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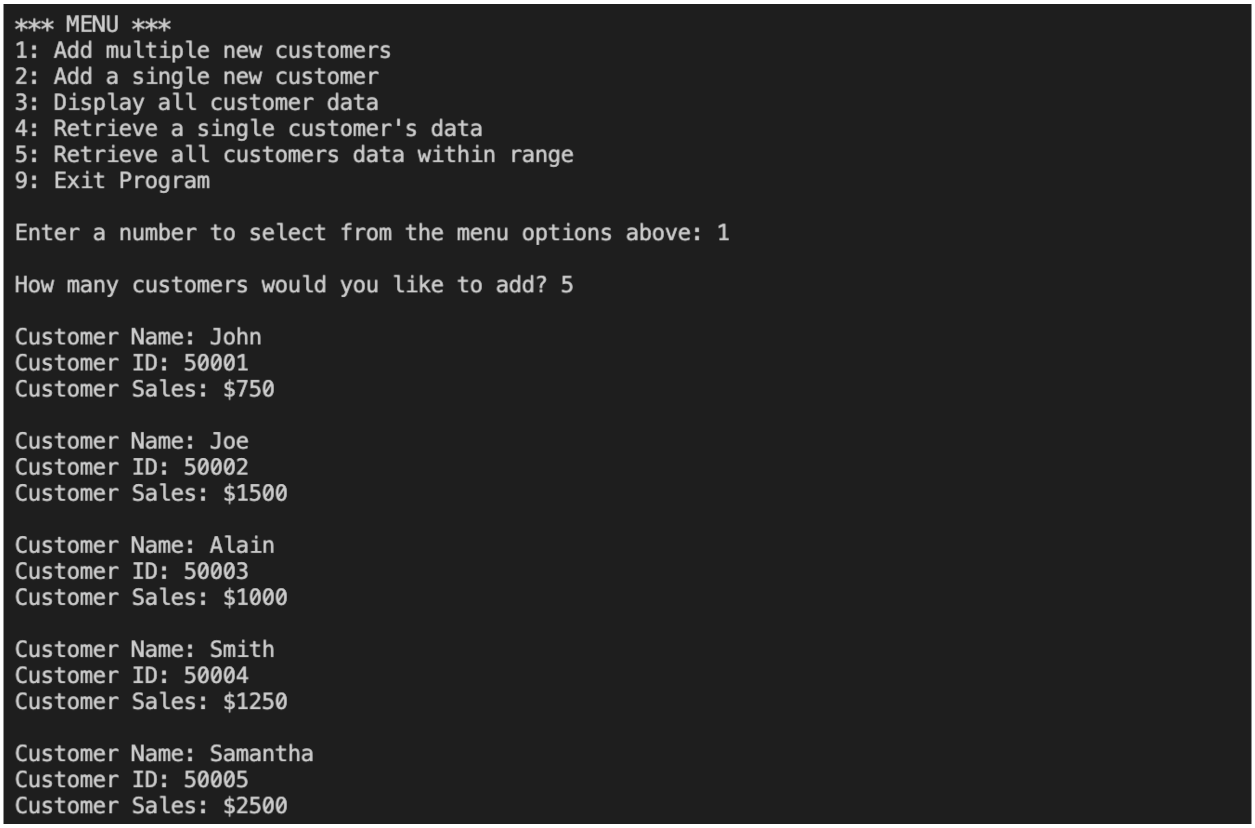
Final Project

