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*The Energy University*

**BUSINESS PROGRAMMING**

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**MINI PROJECT 1**

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**SECTION: SECTION 01**

**TO BE PRESENTED TO:**

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## 1.0 Company Background

From modest origins as a tiny bookshop, MPH Bookstores, a well-known chain of bookstores in Malaysia, has grown to become a key competitor within the book industry. As the first book retailer in Malaysia to adopt online shopping, MPH entered the e-commerce space in the early 2000s with the establishment of MPHOnline.com. The goal of MPHOnline.com was to establish an international online bookshop so that the business could reach clients outside of its physical location. MPH is now increasing its touchpoints through physical and online stores, vending businesses, and soon-to-be mobile applications as it continues to adapt to the digital era.

MPH's history dates back to when Captain W.G. Shellabear founded the American Mission Press in Malacca in 1890, and this was the first missionary endeavour that MPH Group is rooted in. The press changed throughout time, becoming the Methodist Publishing House in 1906, which is where the abbreviation MPH originated. In 1927, the business became incorporated as Malaya Publishing House Limited and went public. The business continued under many names and ownerships despite obstacles such as the Japanese occupation during World War II. In 1927, the business became incorporated as Malaya Publishing House Limited and went public. The business continued under many names and ownerships despite obstacles such as the Japanese occupation during World War II. Following MPH's purchase by Jack Chia Holdings in 1972, the ownership changed, and the company went public. After Singaporean businessman Simon Cheong acquired the company in 1999, it changed its name to MPH Ltd in March the year 2000. Jalinan Inspirasi Sdn Bhd purchased the MPH name in 2002, along with MPH Bookstores and MPH Distributors. The firm then rebranded itself as MPH Group (M) Sdn Bhd, which is the current parent company.

The main core activities of MPH Group are library services, book distribution, and also retail. Operating in Malaysia, MPH Bookstores is a prominent chain in the book retail sector, having invented the megastore concept with cutting-edge features including internet kiosks and self-search terminals. On top of that, books are distributed by MPH Distributors in Singapore and Malaysia, allowing publishers to reach a wider audience from people all around the world. As such, an effective and efficient record management system would be ideal for the overall growth of MPH to provide solutions in the aspects of its business processes.

## 2.0 System Objective

This project focuses on a developed system named MPH Record Management System. The record keeping system is mainly intended for the use of MPH staffs to manage crucial records which consists of customer purchase records and book records. The records are stored in a JSON file which acts as a modern DBMS. The main goal of the system is to streamline the integration of inventory records and purchasing records while also handling the day-to-day business activities. Some of the fundamental functions of the system includes inserting, searching, updating, deleting, displaying, generating and exporting records. In essence, the purpose of the aforementioned system are as follows:

1. To store appropriate records into designated secure file locations.
2. To locate specific data records for identification purposes.
3. To alter and modify existing current records with newly defined information.
4. To dispose redundant and unnecessary data records.
5. To display existing records into structured and tabulated data reports.
6. To generate and export particular data records into another file.
7. To ensure data security, availability, and integrity with the state-of-the-art user authentication.

With this new Record Management System, there is no doubt that MPH would be able to resolve many of their challenges and difficulties that they are currently facing today. The record keeping system could address the issues in handling diverse inventory by efficiently segregating the data records to suitable locations in the record storage file. Additionally, the inventory stocks could also be managed in the most precise and timely manner as to avoid wasting unnecessary resources. On another note, problems regarding data security and privacy could also be evaded as the system will allow only authorized users, namely staff members, to log into the system. Ultimately, the system could produce reports based on the existing data records which in the long run would be beneficial for the MPH organization to dive into business intelligence and analytics to gain valuable insights in making informed decisions.

## 3.0 Source Code with Detailed IPO

### 3.1 IPO Chart for project\_main.py file:

```
import json
import time
from mph_package.insert_module import insertmod
from mph_package.search_module import searchmod
from mph_package.update_module import updatemod
from mph_package.delete_module import deletemod
from mph_package.report_module import report_viewmod
from mph_package.report_module import report_exportmod

def mphSystem():
    username=loginSystem()
    username=mainMenu(username)
    time.sleep(1)
    print("\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n  ",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

def loginSystem():
    while True:
        try:
            print("\n"+"-"*(80)+"\n\n MPH Staff Login"+" "*(64-len(" MPH Record
Management"))+"Welcome, MPH Staff!\n\n"+"-"*(80)+"\n\n")
            print(" Please enter user credentials to login to the system.")
            username = input("\n Username: ")
            password = input("\n Password: ")
            with open("record_management.json", "r") as file:
```

```

data = json.load(file)
validation=data["staffs"]
for i in range(len(validation)):
    if(validation[i].get("username")==username and validation[i].get("password")==password):
        time.sleep(1)
        print("\n |-----|" +
              "\n | Success Message: Everything checks out. Logging into the system now.. |" +
              "\n |-----|")
        time.sleep(1)
        return username
print("\n |-----|" +
      "\n | Error Message: It seems you've entered the wrong Username/Password. |" +
      "\n | Please enter the correct Username and Password to login.      |" +
      "\n |-----|")
time.sleep(2)
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.      |" +
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                 "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")
        exit()

```

```

def mainMenu(username):
    while True:
        try:
            time.sleep(1)
            print("\n"+"-"*(80)+"\n\n MPH Record Management"+
                " "*(57-len(" MPH Record Management"))+"Welcome back, "+username+"!\n\n"+
                "-"*(80)+"\n")
            print(" Welcome to MPH Record Management System. This is the Main Menu.\n\n"+
                " What would you like to do today?\n" +
                " 1. Add new records.\n" +
                " 2. Search records.\n" +
                " 3. Update records.\n" +
                " 4. Delete records.\n" +
                " 5. View record reports.\n" +
                " 6. Generate & Export records.\n" +
                " 7. Log Out the system.\n" +
                " 8. Exit the system.\n")
            print(" Please key-in a number based on the options above.\n")
            time.sleep(0.5)
            option=input(" Option[Example: 1]: ")
            if option=="1":
                time.sleep(1)
                insertmod(username)
            elif option=="2":
                time.sleep(1)
                searchmod(username)
            elif option=="3":
                time.sleep(1)
                updatemod(username)
            elif option=="4":
                time.sleep(1)
                deletemod(username)
            elif option=="5":

```

```

        time.sleep(1)
        report_viewmod(username)
    elif option=="6":
        time.sleep(1)
        report_exportmod(username)
    elif option=="7":
        time.sleep(1)
        print("\n Logging out...")
        time.sleep(2)
        mphSystem()
    elif option=="8":
        return username
    else:
        print("\n |-----|" +
              "\n | Error Message: The option does not appear to exist. |" +
              "\n | Please only choose option 1 to 8.          |" +
              "\n |-----|\n")
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                 "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")

```

<div>exit()</div> <div>mphSystem()</div>		
Input	Process	Output
<ol style="list-style-type: none"> <li>mphSystem() <ul style="list-style-type: none"> <li>No input</li> </ul> </li> <li>loginSystem() <ul style="list-style-type: none"> <li>username</li> <li>password</li> <li>option</li> </ul> </li> <li>mainMenu() <ul style="list-style-type: none"> <li>option</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>mphSystem() <ul style="list-style-type: none"> <li>The main function that will start the program</li> <li>Start off by calling loginSystem() to retrieve the username</li> <li>Then, pass the username to mainMenu()</li> <li>Ultimately, display the system shutdown message when user exit the system</li> </ul> </li> <li>loginSystem() <ul style="list-style-type: none"> <li>Display the Staff Login page</li> <li>Prompt user to enter username</li> <li>Prompt user to enter password</li> <li>Check validation of username and password</li> <li>Display error message if username and/or password is invalid</li> <li>Display success message if username and password match the predefined data in json file</li> <li>Proceed to the Main Menu</li> <li>Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>Prompt user to enter option to continue where they left off or exit system</li> </ul> </li> <li>mainMenu() <ul style="list-style-type: none"> <li>Display the Main Menu page along with the logged in username</li> <li>Prompt user to enter their option based on the numbered list of options</li> <li>Proceed to: <ul style="list-style-type: none"> <li>Add New Records page if user enter 1</li> </ul> </li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>mphSystem() <ul style="list-style-type: none"> <li>username</li> <li>System shutdown message</li> </ul> </li> <li>loginSystem() <ul style="list-style-type: none"> <li>Staff Login page</li> <li>Success message</li> <li>Error messages</li> <li>System shutdown message</li> </ul> </li> <li>mainMenu() <ul style="list-style-type: none"> <li>username</li> <li>Main Menu page</li> <li>Error messages</li> <li>Logout message</li> <li>System shutdown message</li> </ul> </li> </ol>



	<ul style="list-style-type: none"> <li>○ Search Records page if user enter 2</li> <li>○ Update Records page if user enter 3</li> <li>○ Delete Records page if user enter 4</li> <li>○ View Record Reports page if user enter 5</li> <li>○ Generate &amp; Export Records page if user enter 6</li> <li>○ Log out the system and display log out message if user enter 7</li> <li>○ Exit the system and display shutdown message if user enter 8</li> <li>• Display error message if the option is other than 1 to 8</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul>	
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### 3.2 IPO Chart for insert\_module.py file:

```

import json
import random
import time
import datetime

def insertmod(username):
    while True:
        try:
            time.sleep(1)
            print("\n"+"-"*(80)+"\n\n Add New Records"+
                " "+"*(57-len(" Add New Records"))+"Welcome back, "+username+"!\n\n"+
                "-"*(80)+"\n")
            print("\n Which records would you like to add?\n\n" +
                " 1. Add new customer purchase records.\n" +

