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Assignment: Programming Assignment Five

We confirm that the work of this assignment is completely our own. By turning in this assignment, we declare that we did not receive unauthorized assistance. Moreover, all deliverables including, but not limited to the source code, lab report and output files were written and produced by us alone.

### **1. Program Explanation**

In this assignment, we (Sabas Rojas, Alan Holguin, Christian Odom, and Jorge Sandoval) collaborated on a comprehensive Java program designed to manage and facilitate ticket purchases for events. The program incorporated various classes such as Customer, Event, Purchase, TicketMinerCompany, Venue, VenueFactory, and others. The primary goal was to create a system where customers could interactively purchase tickets and cancel purchases, while administrators could manage events, generate invoices, and perform other administrative tasks.

To tackle the problem, we broke it down into modular components, with each class handling specific functionalities. The Customer class represented customer details and purchase history, the Event class managed event information, and the Purchase class stored details of each transaction. The TicketMinerCompany class tracked profits and fees. We implemented a variety of techniques such as file I/O for reading and writing CSV files, user input handling, and logging activities.

### **2. What did I learn?**

Through this assignment, we gained valuable experience in designing and implementing a complex Java program. We learned effective collaboration techniques, code organization, and modular design. Improvements to the solution could involve refining the user interface, enhancing error handling, and potentially integrating additional features to increase functionality.

Another way to solve the problem might be to explore the use of databases for persistent data storage, providing scalability and better data management. The assignment took a reasonable amount of time to complete, around 6 days, and the process helped us strengthen our object-oriented programming skills.

### **3. Solution Design**

In this program, we designed a robust solution with a clear separation of concerns. The Customer, Event, Purchase, and other classes encapsulated specific functionalities, promoting code reusability and maintainability. We employed file handling to read and write customer and event data from/to CSV files, ensuring data persistence.

The use of data structures such as HashMap facilitated efficient data retrieval and manipulation. Assumptions were made regarding the structure of CSV files and the format of input data. The approach was object-oriented, emphasizing encapsulation and abstraction for cleaner code architecture.

#### **4. Testing**

Our testing strategy encompassed a blend of black-box and white-box testing methodologies, ensuring comprehensive coverage of the program's functionality. The JTests class was specifically crafted to execute unit tests for essential components of our program.

Black-box testing focused on examining the program's external behavior, validating user interactions, and confirming correct outputs for given inputs. White-box testing delved into the internal logic of individual classes and methods, ensuring that the underlying mechanisms functioned as intended.

The JTests class played a pivotal role in systematically assessing the correctness of critical functions within the program. By writing unit tests, we could isolate and verify the behavior of specific methods and classes. This approach contributed to the reliability and maintainability of our codebase.

Test cases covered a spectrum of scenarios, including valid and invalid inputs, edge cases, and boundary conditions. The tests also incorporated scenarios reflecting real-world usage, ensuring the program's resilience in practical situations. Additionally, we leveraged the testing framework to assess the program's handling of exceptional cases and errors.

All in all, our testing was great, but we want to get even better. In the future, we can try using tools that automatically test the program. These tools can make testing easier, do the same tests over and over, and work well with continuous development. If we make bigger sets of tests and use automation for repetitive tasks, the program will become more dependable and better prepared for future changes and improvements.

#### **5. Test results**

The results of our tests were successful overall. Console outputs demonstrated the correct functioning of the program, including successful purchases, invoice generation, and event management. Text document results documented specific test cases, input parameters, and expected outcomes, providing a comprehensive overview of the testing process. The program demonstrated reliability and effectiveness in handling various user interactions and administrative tasks.

## Console Outputs:

```
-----
| Ticket Miner Main Menu: |
-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: 1
-----
Please enter your first name: donald
Please enter your last name: duck
-----
Please enter your username: donaldduck
Please enter your password: Fun!23
-----
Login successful!
```

```
What would you like to do?
1. Purchase ticket
2. Cancel purchase
3. EXIT
```

```
1
-----
| Please select an event type. |
| Valid event types are:       |
| - Sport                     |
| - Concert                   |
| - Festival                  |
|-----|
```

```
Concert
-----
```

```
Please select an event to purchase tickets for:
```

```
Please select an event to purchase tickets for:
64. Justin Timberlake Live
45. UTEP Wind Symphony 1
46. UTEP Wind Symphony 2
47. UTEP Wind Symphony 3
48. UTEP Wind Symphony 4
49. UTEP Wind Symphony 5
50. UTEP Wind Symphony 6
51. UTEP Wind Symphony 7
52. UTEP Wind Symphony 8
53. UTEP Wind Symphony 9
54. UTEP Wind Symphony 10
55. UTEP Wind Symphony 11
56. UTEP Wind Symphony 12
57. Taylor Swift Live
58. Drake Live
59. Bad Bunny Live
60. Karol G Live
61. RBD Live
62. Olivia Rodrigo Live
63. Shakira Live
```

```
-----
Please enter the event ID number: 62
-----
```

```
Tickets prices for Olivia Rodrigo Live:
```

```
VIP: $7471.75
Gold: $4942.85
Silver: $4368.1
Bronze: $2873.75
GA: $1149.5
```

```
-----
Please select a ticket tier to purchase.
Example: Type 'gold' to purchase Gold ticket(s).
GA
```

```
How many tickets would you like to purchase?
Maximum of 6 tickets can be purchased be transaction.
2
```