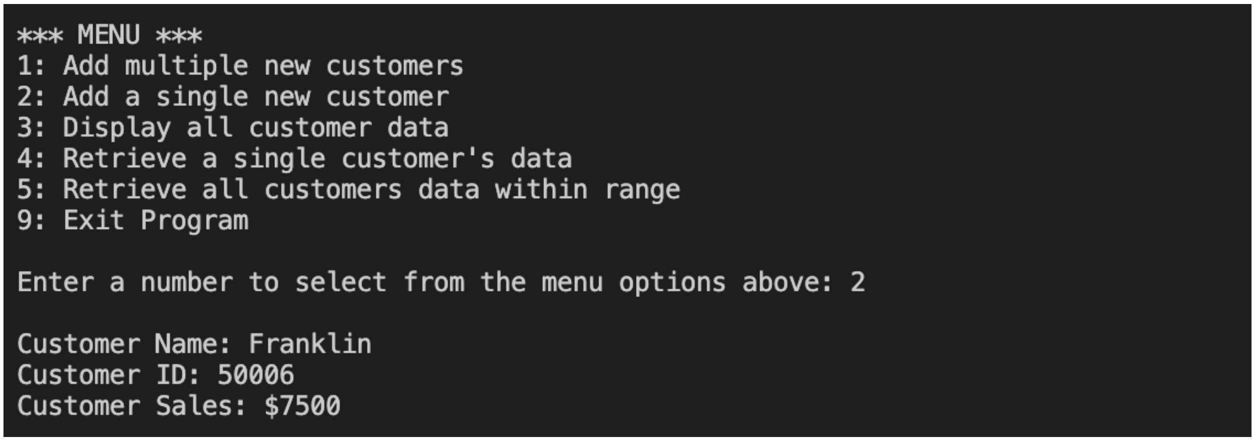
Test Case One:

*Screenshot of execution of **MENU OPTION 1**. Successfully adds **five** customers to the array, in accordance with the users input of **5**.*



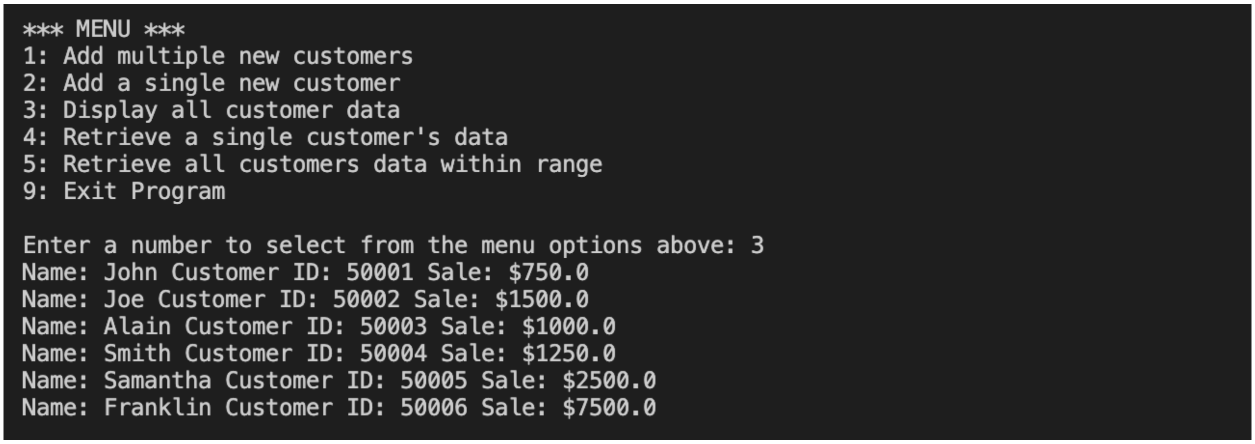
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 1

