to your cart, your balance is $11.19
```

```
Choose an item [1-7]
1- Buy a Ticket
2- Reserve a Ride
3- Buy Food
4- Show The Orders
5- Check Out
6- Clear The Cart
7- Exit
```

Option 2- Reserve a ride

```
2
Your ride cost is $20.00 per student, for 11AM-1PM
The ride reservations have been added to your cart, your balance is $31.19

Choose an item [1-7]
1- Buy a Ticket
2- Reserve a Ride
3- Buy Food
4- Show The Orders
5- Check Out
6- Clear The Cart
7- Exit
```

Option 3- Buy Food

```
3
|  -- // Food Menu //  --  |
+-----+
| Item      | Price  |
+-----+
| Taco      | $3.99  |
+-----+
| Burritos  | $7.99  |
+-----+
| Nachos    | $2.99  |
+-----+
| Quesadilla| $11.99 |
+-----+
| Burger    | $5.99  |
+-----+
| Cheeseburger| $6.99 |
+-----+
What do you want to order? (type the menu item)
Taco
A taco is added to your order
Your balance is $35.18

Choose an item [1-7]
1- Buy a Ticket
2- Reserve a Ride
3- Buy Food
4- Show The Orders
5- Check Out
6- Clear The Cart
7- Exit
```

Option 4- Show Orders

```
4
11AM-1PM      $11.19  4/4/2022
A ride is reserved $20.00
taco          $3.99
1PM-3PM       $22.38  4/4/2022
A ride is reserved $40.00

Choose an item [1-7]
1- Buy a Ticket
2- Reserve a Ride
3- Buy Food
4- Show The Orders
5- Check Out
6- Clear The Cart
7- Exit
```

Option 5- Checkout

```
5
    11AM-1PM      $11.19  4/4/2022
    A ride is reserved $20.00
    taco          $3.99
    1PM-3PM      $22.38  4/4/2022
    A ride is reserved $40.00

your total cost befor TAX is $97.57
Please enter your State [TEXAS, New-York, ..]
Texas
Your Tax rate is 6.25
your total cost after TAX is $707.35
Please enter your card number (16 digits)
1235469874512369
The transaction has been approved! Thank you.
Your cart is now empty!

    Choose an item [1-7]
    1- Buy a Ticket
    2- Reserve a Ride
    3- Buy Food
    4- Show The Orders
    5- Check Out
    6- Clear The Cart
    7- Exit
```

Option 6- Empty Cart

```
6
Are you sure? [y/n]
y
Items from the cart have been removed!

    Choose an item [1-7]
    1- Buy a Ticket
    2- Reserve a Ride
    3- Buy Food
    4- Show The Orders
    5- Check Out
    6- Clear The Cart
    7- Exit
```

Option 7- Exit

```
7
have a great day, see you soon
```

Deliverables: You are expected to submit one file in Blackboard:

- (i) `CL2_YourLastName.java` --- the java file of your program.

Grading Criteria:

Checklist	Score
The program has proper documentation. “Certificate of Acknowledge” comment is included <pre>/* Your Full Name [CS1101] Comprehensive Lab 2 This work is to be done individually. It is not permitted to share, reproduce, or alter any part of this assignment for any purpose. Students are not permitted from sharing code, uploading this assignment online in any form, or viewing/receiving/ modifying code written from anyone else. This assignment is part of an academic course at The University of Texas at El Paso and a grade will be assigned for the work produced individually by the student. */</pre>	5 pts
Check-In i. [5 pts] Students must submit the pseudocode of solution to CL2. ii. [5 pts] Students must have at minimum, completed the Sign in/Sign up module.	10 pts
Program successfully compiles and runs	10 pts
Implementation i.[10 pts] The program uses conditional statements and loops. ii.[15 pts] The program uses methods, correct method signature. iii.[10 pts] Program allows user to add multiple tickets, food, and ride reservations to the cart. iii.[5 pts] The output is correct as described in the lab. iv.[5 pts] Calculations are done mathematically in code and not hardcoded v.[5 pts] Program displays a message for incorrect input	40 pts
Variable Names and Types i. [5 pts] Correct types for each variable ii. [5 pts] Correct naming conventions (class name is camel case but first letter is capitalized). Variables are camel case, but the first letter is in lowercase. iii. [5 pts] Variables should have meaningful variable names	15 pts
Program output follows the correct format and style as the samples.	5 pts
The deliverable follows proper name	2 pts
The program is indented properly	3 pts
Demo	10 pts
Total	100 pts

Late submission: [-10] points for every 24 hours after the deadline.

If you need any clarification, please ask your TA for further details.