2

You could've saved money with the TicketMiner membership!

INVOICE						
NAME	DATE	TIME	TIER	QTY	TOTAL	CONFIRMATION #
Donald Duck	3/4/24	8:00 PM	ga	2	\$2522.48	1333829409

Olivia Rodrigo Live

Thank you for your purchase. Enjoy!

What would you like to do?

1. Purchase ticket
2. Cancel purchase
3. EXIT

2

Please enter the purchase ID of the event you would like to cancel.

0: Olivia Rodrigo Live

0

Purchase successfully cancelled.

What would you like to do?

1. Purchase ticket
2. Cancel purchase
3. EXIT

2

You do not have any transactions to cancel.

What would you like to do?

1. Purchase ticket
2. Cancel purchase
3. EXIT

3

| Ticket Miner Main Menu: |

Olivia Rodrigo Live

Thank you for your purchase. Enjoy!

What would you like to do?

1. Purchase ticket
2. Cancel purchase
3. EXIT

2

Please enter the purchase ID of the event you would like to cancel.

0: Olivia Rodrigo Live

0

Purchase successfully cancelled.

What would you like to do?

1. Purchase ticket
2. Cancel purchase
3. EXIT

2

You do not have any transactions to cancel.

What would you like to do?

1. Purchase ticket
2. Cancel purchase
3. EXIT

3

| Ticket Miner Main Menu: |

1. I am a Customer
  2. I am a System Administrator
  3. Run Autopurchaser
- EXIT: Exit

Enter your choice: exit

Exiting. Goodbye.

```

-----
| Ticket Miner Main Menu: |
-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: 1
-----
Please enter your first name: donald
Please enter your last name: duck
-----
Please enter your username: donaldduck
Please enter your password: Fun!23
-----
Login successful!

What would you like to do?
1. Purchase ticket
2. Cancel purchase
3. EXIT

```

1

```

-----
| Please select an event type. |
| Valid event types are:      |
| - Sport                    |
| - Concert                  |
| - Festival                  |
-----

```

Concert

```

-----
Please select an event to purchase tickets for:
64. Justin Timberlake Live
45. UTEP Wind Symphony 1
46. UTEP Wind Symphony 2
47. UTEP Wind Symphony 3
48. UTEP Wind Symphony 4

```

```

-----
Please enter the event ID number: 59
-----

```

```

Tickets prices for Bad Bunny Live:
VIP: $7765.49
Gold: $5137.17
Silver: $4539.82
Bronze: $2986.73
GA: $1194.69

```

```

-----
Please select a ticket tier to purchase.
Example: Type 'gold' to purchase Gold ticket(s).
GA

```

```

How many tickets would you like to purchase?
Maximum of 6 tickets can be purchased be transaction.
1

```

You could've saved money with the TicketMiner membership!

```

-----
|                               INVOICE                               |
-----
| NAME           | DATE   | TIME   | TIER  | QTY | TOTAL  | CONFIRMATION # |
-----
| Donald Duck    | 3/19/24 | 8:00 PM | ga    | 1   | $1312.12 | 1333829409     |
-----

```

```

Bad Bunny Live
Thank you for your purchase. Enjoy!