How many customers would you like to add? 5

Customer Name: John
Customer ID: 50001
Customer Sales: $750

Customer Name: Joe
Customer ID: 50002
Customer Sales: $1500

Customer Name: Alain
Customer ID: 50003
Customer Sales: $1000

Customer Name: Smith
Customer ID: 50004
Customer Sales: $1250

Customer Name: Samantha
Customer ID: 50005
Customer Sales: $2500
```

*Screenshot of execution of **MENU OPTION 2**. Successfully adds **a single customer** to the array.*



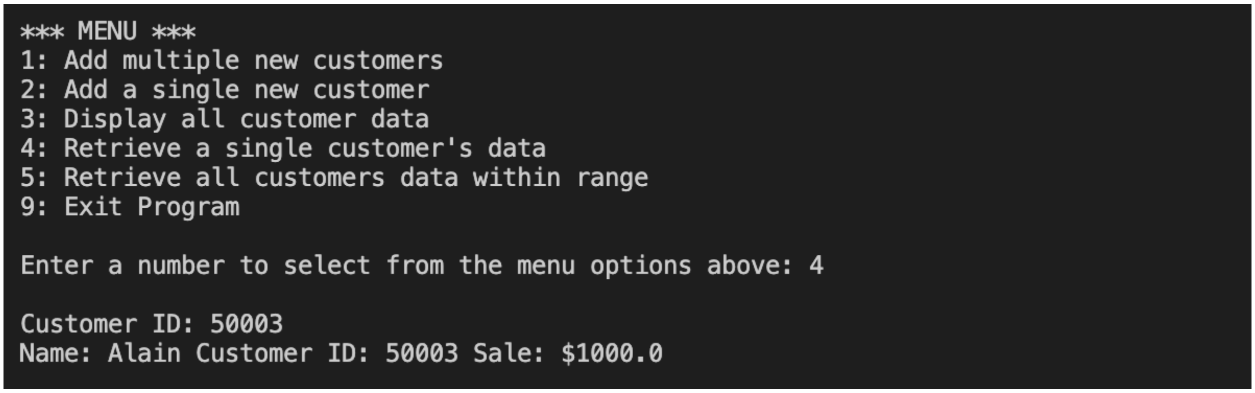
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 2

Customer Name: Franklin
Customer ID: 50006
Customer Sales: $7500
```

Screenshot of execution of ***MENU OPTION 3****. Successfully displays the data of* ***all customers*** *previously added to the array performed via OPTION 1 and OPTION 2.*



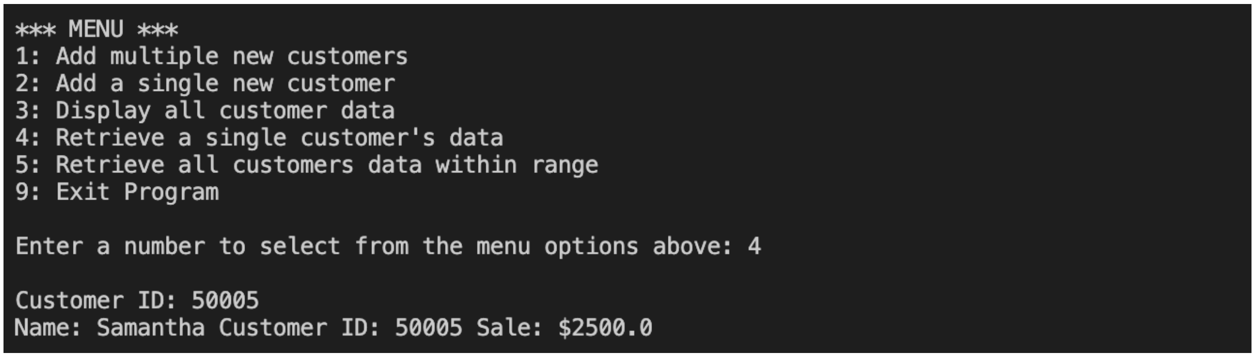
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 3
Name: John Customer ID: 50001 Sale: $750.0
Name: Joe Customer ID: 50002 Sale: $1500.0
Name: Alain Customer ID: 50003 Sale: $1000.0
Name: Smith Customer ID: 50004 Sale: $1250.0
Name: Samantha Customer ID: 50005 Sale: $2500.0
Name: Franklin Customer ID: 50006 Sale: $7500.0
```

Screenshot of execution of MENU OPTION 4. Successfully searches for a customer in the array using their ***USER ID*** *and* ***displays the customer data*** *to the console.*



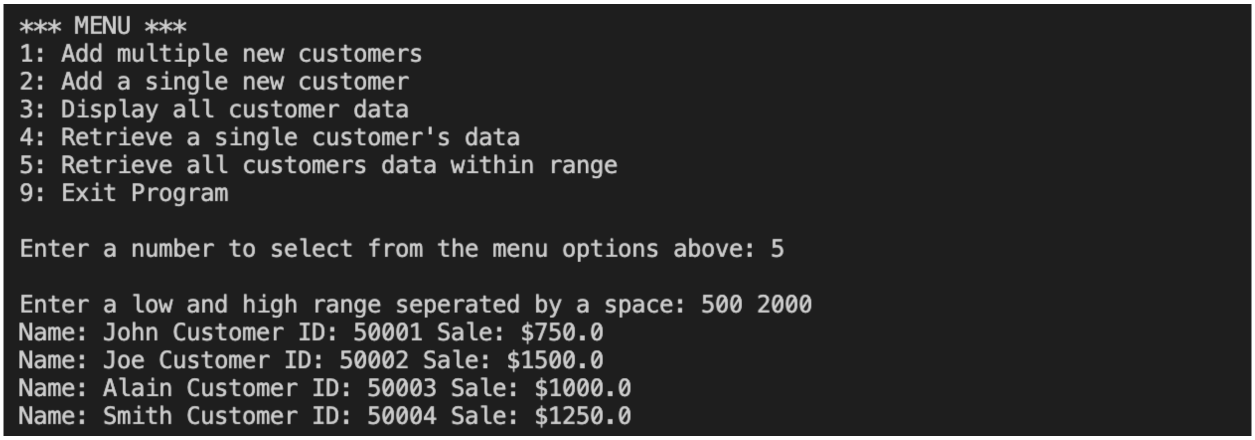
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 4

Customer ID: 50003
Name: Alain Customer ID: 50003 Sale: $1000.0
```