```

```

        " 2. Add new book records.\n" +
        " 3. Go back to main menu.\n")
print(" Please key-in a number based on the options above.\n")
time.sleep(0.5)
option=input(" Option[Example: 1]: ")
if option=="1":
    time.sleep(1)
    addCustomer(username)
    return username
elif option=="2":
    time.sleep(1)
    addBook(username)
    return username
elif option=="3":
    return username
else:
    print("\n |-----|" +
          "\n | Error Message: The option does not appear to exist. |" +
          "\n | Please only choose option 1 to 3.          |" +
          "\n |-----|\n")
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
time.sleep(2)
option=input("\n [Press 0 to exit the system] OR "+
             "\n [Press any other key to continue where you left off] : ")
time.sleep(1)
if(option=="0"):
    print("\n\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)

```

```

        print("\n ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

```

```
def addCustomer(username):
```

```
    total_price=0
```

```
    total_quantity=0
```

```
    try:
```

```
        print("\n"+"-"*(80)+"\n\n Add Customer Purchase Records"+
```

```
              " "*(57-len(" Add Customer Purchase Records"))+"Welcome back, "+username+"!\n\n"+
```

```
              "-"*(80)+"\n")
```

```
    with open("record_management.json", "r") as file:
```

```
        data = json.load(file)
```

```
        check_book=data["books"]
```

```
        insert_customer=data["customer_purchases"]
```

```
        if len(check_book)==0:
```

```
            print("\n |-----|"+
```

```
                  "\n | Error Message: There seems to be no book records |"+
```

```
                  "\n | in the system. Please add a book record first. |"+
```

```
                  "\n |-----|\n")
```

```
        input("\n Please press enter key to go back to main menu: ")
```

```
        return username
```

```
    else:
```

```
        print("\n Please enter the required information for the customer purchase record.")
```

```
        select="0"
```

```
        purchase_id= "PID" + str(random.randint(100, 1000))
```

```
        for i in range(len(insert_customer)):
```

```
            for i in range(len(insert_customer)):
```

```
                if(insert_customer[i].get("purchase_id")==purchase_id):
```

```
                    purchase_id= "PID" + str(random.randint(100, 1000))
```

```
        print("\n Purchase ID[Auto Generated]: "+purchase_id)
```

```

time.sleep(1)
while True:
    customer_name=input("\n Customer Name[Example: Ali bin Abu]: ")
    time.sleep(1)
    if(len(customer_name)>20 or len(customer_name)<3):
        print("\n |-----|" +
              "\n | Error Message: The customer name must be between |" +
              "\n | 3 to 20 characters only. Please try again.      |" +
              "\n |-----|\n")
    elif(customer_name.replace(" ", "").isalpha()):
        customer_name=customer_name.title()
        break
    else:
        print("\n |-----|" +
              "\n | Error Message: The customer name can only be in |" +
              "\n | alphabet letters. Please try again.          |" +
              "\n |-----|\n")
    time.sleep(1)
while True:
    phone_number=input("\n Phone Number[Example: 0123456789]: ")
    time.sleep(1)
    if(phone_number.isnumeric()):
        if(len(phone_number)>=10 and len(phone_number)<=11):
            while True:
                print("\n Is this a Malaysian number?")
                num_type=input("\n Type [1] for Yes OR Type [2] for No: ")
                if(num_type=="1"):
                    phone_number="+6"+phone_number
                    break
                elif(num_type=="2"):
                    phone_number="+"+phone_number
                    break
            else:

```

```

        print("\n |-----|" +
              "\n | Error Message: The option does not appear to exist. |" +
              "\n | Please choose only option 1 or 2.          |" +
              "\n |-----|\n")

    break

else:

    print("\n |-----|" +
          "\n | Error Message: The phone number must be between |" +
          "\n | 10 to 11 numbers only. Please try again.          |" +
          "\n |-----|\n")

else:

    print("\n |-----|" +
          "\n | Error Message: The phone number can only contain |" +
          "\n | numeral numbers. Please try again.                  |" +
          "\n |-----|\n")

while True:

    while True:

        time.sleep(1)

        print("\n Please key-in a number to choose a book from the options below:")

        print( "\n +-----+-----+-----+-----+" +
              "\n | No. | Book Title          | Book Price | Book Stock |" +
              "\n +-----+-----+-----+-----+")

        for i in range(len(check_book)):

            print(" |",str(i+1)+".", " "*(2-len(str(i+1)+".")), "|",
                  check_book[i].get("book_title")," "*(30-len(check_book[i].get("book_title"))),"|",
                  check_book[i].get("book_price")," "*(10-len(str(check_book[i].get("book_price")))),"|",
                  check_book[i].get("book_stock")," "*(9-len(str(check_book[i].get("book_stock")))),"|")

            print(" +-----+-----+-----+-----+")

        try:

            time.sleep(1)

            book_index=int(input("\n Book Product Number[Example: 1]: "))

            if(book_index<1 or book_index>(len(check_book))):

                print("\n |-----|" +

```

```

        "\n | Error Message: The book product number does not appear |"+
        "\n | to exist. Please choose from the options above only. |"+
        "\n |-----|\n")
    continue
if(check_book[book_index-1].get("book_stock")==0):
    print("\n |-----|"+
        "\n | Error Message: The product is currently out of stock. |"+
        "\n | Please choose another product. |"+
        "\n |-----|\n")
    continue
book_index=book_index-1
break
except ValueError:
    print("\n |-----|"+
        "\n | Error Message: The book product number does not appear |"+
        "\n | to exist. Please choose from the options above only. |"+
        "\n |-----|\n")
book_product=check_book[book_index].get("book_id")
product_price=check_book[book_index].get("book_price")
product_stock=check_book[book_index].get("book_stock")
while True:
    time.sleep(1)
    print("\n Please select the number of books.")
    print("\n +----+-----+-----+-----+ " +
        "\n | No. | Book Title          | Book Price | Book Stock |" +
        "\n +----+-----+-----+-----+")
    print(" |",str(book_index+1)+".", " *(2-len(str(book_index+1)+".")), "|",
        check_book[book_index].get("book_title"), " *(30-
len(check_book[book_index].get("book_title"))),"|",
        product_price, " *(10-len(str(product_price))),"|",
        product_stock, " *(9-len(str(product_stock))),"|")
    print(" " +----+-----+-----+-----+")
    try:

```

```

time.sleep(1)
product_quantity=int(input("\n Product Quantity[Example: 1]: "))
if(product_quantity>product_stock):
    print("\n |-----|"+
          "\n | Error Message: The quantity exceeds the |"+
          "\n | product stock. Please choose accordingly. |"+
          "\n |-----|\n")
    continue
if(product_quantity<1):
    print("\n |-----|"+
          "\n | Error Message: The quantity must be more |"+
          "\n | than 0. Please choose a higher number. |"+
          "\n |-----|\n")
    continue
break
except ValueError:
    print("\n |-----|"+
          "\n | Error Message: The quantity can only |"+
          "\n | be in numerals. Please try again. |"+
          "\n |-----|\n")

product_price=product_price.replace("RM","")
product_price=float(product_price)
book_stock=product_stock-product_quantity
update_stock=data["books"][book_index]
update_stock.update({"book_stock":book_stock})
total_quantity=total_quantity+product_quantity
subtotal=product_price*product_quantity
total_price=total_price+subtotal
temp_price="RM"+"{:2f}".format(total_price)
print("\n Total Price[Auto generated]:",temp_price)
product_data = {
    "book_product": book_product,
    "product_price":"RM"+"{:2f}".format(product_price),

```

```

        "product_quantity":product_quantity,
        "subtotal":"RM"+"{:2f}".format(subtotal)
    }
    if(select=="1"):
        found = False
        with open("record_management.json", "w") as file:
            variable_update=data["customer_purchases"][len(insert_customer)-1]
            variable_update.update({"total_quantity":total_quantity})
            variable_update.update({"total_price":"RM"+"{:2f}".format(total_price)})
            product_add=data["customer_purchases"][len(insert_customer)-1]["purchased_product"]
            for i in range(len(product_add)):
                if(product_add[i].get("book_product")==book_product):

product_add[i].update({"product_quantity":product_add[i].get("product_quantity")+product_quantity})
                subtotal_temp=float(product_add[i].get("subtotal").replace("RM",""))
                product_add[i].update({"subtotal":"RM"+"{:2f}".format(subtotal_temp+subtotal)})
                found = True
                break
            if found == False:
                product_add.append(product_data)
            json.dump(data, file, indent=6)
    else:
        datetime_format=datetime.date.today()
        purchase_date=datetime.datetime.strptime(datetime_format, '%d/%m/%Y')
        purchase_date=str(purchase_date)
        print("\n Purchase Date[Auto generated]:",purchase_date)
        customer_data = {
            "purchase_id": purchase_id,
            "customer_name": customer_name,
            "phone_number": phone_number,
            "purchased_product":[product_data],
            "total_quantity":total_quantity,
            "total_price":"RM"+"{:2f}".format(total_price),