```

```

What would you like to do?
1. Purchase ticket
2. Cancel purchase
3. EXIT

```

3

```

-----
| Ticket Miner Main Menu: |
-----

```

```
| Ticket Miner Main Menu: |
-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: 2
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: E
Available Events:
1. UTEP Football 1
2. UTEP Football 2
3. UTEP Football 3
4. UTEP Football 4
5. UTEP Football 5
6. UTEP Football 6
7. UTEP Football 7
8. UTEP Football 8
9. UTEP Football 9
10. UTEP Football 10
11. UTEP Football 11
12. UTEP Football 12
13. UTEP Football 13
14. UTEP Basketball 1
15. UTEP Basketball 2
16. UTEP Basketball 3
17. UTEP Basketball 4
18. UTEP Basketball 5
19. UTEP Basketball 6
20. UTEP Basketball 7
```

```
67. ACL
68. Minerpalooza
69. UTEP Commencement 1
70. UTEP Commencement 2
71. UTEP Commencement 3
72. UTEP Commencement 3
Please enter the ID of the event you want to compute fees for: 59
-----
Event: Bad Bunny Live
Total Service Fees: $5.97
Total Convenience Fees: $2.50
Total Charity Fees: $8.96
Total Fees: $17.43
Do you want to compute fees for another event? (Y/N): n
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: F
-----
Total Service Fees: $5.97
Total Convenience Fees: $2.5
Total Charity Fees: $8.96
Total Fees: $17.43
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit
```

```

C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: 6

Enter the ID of the event to cancel: 59
Event canceled successfully. Total refund amount: $1312.12
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: exit
-----
| Ticket Miner Main Menu: |
-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: 1
-----
Please enter your first name: donald
Please enter your last name: duck
-----
Please enter your username: donaldduck
Please enter your password: Fun!23
-----
Login successful!

```

```

-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: 1
-----
Please enter your first name: donald
Please enter your last name: duck
-----
Please enter your username: donaldduck
Please enter your password: Fun!23
-----
Login successful!

What would you like to do?
1. Purchase ticket
2. Cancel purchase
3. EXIT

2
You do not have any transactions to cancel.
What would you like to do?
1. Purchase ticket
2. Cancel purchase
3. EXIT

3
-----
| Ticket Miner Main Menu: |
-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: exit
Exiting. Goodbye.

```

## Wrong Inputs:

```
-----
| Ticket Miner Main Menu: |
-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: utep
Sorry, that is not a valid input.
Enter '1' to login as customer,
Enter '2' to login as admin.
Enter '3' to run autopurchaser.
Enter 'EXIT' to quit.

1
-----
Please enter your first name: utep
Please enter your last name: utep
Invalid name. Please try again...

-----
Please enter your first name: donald
Please enter your last name: duck
-----
Please enter your username: utep
Please enter your password: utep
Invalid username or password. Try again!
Please enter your username: donaldduck
Please enter your password: Fun!23
-----
Login successful!

What would you like to do?
1. Purchase ticket
2. Cancel purchase
3. EXIT

1
-----
```

You could've saved money with the TicketMiner membership!

INVOICE						
NAME	DATE	TIME	TIER	QTY	TOTAL	CONFIRMATION #
Donald Duck	2/21/24	7:15 PM	ga	2	\$68.47	1333829409

UTEP Basketball 28  
Thank you for your purchase. Enjoy!

What would you like to do?  
1. Purchase ticket  
2. Cancel purchase  
3. EXIT

2  
Please enter the purchase ID of the event you would like to cancel.  
0: UTEP Basketball 28

12345  
Sorry, that is not a valid purchase ID. Please try again.  
0  
Purchase successfully cancelled.  
What would you like to do?  
1. Purchase ticket  
2. Cancel purchase  
3. EXIT

3  
-----  
Ticket Miner Main Menu:
1. I am a Customer  
2. I am a System Administrator  
3. Run Autopurchaser  
EXIT: Exit

Enter your choice: 2



```

66. Coachella 2
67. ACL
68. Minerpalooza
69. UTEP Commencement 1
70. UTEP Commencement 2
71. UTEP Commencement 3
72. UTEP Commencement 3
Please enter the ID of the event you want to compute fees for: 12345
Invalid event ID. Please enter a valid ID.
Please enter the ID of the event you want to compute fees for: 41
-----
Event: UTEP Basketball 28
Total Service Fees: $0.30
Total Convenience Fees: $2.50
Total Charity Fees: $0.45
Total Fees: $3.25
Do you want to compute fees for another event? (Y/N): n
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: utep
Invalid choice! Please enter A, B, C, D, E, F, G, or EXIT.
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: G

```

```

EXIT: Exit

Enter your choice: utep
Invalid choice! Please enter A, B, C, D, E, F, G, or EXIT.
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: G

Enter the ID of the event to cancel: 12345
Event not found.
-----
A. Inquire event by ID
B. Inquire event by name
C. Create new event
D. Get invoice summary
E. Get fees summary for one event by ID
F. Get fees summary for all events
G. Cancel an event
EXIT: Exit

Enter your choice: exit
-----
| Ticket Miner Main Menu: |
-----
1. I am a Customer
2. I am a System Administrator
3. Run Autopurchaser
EXIT: Exit

Enter your choice: exit
Exiting. Goodbye.

```