Screenshot of execution of MENU OPTION 4. Successfully finds a customer in the array using their ***USER ID*** *and* ***displays the customer data*** *to the console.*



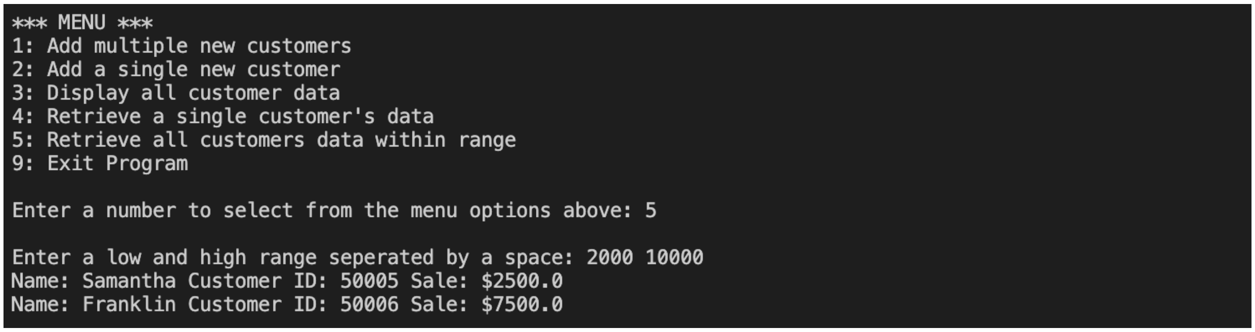
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 4

Customer ID: 50005
Name: Samantha Customer ID: 50005 Sale: $2500.0
```

Screenshot of execution of MENU OPTION 5. Successfully finds all customers within the ***user-specified range*** *(500-2000****)*** *and* ***displays relevant customer data*** *to the console.*



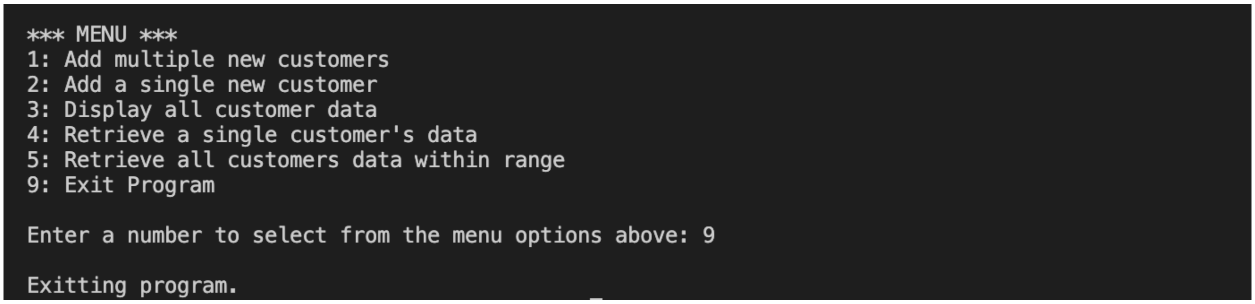
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 5

Enter a low and high range seperated by a space: 500 2000
Name: John Customer ID: 50001 Sale: $750.0
Name: Joe Customer ID: 50002 Sale: $1500.0
Name: Alain Customer ID: 50003 Sale: $1000.0
Name: Smith Customer ID: 50004 Sale: $1250.0
```