```



```

        "purchase_date":purchase_date
    }
    with open("record_management.json", "w") as file:
        insert_customer.append(customer_data)
        json.dump(data, file, indent=4)
    print("\n Do you want to add more products?\n"+
        " Press [1] to add more product OR press any other key to stop adding products.\n")
    time.sleep(1)
    select=input(" Option[Example: 1]: ")
    if select!="1":
        break
    print("\n |-----|" +
        "\n | Success Message: Well done! The customer purchase record |" +
        "\n | has successfully been recorded in the database.      |" +
        "\n |-----|\n")
    input("\n Please press enter key to go back to main menu: ")
    return username
except KeyboardInterrupt:
    print("\n\n |-----|" +
        "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
        "\n | It's ok we all make mistakes sometimes.          |" +
        "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
        "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
            "\n Goodbye :)\n\n")

```

```

exit()

def addBook(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Add Book Records"+
              " "*(57-len(" Add Book Records"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")
        print("\n Please enter the required information for the book record.")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            insert_book=data["books"]
            book_id= "BID" + str(random.randint(1000, 10000))
            for i in range(len(insert_book)):
                for i in range(len(insert_book)):
                    if(insert_book[i].get("book_id")==book_id):
                        book_id= "BID" + str(random.randint(1000, 10000))
            print("\n Book ID[Auto Generated]: " +book_id)
            time.sleep(1)
            while True:
                book_title=input("\n Book Title[Example:The Story of Life #1]: ")
                if(len(book_title)>30 or len(book_title)<3):
                    print("\n |-----|"+
                          "\n | Error Message: The book title must be between |"+
                          "\n | 3 to 30 characters only. Please try again.  |"+
                          "\n |-----|\n")
                else:
                    book_title=book_title.title()
                    break
            time.sleep(1)
            while True:
                book_author=input("\n Book Author[Example: Ali bin Abu]: ")
                if(len(book_author)>20 or len(book_author)<3):

```

```

print("\n |-----|" +
      "\n | Error Message: The book author must be between |" +
      "\n | 3 to 20 characters only. Please try again.    |" +
      "\n |-----|\n")
elif(book_author.replace("&", "").replace(", ", "").replace(" ", "").isalpha()):
    book_author=book_author.title()
    break
else:
    print("\n |-----|" +
          "\n | Error Message: The book author can only be in |" +
          "\n | alphabet letters. Please try again.          |" +
          "\n |-----|\n")
time.sleep(1)
book_isbn= str(random.randint(9000000000000, 9999999999999))
for i in range(len(insert_book)):
    for i in range(len(insert_book)):
        if(insert_book[i].get("book_isbn")==book_isbn):
            book_isbn= str(random.randint(9000000000000, 9999999999999))
print("\n Book ISBN[Auto Generated]: " +book_isbn)
time.sleep(1)
while True:
    try:

        book_price=float(input("\n Book Price[Example: 54.96]: RM"))
        if(book_price<=0):
            print("\n |-----|" +
                  "\n | Error Message: The book price must be |" +
                  "\n | more than 0. Please try again.        |" +
                  "\n |-----|\n")
            continue
        book_price="RM"+"{: .2f}".format(book_price)
        break
    except ValueError:

```

```

        print("\n |-----|" +
              "\n | Error Message: The book price can only  |" +
              "\n | be in numeral numbers. Please try again.  |" +
              "\n |-----|\n")
time.sleep(1)
while True:
    try:
        book_stock=int(input("\n Book Stock[Example: 10]: "))
        if(book_stock<1):
            print("\n |-----|" +
                  "\n | Error Message: The book stock must be  |" +
                  "\n | more than 0. Please try again.      |" +
                  "\n |-----|\n")
            continue
        break
    except ValueError:
        print("\n |-----|" +
              "\n | Error Message: The book stock can only be  |" +
              "\n | in numeral numbers. Please try again.    |" +
              "\n |-----|\n")
time.sleep(1)
book_data = {
    "book_id":book_id,
    "book_title":book_title,
    "book_author":book_author,
    "book_isbn":book_isbn,
    "book_price":book_price,
    "book_stock":book_stock
}
with open("record_management.json", "w") as file:
    insert_book.append(book_data)
    json.dump(data, file, indent=4)
print("\n |-----|" +

```

```

        "\n | Success Message: Well done! The book record has |"+
        "\n | successfully been recorded in the database.   |"+
        "\n |-----|\n")
input("\n Please press enter key to go back to main menu: ")
return username
except KeyboardInterrupt:
    print("\n\n |-----|"+
        "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
        "\n | It's ok we all make mistakes sometimes.          |"+
        "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
        "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
            "\n Goodbye :)\n\n")
        exit()

```

Input	Process	Output
1. insertmod() <ul style="list-style-type: none"> <li>option</li> </ul> 2. addCustomer() <ul style="list-style-type: none"> <li>customer_name</li> <li>phone_number</li> <li>num_type</li> <li>book_index</li> <li>product_quantity</li> <li>select</li> <li>option</li> </ul>	1. insertmod() <ul style="list-style-type: none"> <li>Display the Add New Records page along with the logged in username</li> <li>Prompt user to enter their option based on the numbered list of options</li> <li>Proceed to: <ul style="list-style-type: none"> <li>Add Customer Purchase Records page if user enter 1</li> <li>Add Book Records page if user enter 2</li> </ul> </li> </ul>	1. insertmod() <ul style="list-style-type: none"> <li>username</li> <li>Add New Records page</li> <li>Error messages</li> <li>System shutdown message</li> </ul> 2. addCustomer() <ul style="list-style-type: none"> <li>username</li> </ul>

<p>3. addBook()</p> <ul style="list-style-type: none"> <li>• book_title</li> <li>• book_author</li> <li>• book_price</li> <li>• book_stock</li> <li>• option</li> </ul>	<ul style="list-style-type: none"> <li>○ Go back to Main menu page if user enter 3</li> <li>○ Display error message if the option is other than 1 to 3</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>2. addCustomer()</p> <ul style="list-style-type: none"> <li>• Display the Add Customer Purchase Records page along with the logged in username</li> <li>• Display error message if there are no book records in the json file and go back to Main Menu page</li> <li>• Else, auto generate the purchase ID and check input validation: <ul style="list-style-type: none"> <li>○ Auto generate purchase ID again if there is a similar purchase ID in json file</li> <li>○ Prompt user to enter customer name and check input validation:</li> <li>○ Display error message if input length is less than 3 or more than 20 characters</li> <li>○ Additionally, display error message if input contains other than alphabet letters</li> </ul> </li> <li>• Prompt user to enter phone number and check input validation: <ul style="list-style-type: none"> <li>○ Display error message if input length is not 10 to 11 numbers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Add Customer Purchase Records page</li> <li>• Book record tables</li> <li>• Total Price</li> <li>• Purchase Date</li> <li>• Success message</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul> <p>3. addBook()</p> <ul style="list-style-type: none"> <li>• username</li> <li>• Add Book Records page</li> <li>• Success message</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul>
---	---	--

	<ul style="list-style-type: none"> <li>○ Additionally, display error message input contains other than numbers</li> <li>● Prompt user to enter the number type and check validation: <ul style="list-style-type: none"> <li>○ Malaysian number if user enter 1</li> <li>○ Others if user enter 2</li> <li>○ Additionally, display error message if user enter other than 1 or 2</li> </ul> </li> <li>● Display book records table</li> <li>● Prompt user to enter book product number and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match any book product number in the table</li> <li>○ Additionally, display error message if input of selected book product number is out of stock</li> </ul> </li> <li>● Display the selected book product number record in a table</li> <li>● Prompt user to enter product quantity and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input is more than book product stock</li> <li>○ Additionally, display error message if input is 0</li> <li>○ Moreover, display error message if input is not numbers</li> </ul> </li> <li>● Auto generate total price</li> <li>● Auto generate purchase date</li> <li>● Prompt user for their option to either add more product or finish process: <ul style="list-style-type: none"> <li>○ Repeat the process to add another product if user enter 1</li> </ul> </li> </ul>	
--	--	--

	<ul style="list-style-type: none"> <li>• Display success message when the add customer purchase record process is finished</li> <li>• Proceed back to Main menu page when prompt</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>3. addBook()</p> <ul style="list-style-type: none"> <li>• Display Add Book Records page along with the logged in username</li> <li>• Auto generate the book ID and check input validation: <ul style="list-style-type: none"> <li>○ Auto generate book ID again if there is a similar book ID in json file</li> </ul> </li> <li>• Prompt user to enter book title and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input length is less than 3 or more 30 characters</li> </ul> </li> <li>• Prompt user to enter book author and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input length is less than 3 or more than 20 characters</li> <li>○ Additionally, display error message if input contains other than alphabet letters</li> </ul> </li> <li>• Auto generate the book ISBN and check input validation: <ul style="list-style-type: none"> <li>○ Auto generate book ISBN again if there is a similar book ISBN in json file</li> </ul> </li> </ul>	
--	---	--



	<ul style="list-style-type: none"> <li>• Prompt user to enter book price and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input is 0</li> <li>○ Additionally, display error message if input contains other than numbers</li> </ul> </li> <li>• Prompt user to enter book stock and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input is 0</li> <li>○ Additionally, display error message if input contains other than numbers</li> </ul> </li> <li>• Display success message when the add book record process is finished</li> <li>• Proceed back to Main menu page when prompt</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul>	
--	---	--