Screenshot of execution of MENU OPTION 5. Successfully finds all customers within the ***user-specified range*** *(2000-10000) and* ***displays relevant customer data*** *to the console.*



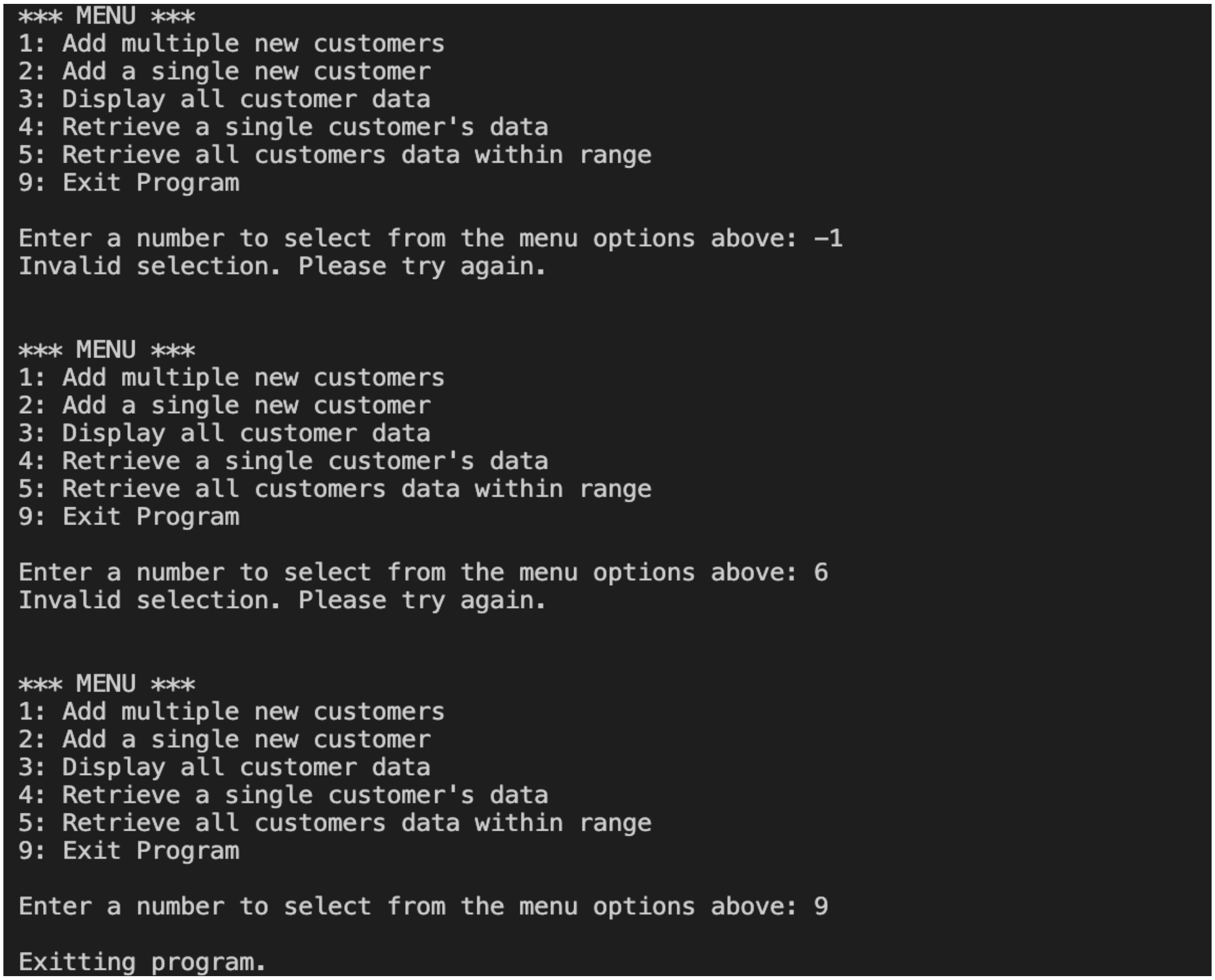
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 5