### 3.3 IPO Chart for search\_module.py file:

```
import json
import time

def searchmod(username):
    while True:
        try:
            time.sleep(1)
            print("\n"+"-"*(80)+"\n\n Search Records"+
                " "*(57-len(" Search Records"))+"Welcome back, "+username+"!\n\n"+
                "-"*(80)+"\n")
```

```

print("\n Which records would you like to search for?\n\n" +
      " 1. Search for customer purchase records.\n" +
      " 2. Search for book records.\n" +
      " 3. Go back to main menu.\n")

print(" Please key-in a number based on the options above.\n")
time.sleep(1)
option=input(" Option[Example: 1]: ")
if option=="1":
    time.sleep(1)
    searchCustomer(username)
    return username
elif option=="2":
    time.sleep(1)
    searchBook(username)
    return username
elif option=="3":
    return username
else:
    print("\n |-----|" +
          "\n | Error Message: The option does not appear to exist. |" +
          "\n | Please only choose option 1 to 3.          |" +
          "\n |-----|\n")
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
time.sleep(2)
option=input("\n [Press 0 to exit the system] OR ")
      "\n [Press any other key to continue where you left off] : ")
time.sleep(1)
if(option=="0"):
    print("\n\n Shutting down system.... in 5")

```

```

        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")
        exit()

def searchCustomer(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Search Customer Purchase Records"+
              " "*(57-len(" Search Customer Purchase Records"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            search_customer=data["customer_purchases"]
            if len(search_customer)!=0:
                while True:
                    found=False
                    time.sleep(1)
                    print("\n Please enter the customer's Purchase ID to search for the customer record.")
                    print( "\n +-----+-----+-----+-----+"+
                          "\n | Purchase ID | Customer Name      | Phone Number | Purchase Date |"+
                          "\n +-----+-----+-----+-----+")
                    for i in range(len(search_customer)):
                        print(" |",search_customer[i].get("purchase_id")," "*(10-
len(search_customer[i].get("purchase_id"))),"|",
                            search_customer[i].get("customer_name")," "*(19-
len(search_customer[i].get("customer_name"))),"|",
                            search_customer[i].get("phone_number")," "*(13-
len(search_customer[i].get("phone_number"))),"|",
                            search_customer[i].get("purchase_date")," "*(12-
len(search_customer[i].get("purchase_date"))),"|")

```

```

        print(" +-----+-----+-----+-----+")
    time.sleep(1)
    cust_pcID=input("\n Customer's Purchase ID[Example: PID138]: ")
    for i in range(len(search_customer)):
        if(search_customer[i].get("purchase_id")==cust_pcID):
            pid_index = i
            found=True
            break
    if found==True:
        break
    else:
        print("\n |-----|" +
              "\n | Error Message: The customer purchase record does not appear |" +
              "\n | to exist. Please choose an existing Purchase ID as above. |" +
              "\n |-----|\n")
    time.sleep(1)
    print("\n |-----|" +
          "\n | Success Message: Gotcha! Found the customer purchase result. |" +
          "\n |-----|\n")
    print("\n Customer Purchase Record #"+str(pid_index+1))
    print(" Purchase ID:", " "+search_customer[pid_index].get("purchase_id")," *(14-
len(search_customer[pid_index].get("purchase_id")))," ", "Customer Name:", "
"+search_customer[pid_index].get("customer_name"))
    print(" Phone Number:",search_customer[pid_index].get("phone_number")," *(14-
len(search_customer[pid_index].get("phone_number")))," ", "Date of
Purchase:",search_customer[pid_index].get("purchase_date"))
    print(" +-----+")
    "\n | Purchased Product |" +
    "\n +-----+" +
    "\n | No. | Book Product ID | Product Price | Product Quantity | Subtotal |" +
    "\n +-----+")
    for num in range(len(search_customer[pid_index]["purchased_product"])):
        print(" |",str(num+1)+".", " *(2-len(str(num+1)+".")), "|",

```

```

        search_customer[pid_index]["purchased_product"][num].get("book_product")," *(14-
len(str(search_customer[pid_index]["purchased_product"][num].get("book_product"))),"|",
        search_customer[pid_index]["purchased_product"][num].get("product_price")," *(12-
len(search_customer[pid_index]["purchased_product"][num].get("product_price"))),"|",
        search_customer[pid_index]["purchased_product"][num].get("product_quantity")," *(15-
len(str(search_customer[pid_index]["purchased_product"][num].get("product_quantity"))),"|",
        search_customer[pid_index]["purchased_product"][num].get("subtotal")," *(10-
len(search_customer[pid_index]["purchased_product"][num].get("subtotal"))),"|")
        print(" +-----+-----+-----+-----+-----+-----+")
        if(num==(len(search_customer[pid_index]["purchased_product"])-1)):
            print(" |","Total",
|" ,search_customer[pid_index].get("total_quantity")," *(15-
len(str(search_customer[pid_index].get("total_quantity"))),"|",
                search_customer[pid_index].get("total_price")," *(10-
len(str(search_customer[pid_index].get("total_price"))),"|")
            print(" +-----+-----+-----+-----+-----+-----+")
            input("\n Press enter any key to go back to main menu: ")
            return username
    else:
        print("\n |-----|"+
"\n | Error Message: There seems to be no customer purchase record |"+
"\n | in the system. Please add a customer purchase record first. |"+
"\n |-----|\n")
        input("\n Please press enter key to go back to main menu: ")
        return username
except KeyboardInterrupt:
    print("\n\n |-----|"+
"\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
"\n | It's ok we all make mistakes sometimes. |"+
"\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
"\n [Press any other key to continue where you left off] : ")

```

```

time.sleep(1)
if(option=="0"):
    print("\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n  ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

```

```

def searchBook(username):

```

```

    try:

```

```

        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Search Book Records"+
              " "*(57-len(" Search Book Records"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")

```

```

        with open("record_management.json", "r") as file:

```

```

            data = json.load(file)
            search_book=data["books"]

```

```

            if len(search_book)!=0:

```

```

                while True:

```

```

                    found=False

```

```

                    time.sleep(1)

```

```

                    print("\n Please enter the Book ID to search for the book record.")

```

```

                    print("\n +-----+-----+-----+-----+ " +
                          "\n | Book ID | Book Title           | Book Author       |" +
                          "\n +-----+-----+-----+-----+")

```

```

                    for i in range(len(search_book)):

```

```

                        print(" |",search_book[i].get("book_id")," "*(8-len(search_book[i].get("book_id"))),"|",
                              search_book[i].get("book_title")," "*(29-len(search_book[i].get("book_title"))),"|",
                              search_book[i].get("book_author")," "*(19-len(search_book[i].get("book_author"))),"|")
                        print(" +-----+-----+-----+-----+")

```

```

                    time.sleep(1)

```

```

book_ID=input("\n Book ID[Example: BID4748]: ")
for i in range(len(search_book)):
    if(search_book[i].get("book_id")==book_ID):
        bid_index = i
        found=True
        break
if found==True:
    break
else:
    print( "\n |-----|" +
          "\n | Error Message: The book record does not appear to |" +
          "\n | exist. Please choose an existing Book ID as above. |" +
          "\n |-----|\n")
time.sleep(1)
print( "\n |-----|" +
      "\n | Success Message: Gotcha! Found the book result. |" +
      "\n |-----|\n")
print("\n Book Record #"+str(bid_index+1))
print(" Book ID:",search_book[bid_index].get("book_id")," *(8-
len(search_book[bid_index].get("book_id")))," ", " Book
Title:",search_book[bid_index].get("book_title"))

print( " +-----+" +
      "\n | Book Details |" +
      "\n +-----+" +
      "\n | Book Author | Book ISBN | Book Price | Book Stock |" +
      "\n +-----+")
print(" |",search_book[bid_index].get("book_author")," *(19-
len(search_book[bid_index].get("book_author"))),"|",
      search_book[bid_index].get("book_isbn")," *(13-
len(search_book[bid_index].get("book_isbn"))),"|",
      search_book[bid_index].get("book_price")," *(10-
len(str(search_book[bid_index].get("book_price")))),"|",

```

```

        search_book[bid_index].get("book_stock")," *(9-
len(str(search_book[bid_index].get("book_stock")))), "|")

        print(" +-----+-----+-----+-----+")
        input("\n Press enter any key to go back to main menu: ")
        return username
    else:
        print("\n |-----|"+
              "\n | Error Message: There seems to be no book record |"+
              "\n | in the system. Please add a book record first. |"+
              "\n |-----|\n")
        input("\n Please press enter key to go back to main menu: ")
        return username
except KeyboardInterrupt:
    print("\n\n |-----|"+
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |"+
          "\n | It's ok we all make mistakes sometimes. |"+
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                 "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")
    exit()

```

Input	Process	Output
1. searchmod() • option 2. searchCustomer()	1. searchmod() • Display the Search Records page along with the logged in username	1. searchmod() • username