Enter a low and high range seperated by a space: 2000 10000
Name: Samantha Customer ID: 50005 Sale: $2500.0
Name: Franklin Customer ID: 50006 Sale: $7500.0
```

Screenshot of execution of MENU OPTION 9. Successfully exits the program.



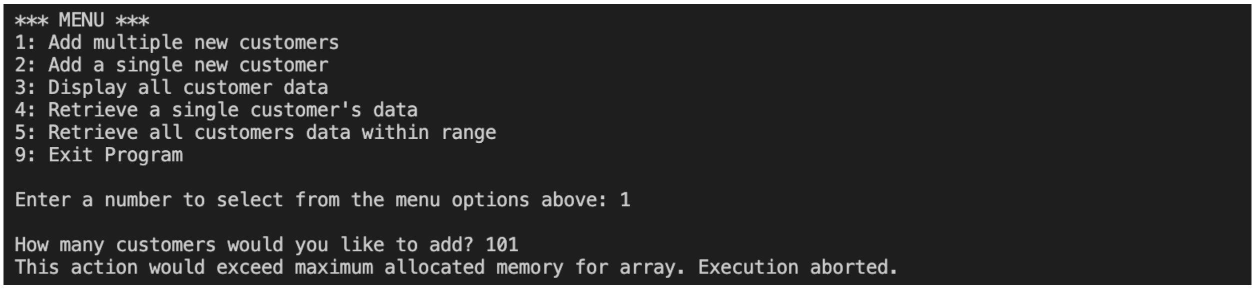
```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 9

Exitting program.
```

Screenshot of user providing ***invalid menu option selection****. Successfully* ***loops menu*** *until a* ***valid option is selected****.*



```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: -1
Invalid selection. Please try again.


*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 6
Invalid selection. Please try again.


*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 9

Exitting program.
```

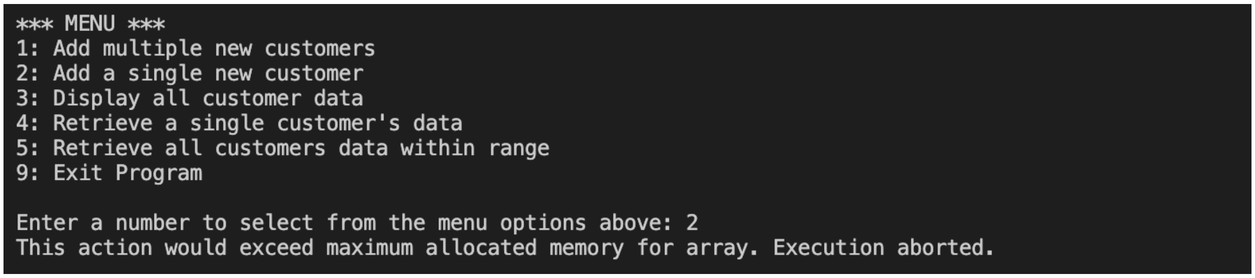
Screenshot of user providing attempting to ***add more elements than allocated (max is set to 100)*** *via OPTION 1. Successfully* ***aborts execution*** *as to* ***avoid an exception error*** *caused by going out of the bounds of the array.*