<ul style="list-style-type: none"> <li>• cust_pcID</li> <li>• option</li> </ul> <p>3. searchBook()</p> <ul style="list-style-type: none"> <li>• book_ID</li> <li>• option</li> </ul>	<ul style="list-style-type: none"> <li>• Prompt user to enter option based on the numbered lists of options.</li> <li>• Proceed to: <ul style="list-style-type: none"> <li>○ Search Customer Purchase Records page if user enter 1</li> <li>○ Search Book Records page if user enter 2</li> <li>○ Main Menu page if user enter 3</li> <li>○ Display error message if user enter other than 1 to 3</li> </ul> </li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>2. searchCustomer()</p> <ul style="list-style-type: none"> <li>• Display Search Customer Purchase Record page along with logged in username</li> <li>• Display customer purchase records in a table</li> <li>• Prompt user to enter customer purchase ID and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match any customer purchase ID</li> </ul> </li> <li>• Display success message when the customer purchase record is found</li> <li>• Display a tabulated customer purchase record in detail</li> <li>• Go back to Main Menu page when prompt</li> <li>• If there is no customer purchase record in the json file, then user will be directed to Main Menu page without going thru the search process</li> </ul>	<ul style="list-style-type: none"> <li>• Search Records page</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul> <p>2. searchCustomer()</p> <ul style="list-style-type: none"> <li>• username</li> <li>• Search Customer Purchase Records page</li> <li>• Customer purchase record tables</li> <li>• Success message</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul> <p>3. searchBook()</p> <ul style="list-style-type: none"> <li>• username</li> <li>• Search Book Records page</li> <li>• Book record tables</li> <li>• Success message</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul>
--	---	--

	<ul style="list-style-type: none"> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>3. searchBook()</p> <ul style="list-style-type: none"> <li>• Display Search Book Records page along with logged in username</li> <li>• Display book records in a table</li> <li>• Prompt user to enter book ID and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match any book ID</li> </ul> </li> <li>• Display success message when the book record is found</li> <li>• Display a tabulated book record in detail</li> <li>• Go back to Main Menu page when prompt</li> <li>• If there is no book record in the json file, then user will be directed to Main Menu page without going thru the search process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul>	
--	--	--

### 3.4 IPO Chart for update\_module.py file:

```
import json
import time
import datetime
```

```
def updatemod(username):
```

```

while True:
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Update Records"+
              " "*(57-len(" Update Records"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")
        print("\n Which records would you like to update?\n\n" +
              " 1. Update customer purchase records.\n" +
              " 2. Update book records.\n" +
              " 3. Go back to main menu.\n")
        print(" Please key-in a number based on the options above.\n")
        time.sleep(0.5)
        option=input(" Option[Example: 1]: ")
        if option=="1":
            time.sleep(1)
            updateCustomer(username)
            return username
        elif option=="2":
            time.sleep(1)
            updateBook(username)
            return username
        elif option=="3":
            return username
        else:
            print("\n |-----|"+
                  "\n | Error Message: The option does not appear to exist. |"+
                  "\n | Please only choose option 1 to 3.          |"+
                  "\n |-----|\n")
    except KeyboardInterrupt:
        print("\n\n |-----|"+
              "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
              "\n | It's ok we all make mistakes sometimes.          |"+
              "\n |-----| \n")

```

```

time.sleep(2)
option=input("\n [Press 0 to exit the system] OR "+
            "\n [Press any other key to continue where you left off] : ")
time.sleep(1)
if(option=="0"):
    print("\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

```

```

def updateCustomer(username):

```

```

    try:

```

```

        time.sleep(1)

```

```

        print("\n"+"-"*(80)+"\n\n Update Customer Purchase Records"+

```

```

              " "*(57-len(" Update Customer Purchase Records"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")

```

```

        with open("record_management.json", "r") as file:

```

```

            data = json.load(file)

```

```

            update_customer=data["customer_purchases"]

```

```

            update_bkdetails=data["books"]

```

```

            if len(update_customer)!=0:

```

```

                total_price=0

```

```

                total_quantity=0

```

```

                while True:

```

```

                    found=False

```

```

                    time.sleep(1)

```

```

                    print("\n Please enter the customer's Purchase ID to search for the customer record.")

```

```

                    print("\n +-----+-----+-----+-----+")+

```

```

                          "\n | Purchase ID | Customer Name      | Phone Number  | Purchase Date |"+

```

```

                          "\n +-----+-----+-----+-----+)"

```

```

        for i in range(len(update_customer)):
            print(" |",update_customer[i].get("purchase_id")," *(10-
len(update_customer[i].get("purchase_id"))),"|",
                update_customer[i].get("customer_name")," *(19-
len(update_customer[i].get("customer_name"))),"|",
                update_customer[i].get("phone_number")," *(13-
len(update_customer[i].get("phone_number"))),"|",
                update_customer[i].get("purchase_date")," *(12-
len(update_customer[i].get("purchase_date"))),"|")
            print(" +-----+-----+-----+-----+")
            time.sleep(1)
            cust_pcID=input("\n Customer's Purchase ID[Example: PID138]: ")
            for i in range(len(update_customer)):
                if(update_customer[i].get("purchase_id")==cust_pcID):
                    pid_index = i
                    found=True
                    break
            if found==True:
                break
            else:
                print("\n |-----|" +
                    "\n | Error Message: The customer purchase record does not appear |" +
                    "\n | to exist. Please choose an existing Purchase ID as above. |" +
                    "\n |-----|\n")
                time.sleep(1)
                print("\n |-----|" +
                    "\n | Success Message: Gotcha! Found the customer purchase result. |" +
                    "\n |-----|\n")
                print("\n Customer Purchase Record #"+str(pid_index+1))
                print(" Purchase ID:", " "+update_customer[pid_index].get("purchase_id")," *(14-
len(update_customer[pid_index].get("purchase_id")))," ", "Customer Name:", "
"+update_customer[pid_index].get("customer_name"))

```

```

print(" Phone Number:",update_customer[pid_index].get("phone_number")," *(14-
len(update_customer[pid_index].get("phone_number")))," ", "Date of
Purchase:",update_customer[pid_index].get("purchase_date"))

print(" +-----+-----+-----+-----+-----+-----+")
"\n |          Purchased Product          |"+
"\n +---+-----+-----+-----+-----+-----+"
"\n | No. | Book Product ID | Product Price | Product Quantity | Subtotal |"+
"\n +---+-----+-----+-----+-----+-----+")
for num in range(len(update_customer[pid_index]["purchased_product"])):
    print(" |",str(num+1)+".", " *(2-len(str(num+1)+".")), "|",
          update_customer[pid_index]["purchased_product"][num].get("book_product")," *(14-
len(str(update_customer[pid_index]["purchased_product"][num].get("book_product")))), "|",
          update_customer[pid_index]["purchased_product"][num].get("product_price")," *(12-
len(update_customer[pid_index]["purchased_product"][num].get("product_price"))), "|",
          update_customer[pid_index]["purchased_product"][num].get("product_quantity")," *(15-
len(str(update_customer[pid_index]["purchased_product"][num].get("product_quantity")))), "|",
          update_customer[pid_index]["purchased_product"][num].get("subtotal")," *(10-
len(update_customer[pid_index]["purchased_product"][num].get("subtotal"))), "|")
    print(" +---+-----+-----+-----+-----+-----+")
    if(num==(len(update_customer[pid_index]["purchased_product"])-1)):
        print(" |", "Total", "
|",update_customer[pid_index].get("total_quantity")," *(15-
len(str(update_customer[pid_index].get("total_quantity")))), "|",
              update_customer[pid_index].get("total_price")," *(10-
len(str(update_customer[pid_index].get("total_price")))), "|")
        print(" +-----+-----+-----+-----+-----+")
    print("\n Press [1] to update the customer purchase record OR press any other key to cancel.")
    option=input(" Option[Example: 1]: ")
    if(option!="1"):
        input("\n Please press enter key to go back to main menu: ")
        return username
    else:
        print("\n Purchase ID[Cannot be changed]:",update_customer[pid_index].get("purchase_id"))

```

```

time.sleep(1)
print("\n Old Customer Name: "+update_customer[pid_index].get("customer_name"))
while True:
    customer_name=input("\n New Customer Name[Example: Ali bin Abu]: ")
    time.sleep(1)
    if(len(customer_name)>20 or len(customer_name)<3):
        print("\n |-----|" +
              "\n | Error Message: The customer name must be between |" +
              "\n | 3 to 20 characters only. Please try again.      |" +
              "\n |-----|\n")
    elif(customer_name.replace(" ", "").isalpha()):
        customer_name=customer_name.title()
        update_custname=update_customer[pid_index]
        update_custname.update({"customer_name":customer_name})
        break
    else:
        print("\n |-----|" +
              "\n | Error Message: The customer name can only be in |" +
              "\n | alphabet letters. Please try again.          |" +
              "\n |-----|\n")
    time.sleep(1)
print("\n Old Phone Number:
"+update_customer[pid_index].get("phone_number").replace("+",""))
while True:
    phone_number=input("\n New Phone Number[Example: 0123456789]: ")
    time.sleep(1)
    if(phone_number.isnumeric()):
        if(len(phone_number)>=10 and len(phone_number)<=11):
            while True:
                print("\n Is this a Malaysian number?")
                num_type=input("\n Type [1] for Yes OR Type [2] for No: ")
                if(num_type=="1"):
                    phone_number="+6"+phone_number

```

```

        break
    elif(num_type=="2"):
        phone_number=" "+phone_number
        break
    else:
        print("\n |-----|" +
              "\n | Error Message: The option does not exist. |" +
              "\n | Please choose only option 1 or 2.          |" +
              "\n |-----|\n")
        update_custphone=update_customer[pid_index]
        update_custphone.update({"phone_number":phone_number})
        break
    else:
        print("\n |-----|" +
              "\n | Error Message: The phone number must be between |" +
              "\n | 10 to 11 numbers only. Please try again.        |" +
              "\n |-----|\n")
    else:
        print("\n |-----|" +
              "\n | Error Message: The phone number can only contain |" +
              "\n | numeral numbers. Please try again.                |" +
              "\n |-----|\n")
    time.sleep(1)
    for i in range(len(update_customer[pid_index]["purchased_product"])):
        old_quantity=update_customer[pid_index]["purchased_product"][i].get("product_quantity")
        old_bookprod=update_customer[pid_index]["purchased_product"][i].get("book_product")
        for y in range(len(update_bkdetails)):
            if(update_bkdetails[y].get("book_id")==old_bookprod):
                bid_index = y
                break
        old_stock=update_bkdetails[bid_index].get("book_stock")
        update_bkdetails[bid_index].update({"book_stock":old_stock+old_quantity})

```



```

with open("record_management.json", "w") as file:
    for i in range(len(update_customer[pid_index]["purchased_product"])):
        del update_customer[pid_index]["purchased_product"][0]
    json.dump(data, file, indent=4)
while True:
    while True:
        time.sleep(1)
        print("\n Please key-in a number to choose a book from the options below:")
        print( "\n +-----+-----+-----+-----+" +
            "\n | No. | Book Title          | Book Price | Book Stock |" +
            "\n +-----+-----+-----+-----+")
        for i in range(len(update_bkdetails)):
            print(" |",str(i+1)+".", " *(2-len(str(i+1)+".")),"|",
                update_bkdetails[i].get("book_title")," *(30-
len(update_bkdetails[i].get("book_title"))),"|",
                update_bkdetails[i].get("book_price")," *(10-
len(str(update_bkdetails[i].get("book_price"))))),"|",
                update_bkdetails[i].get("book_stock")," *(9-
len(str(update_bkdetails[i].get("book_stock"))))),"|")
            print(" +-----+-----+-----+-----+")
        try:
            time.sleep(1)
            book_index=int(input("\n Book Product Number[Example: 1]: "))
            if(book_index<1 or book_index>(len(update_bkdetails))):
                print("\n |-----|"+
                    "\n | Error Message: The book product number does not appear |"+
                    "\n | to exist. Please choose from the options above only. |"+
                    "\n |-----|\n")
                continue
            if(update_bkdetails[book_index-1].get("book_stock")==0):
                print("\n |-----|"+
                    "\n | Error Message: The product is currently out of stock. |"+
                    "\n | Please choose another product.          |"+

```

```

        "\n |-----|\n")
        continue
    book_index=book_index-1
    break
except ValueError:
    print("\n |-----|"+
          "\n | Error Message: The book product number does not appear |"+
          "\n | to exist. Please choose from the options above only. |"+
          "\n |-----|\n")
    book_product=update_bkdetails[book_index].get("book_id")
    product_price=update_bkdetails[book_index].get("book_price")
    product_stock=update_bkdetails[book_index].get("book_stock")
    while True:
        time.sleep(1)
        print("\n Please select the number of books.")
        print("\n +---+-----+-----+-----+" +
              "\n | No. | Book Title          | Book Price | Book Stock |" +
              "\n +---+-----+-----+-----+")
        print(" |",str(book_index+1)+".", " *(2-len(str(book_index+1)+".")),"|",
              update_bkdetails[book_index].get("book_title")," *(30-
len(update_bkdetails[book_index].get("book_title"))),"|",
              product_price," *(10-len(str(product_price))),"|",
              product_stock," *(9-len(str(product_stock))),"|")
        print(" " +---+-----+-----+-----+")
    try:
        time.sleep(1)
        product_quantity=int(input("\n Product Quantity[Example: 1]: "))
        if(product_quantity>product_stock):
            print("\n |-----|"+
                  "\n | Error Message: The quantity exceeds the |"+
                  "\n | product stock. Please choose accordingly. |"+
                  "\n |-----|\n")
        continue

```

```

        if(product_quantity<1):
            print("\n |-----|" +
                  "\n | Error Message: The quantity must be more |" +
                  "\n | than 0. Please choose a higher number.  |" +
                  "\n |-----|\n")
            continue
        break
    except ValueError:
        print("\n |-----|" +
              "\n | Error Message: The quantity can only |" +
              "\n | be in numerals. Please try again.  |" +
              "\n |-----|\n")

    product_price=product_price.replace("RM","")
    product_price=float(product_price)
    book_stock=product_stock-product_quantity
    update_stock=data["books"][book_index]
    update_stock.update({"book_stock":book_stock})
    total_quantity=total_quantity+product_quantity
    subtotal=product_price*product_quantity
    total_price=total_price+subtotal
    temp_price="RM"+"{:2f}".format(total_price)
    print("\n Total Price[Auto generated]:",temp_price)
    product_data = {
        "book_product": book_product,
        "product_price":"RM"+"{:2f}".format(product_price),
        "product_quantity":product_quantity,
        "subtotal":"RM"+"{:2f}".format(subtotal)
    }

    found = False
    with open("record_management.json", "w") as file:
        variable_update=data["customer_purchases"][pid_index]
        variable_update.update({"total_quantity":total_quantity})
        variable_update.update({"total_price":"RM"+"{:2f}".format(total_price)})

```

```

        product_add=data["customer_purchases"][pid_index]["purchased_product"]
        for i in range(len(product_add)):
            if(product_add[i].get("book_product")==book_product):

product_add[i].update({"product_quantity":product_add[i].get("product_quantity")+product_quantity})
                subtotal_temp=float(product_add[i].get("subtotal").replace("RM",""))
                product_add[i].update({"subtotal":"RM"+"{:.2f}".format(subtotal_temp+subtotal)})
                found = True
                break

        if found == False:
            product_add.append(product_data)
            json.dump(data, file, indent=6)
            print("\n Do you want to add more products?\n"+
                " Press [1] to add more product OR press any other key to stop adding products.\n")
            time.sleep(1)
            select=input(" Option[Example: 1]: ")
            if select!="1":
                datetime_format=datetime.date.today()
                purchase_date=datetime.datetime.strptime(datetime_format, '%d/%m/%Y')
                purchase_date=str(purchase_date)
                print("\n New Purchase Date[Auto generated]:",purchase_date)
                update_customer[pid_index].update({"purchase_date":purchase_date})
                break

with open("record_management.json", "w") as file:
    json.dump(data, file, indent=4)
    print("\n |-----|" +
        "\n | Success Message: Well done! The customer purchase record |" +
        "\n | has successfully been updated in the database.      |" +
        "\n |-----|\n")
    input("\n Please press enter key to go back to main menu: ")
    return username

else:
    print("\n |-----|" +

```

```

        "\n | Error Message: There seems to be no customer purchase record |"+
        "\n | in the system. Please add a customer purchase record first. |"+
        "\n |-----|\n")
    input("\n Please press enter key to go back to main menu: ")
    return username
except KeyboardInterrupt:
    print("\n\n |-----|"+
        "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
        "\n | It's ok we all make mistakes sometimes. |"+
        "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
        "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
            "\n Goodbye :)\n\n")
        exit()

def updateBook(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Update Book Records"+
            " "+"*(57-len(" Update Book Records"))+"Welcome back, "+username+"!\n\n"+
            "-"*(80)+"\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            update_book=data["books"]
            if len(update_book)!=0:

```

```

while True:
    found=False
    time.sleep(1)
    print("\n Please enter the Book ID to search for the book record.")
    print("\n +-----+-----+-----+-----+" +
          "\n | Book ID | Book Title          | Book Author      |" +
          "\n +-----+-----+-----+-----+")
    for i in range(len(update_book)):
        print(" |",update_book[i].get("book_id")," "*(8-len(update_book[i].get("book_id"))),"|",
              update_book[i].get("book_title")," "*(29-len(update_book[i].get("book_title"))),"|",
              update_book[i].get("book_author")," "*(19-len(update_book[i].get("book_author"))),"|")
        print(" +-----+-----+-----+-----+")
    time.sleep(1)
    book_ID=input("\n Book ID[Example: BID4748]: ")
    for i in range(len(update_book)):
        if(update_book[i].get("book_id")==book_ID):
            bid_index = i
            found=True
            break
    if found==True:
        break
    else:
        print("\n |-----|" +
              "\n | Error Message: The book record does not appear to |" +
              "\n | exist. Please choose an existing Book ID as above. |" +
              "\n |-----|\n")
    time.sleep(1)
    print("\n |-----|" +
          "\n | Success Message: Gotcha! Found the book result. |" +
          "\n |-----|\n")
    print("\n Book Record #" +str(bid_index+1))