```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 1

How many customers would you like to add? 101
This action would exceed maximum allocated memory for array. Execution aborted.
```

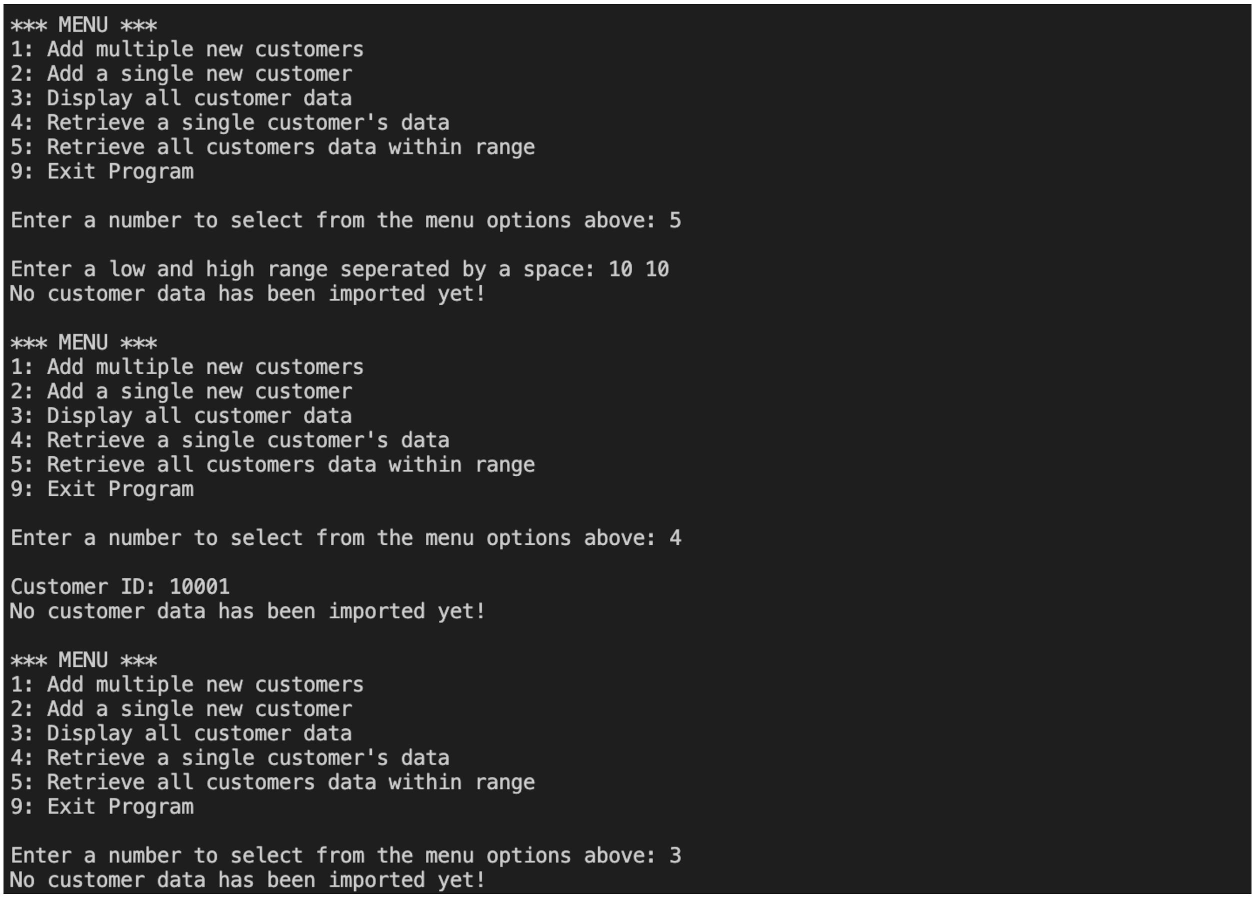
Screenshot of user providing attempting to ***add a single element when all elements in the array have already been allocated*** *via OPTION 2. Successfully* ***aborts execution*** *as to* ***avoid an exception error*** *caused by going out of the bounds of the array.*

(For the sake of this example, the constant DATA_SIZE was temporarily changed to 0. If the user tried to add another after reaching 100 like the example above, the same message would display.)



```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 2
This action would exceed maximum allocated memory for array. Execution aborted.
```

Screenshot of user ***attempting to load customer data before importing it****. Reminds the user that no data has been imported and loops the menu.*



```
*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 5

Enter a low and high range seperated by a space: 10 10
No customer data has been imported yet!

*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 4

Customer ID: 10001
No customer data has been imported yet!

*** MENU ***
1: Add multiple new customers
2: Add a single new customer
3: Display all customer data
4: Retrieve a single customer's data
5: Retrieve all customers data within range
9: Exit Program

Enter a number to select from the menu options above: 3
No customer data has been imported yet!
```