```

```

print(" Book ID:",update_book[bid_index].get("book_id")," *(8-
len(update_book[bid_index].get("book_id")))," ", " Book
Title:",update_book[bid_index].get("book_title"))

print( " +-----+-----+-----+-----+"
      "\n |                Book Details                |"+
      "\n +-----+-----+-----+-----+"
      "\n | Book Author      | Book ISBN    | Book Price | Book Stock |"+
      "\n +-----+-----+-----+-----+")

print(" |",update_book[bid_index].get("book_author")," *(19-
len(update_book[bid_index].get("book_author"))),"|",
      update_book[bid_index].get("book_isbn")," *(13-
len(update_book[bid_index].get("book_isbn"))),"|",
      update_book[bid_index].get("book_price")," *(10-
len(str(update_book[bid_index].get("book_price")))),"|",
      update_book[bid_index].get("book_stock")," *(9-
len(str(update_book[bid_index].get("book_stock")))),"|")

print(" +-----+-----+-----+-----+")
print("\n Press [1] to update the book record OR press any other key to cancel.")
option=input(" Option[Example: 1]: ")
if(option!="1"):
    input("\n Please press enter key to go back to main menu: ")
    return username
else:
    print("\n Book ID[Cannot be changed]:",update_book[bid_index].get("book_id"))
    time.sleep(1)

    print("\n Old Book Title: "+update_book[bid_index].get("book_title"))
    while True:
        book_title=input("\n New Book Title[Example:The Story of Life #1]: ")
        if(len(book_title)>30 or len(book_title)<3):
            print("\n |-----|"+
                  "\n | Error Message: The book title must be between |"+
                  "\n | 3 to 30 characters only. Please try again.  |"+

```

```

        "\n |-----|\n")
    else:
        book_title=book_title.title()
        update_bktitle=update_book[bid_index]
        update_bktitle.update({"book_title":book_title})
        break
    time.sleep(1)
    print("\n Old Book Author: "+update_book[bid_index].get("book_author"))
    while True:
        book_author=input("\n New Book Author[Example: Ali bin Abu]: ")
        if(len(book_author)>20 or len(book_author)<3):
            print("\n |-----|"+
                "\n | Error Message: The book author must be between |"+
                "\n | 3 to 20 characters only. Please try again.  |"+
                "\n |-----|\n")
        elif(book_author.replace("&", "").replace(", ", "").replace(" ", "").isalpha()):
            book_author=book_author.title()
            update_bkauthor=update_book[bid_index]
            update_bkauthor.update({"book_author":book_author})
            break
        else:
            print("\n |-----|"+
                "\n | Error Message: The book author can only be in |"+
                "\n | alphabet letters. Please try again.      |"+
                "\n |-----|\n")
    time.sleep(1)
    print("\n Book ISBN[Cannot be changed]:",update_book[bid_index].get("book_isbn"))
    time.sleep(1)
    print("\n Old Book Price: "+update_book[bid_index].get("book_price"))
    while True:
        try:
            book_price=float(input("\n New Book Price[Example: 54.96]: RM"))
            if(book_price<=0):

```



```

        print("\n |-----|" +
              "\n | Error Message: The book price must be |" +
              "\n | more than 0. Please try again.      |" +
              "\n |-----|\n")

        continue

    book_price="RM"+"{:2f}".format(book_price)
    update_bkprice=update_book[bid_index]
    update_bkprice.update({"book_price":book_price})
    break

except ValueError as ve:
    print("\n |-----|" +
          "\n | Error Message: The book price can only |" +
          "\n | be in numeral numbers. Please try again. |" +
          "\n |-----|\n")

time.sleep(1)
print("\n Old Book Stock: "+str(update_book[bid_index].get("book_stock")))

while True:
    try:
        book_stock=int(input("\n New Book Stock[Example: 10]: "))
        if(book_stock<1):
            print("\n |-----|" +
                  "\n | Error Message: The book stock must be |" +
                  "\n | more than 0. Please try again.      |" +
                  "\n |-----|\n")

            continue

        update_bkstock=update_book[bid_index]
        update_bkstock.update({"book_stock":book_stock})
        break

    except ValueError as ve:
        print("\n |-----|" +
              "\n | Error Message: The book stock can only be |" +
              "\n | in numeral numbers. Please try again.      |" +
              "\n |-----|\n")

```

```

time.sleep(1)
with open("record_management.json", "w") as file:
    json.dump(data, file, indent=4)

print("\n |-----|" +
      "\n | Success Message: Well done! The book record has |" +
      "\n | successfully been updated in the database.    |" +
      "\n |-----|\n")
input("\n Please press enter key to go back to main menu: ")
return username
else:
    print("\n |-----|" +
          "\n | Error Message: There seems to be no book record |" +
          "\n | in the system. Please add a book record first. |" +
          "\n |-----|\n")
    input("\n Please press enter key to go back to main menu: ")
    return username
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                 "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")

```

exit()		
Input	Process	Output
1. updatemod() <ul style="list-style-type: none"> <li>option</li> </ul> 2. updateCustomer() <ul style="list-style-type: none"> <li>cust_pcID</li> <li>option</li> <li>customer_name</li> <li>phone_number</li> <li>num_type</li> <li>book_index</li> <li>product_quantity</li> <li>select</li> </ul> 3. updateBook() <ul style="list-style-type: none"> <li>book_ID</li> <li>option</li> <li>book_title</li> <li>book_author</li> <li>book_price</li> <li>book_stock</li> </ul>	1. updatemod() <ul style="list-style-type: none"> <li>Display the Update Records page along with the logged in username</li> <li>Prompt user to enter option based on the numbered lists of options.</li> <li>Proceed to: <ul style="list-style-type: none"> <li>Update Customer Purchase Records page if user enter 1</li> <li>Update Book Records page if user enter 2</li> <li>Main Menu page if user enter 3</li> <li>Display error message if user enter other than 1 to 3</li> </ul> </li> <li>Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>Prompt user to enter option to continue where they left off or exit system</li> </ul> 2. updateCustomer() <ul style="list-style-type: none"> <li>Display the Update Customer Purchase Records page along with logged in username</li> <li>Display the customer purchase record in a table</li> <li>Prompt user to enter customer purchase ID and check validation: <ul style="list-style-type: none"> <li>Display error message if input does not match the customer purchase ID based on the table</li> </ul> </li> <li>Display success message when customer purchase record is found</li> </ul>	1. updatemod() <ul style="list-style-type: none"> <li>username</li> <li>Update Records page</li> <li>Error messages</li> <li>System shutdown message</li> </ul> 2. updateCustomer() <ul style="list-style-type: none"> <li>username</li> <li>Update Customer Purchase Records page</li> <li>Customer purchase record tables</li> <li>Error messages</li> <li>Success messages</li> <li>Book record tables</li> <li>Purchase ID</li> <li>Old customer name</li> <li>Old phone number</li> <li>Old book products</li> <li>System shutdown message</li> </ul> 3. updateBook() <ul style="list-style-type: none"> <li>username</li> <li>Update Book Records page</li> <li>Book record tables</li> <li>Error messages</li> <li>Success messages</li> <li>Book ID</li> </ul>

	<ul style="list-style-type: none"> <li>• Display the customer purchase record based on the customer purchase record ID in a detailed table</li> <li>• Prompt user to enter option to either update the record or cancel: <ul style="list-style-type: none"> <li>○ Prompt user to go back to Main Menu page if user input is not 1</li> </ul> </li> <li>• Else, display the customer purchase record's purchase ID which cannot be change</li> <li>• Display old customer name record</li> <li>• Prompt user to enter new customer name and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input length is less than 3 or more than 20 characters</li> <li>○ Additionally, display error message if input contains other than alphabet letters</li> </ul> </li> <li>• Display old phone number record</li> <li>• Prompt user to enter new phone number and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input length is not between 10 to 11 numbers</li> <li>○ Display error message if input contains other than number</li> </ul> </li> <li>• Prompt user to enter number type and check validation: <ul style="list-style-type: none"> <li>○ Malaysian number if user enter 1</li> <li>○ Others if user enter 2</li> <li>○ Additionally, display error message if input is not 1 or 2</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Old book title</li> <li>• Old book author</li> <li>• Book ISBN</li> <li>• Old book price</li> <li>• Old book stock</li> <li>• System shutdown message</li> </ul>
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	<ul style="list-style-type: none"> <li>• Delete the previous purchased product record from the json file and return the stocks back to the respective book stocks</li> <li>• Display book records in a table</li> <li>• Prompt user to enter book product number and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match any book product number from the table</li> <li>○ Additionally, display error message if selected book product is out of stock</li> </ul> </li> <li>• Prompt user to enter book product number and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match any book product number in the table</li> <li>○ Additionally, display error message if input of selected book product number is out of stock</li> </ul> </li> <li>• Display the selected book product number record in a table</li> <li>• Prompt user to enter product quantity and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input is more than book product stock</li> <li>○ Additionally, display error message if input is 0</li> <li>○ Moreover, display error message if input is not numbers</li> </ul> </li> <li>• Auto generate new total price</li> <li>• Auto generate new purchase date</li> </ul>	
--	--	--

	<ul style="list-style-type: none"> <li>• Prompt user for their option to either add more product or finish process: <ul style="list-style-type: none"> <li>○ Repeat the process to add another product if user enter 1</li> </ul> </li> <li>• Display success message when the update customer purchase record process is finished</li> <li>• Proceed back to Main menu page when prompt</li> <li>• If there is no customer purchase record in the json file, then user will be directed back to the Main Menu page instead of going thru the update process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>3. updateBook()</p> <ul style="list-style-type: none"> <li>• Display the Update Book Records along with logged in username</li> <li>• Display the book record in a table</li> <li>• Prompt user to enter book ID and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match the book ID based on the table</li> </ul> </li> <li>• Display success message when book record is found</li> <li>• Display the book record based on the book record ID in a detailed table</li> </ul>	
--	---	--

	<ul style="list-style-type: none"> <li>• Prompt user to enter option to either update the record or cancel: <ul style="list-style-type: none"> <li>○ Prompt user to go back to Main Menu page if user input is not 1</li> </ul> </li> <li>• Else, display the book record's purchase ID which cannot be change</li> <li>• Display the old book title</li> <li>• Prompt user to enter book title and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input length is less than 3 or more 30 characters</li> </ul> </li> <li>• Display the old book author</li> <li>• Prompt user to enter book author and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input length is less than 3 or more than 20 characters</li> <li>○ Additionally, display error message if input contains other than alphabet letters</li> </ul> </li> <li>• Display the book ISBN which cannot be changed</li> <li>• Display old book price</li> <li>• Prompt user to enter book price and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input is 0</li> <li>○ Additionally, display error message if input contains other than numbers</li> </ul> </li> <li>• Display old book stock</li> <li>• Prompt user to enter book stock and check validation:</li> </ul>	
--	---	--

	<ul style="list-style-type: none"> <li>○ Display error message if input is 0</li> <li>○ Additionally, display error message if input contains other than numbers</li> <li>• Display success message when the update book record process is finished</li> <li>• Proceed back to Main menu page when prompt</li> <li>• If there is no book record in the json file, then user will be directed back to the Main Menu page instead of going thru the update process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul>	
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### 3.5 IPO Chart for delete\_module.py file:

```

import json
import time

def deletemod(username):
    while True:
        try:
            time.sleep(1)
            print("\n"+"-"*(80)+"\n\n Delete Records"+
                " "*(57-len(" Delete Records"))+"Welcome back, "+username+"!\n\n"+
                "-"*(80)+"\n")
            print("\n Which records would you like to delete?\n\n" +
                " 1. Delete customer purchase records.\n" +
                " 2. Delete book records.\n" +

```



```

        " 3. Go back to main menu.\n")

print(" Please key-in a number based on the options above.\n")
time.sleep(1)
option=input(" Option[Example: 1]: ")
if option=="1":
    deleteCustomer(username)
    return username
elif option=="2":
    deleteBook(username)
    return username
elif option=="3":
    return username
else:
    print( "\n |-----|" +
          "\n | Error Message: The option does not appear to exist. |" +
          "\n | Please only choose option 1 to 3.          |" +
          "\n |-----|\n")
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
time.sleep(2)
option=input("\n [Press 0 to exit the system] OR "+
             "\n [Press any other key to continue where you left off] : ")
time.sleep(1)
if(option=="0"):
    print("\n\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")

```

```

exit()

def deleteCustomer(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Delete One Customer Purchase Record"+
              " "*(57-len(" Delete One Customer Purchase Record"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            delete_customer=data["customer_purchases"]
            if len(delete_customer)!=0:
                while True:
                    found=False
                    time.sleep(1)
                    print("\n Please enter the Customer's Purchase ID to delete the customer record.")
                    print( "\n +-----+-----+-----+-----+"
                          "\n | Purchase ID | Customer Name      | Phone Number   | Purchase Date |"
                          "\n +-----+-----+-----+-----+")
                    for i in range(len(delete_customer)):
                        print(" |",delete_customer[i].get("purchase_id")," "*(10-
len(delete_customer[i].get("purchase_id"))),"|",
                             delete_customer[i].get("customer_name")," "*(19-
len(delete_customer[i].get("customer_name"))),"|",
                             delete_customer[i].get("phone_number")," "*(13-
len(delete_customer[i].get("phone_number"))),"|",
                             delete_customer[i].get("purchase_date")," "*(12-
len(delete_customer[i].get("purchase_date"))),"|")
                        print(" +-----+-----+-----+-----+")
                    time.sleep(1)
                    cust_pcID=input("\n Customer's Purchase ID[Example: PID138]: ")
                    for i in range(len(delete_customer)):
                        if(delete_customer[i].get("purchase_id")==cust_pcID):

```

```

        pid_index = i
        found=True
        break
    if found==True:
        break
    else:
        print("\n |-----|" +
              "\n | Error Message: The customer purchase record does not appear |" +
              "\n | to exist. Please choose an existing Purchase ID as above. |" +
              "\n |-----|\n")
    time.sleep(1)
    print("\n Customer Purchase Record #"+str(pid_index+1))
    print(" Purchase ID:", " "+delete_customer[pid_index].get("purchase_id")," *(14-
len(delete_customer[pid_index].get("purchase_id")))," ", "Customer Name:", "
"+delete_customer[pid_index].get("customer_name"))
    print(" Phone Number:",delete_customer[pid_index].get("phone_number")," *(14-
len(delete_customer[pid_index].get("phone_number")))," ", "Date of
Purchase:",delete_customer[pid_index].get("purchase_date"))
    print(" +-----+" +
          "\n | Purchased Product |" +
          "\n +---+-----+-----+-----+-----+" +
          "\n | No. | Book Product ID | Product Price | Product Quantity | Subtotal |" +
          "\n +---+-----+-----+-----+-----+")
    for num in range(len(delete_customer[pid_index]["purchased_product"])):
        print(" |",str(num+1)+".", " *(2-len(str(num+1)+".")), "|",
              delete_customer[pid_index]["purchased_product"][num].get("book_product")," *(14-
len(str(delete_customer[pid_index]["purchased_product"][num].get("book_product")))), "|",
              delete_customer[pid_index]["purchased_product"][num].get("product_price")," *(12-
len(delete_customer[pid_index]["purchased_product"][num].get("product_price")))," |",
              delete_customer[pid_index]["purchased_product"][num].get("product_quantity")," *(15-
len(str(delete_customer[pid_index]["purchased_product"][num].get("product_quantity")))), "|",
              delete_customer[pid_index]["purchased_product"][num].get("subtotal")," *(10-
len(delete_customer[pid_index]["purchased_product"][num].get("subtotal")))," |")

```

```

        print(" +-----+-----+-----+-----+-----+")
        if(num==(len(delete_customer[pid_index]["purchased_product"])-1)):
            print(" |", "Total", "
|", delete_customer[pid_index].get("total_quantity"), " *(15-
len(str(delete_customer[pid_index].get("total_quantity")))), "|",
                delete_customer[pid_index].get("total_price"), " *(10-
len(str(delete_customer[pid_index].get("total_price")))), "|")
            print(" +-----+-----+-----+-----+-----+")
            print("\n Are you sure you want to delete the customer purchase record?\n"+
                "\n Press [1] if you want to delete it OR press any other key to cancel.")
            time.sleep(1)
            option=input(" Option[Example: 1]: ")
            if(option=="1"):
                with open("record_management.json", "w") as file:
                    del delete_customer[pid_index]
                    json.dump(data, file, indent=4)
                print( "\n |-----|" +
                    "\n | Success Message: The customer purchase record |" +
                    "\n | has successfully been deleted from the system. |" +
                    "\n |-----|\n")
                input("\n Please press enter key to go back to main menu: ")
                return username
            else:
                print("\n |-----|" +
                    "\n | Error Message: There seems to be no customer purchase record |" +
                    "\n | in the system. Please add a customer purchase record first. |" +
                    "\n |-----|\n")
                input("\n Please press enter key to go back to main menu: ")
                return username
    except KeyboardInterrupt:
        print("\n\n |-----|" +
            "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
            "\n | It's ok we all make mistakes sometimes. |" +

```

```
"\n |----- \n")
time.sleep(2)
option=input("\n [Press 0 to exit the system] OR "+
            "\n [Press any other key to continue where you left off] : ")
time.sleep(1)
if(option=="0"):
    print("\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n ..",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

def deleteBook(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Delete One Book Record"+
              " "+"*(57-len(" Delete One Book Record"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            delete_book=data["books"]
            if len(delete_book)!=0:
                while True:
                    found=False
                    time.sleep(1)
                    print("\n Please enter the Book ID to delete the book record.")
                    print("\n +-----+-----+-----+-----+-----+")
                    print("\n | Book ID   | Book Title           | Book Author       |" +
                          "\n +-----+-----+-----+-----+-----+")
                    for i in range(len(delete_book)):
                        print(" |",delete_book[i].get("book_id")," "*((8-len(delete_book[i].get("book_id"))),"|",
```

```

        delete_book[i].get("book_title")," "*(29-len(delete_book[i].get("book_title"))),"|",
        delete_book[i].get("book_author")," "*(19-len(delete_book[i].get("book_author"))),"|")
    print(" +-----+-----+-----+-----+")
    time.sleep(1)
book_ID=input("\n Book ID[Example: BID4748]: ")
for i in range(len(delete_book)):
    if(delete_book[i].get("book_id")==book_ID):
        bid_index = i
        found=True
        break
    if found==True:
        break
    else:
        print("\n |-----|"
              "\n | Error Message: The book record does not appear to |"
              "\n | exist. Please choose an existing Book ID as above. |"
              "\n |-----|\n")
        time.sleep(1)
    print("\n Book Record #"+str(bid_index+1))
    print(" Book ID:",delete_book[bid_index].get("book_id")," "*(8-
len(delete_book[bid_index].get("book_id")))," " Book
Title:",delete_book[bid_index].get("book_title"))
    print(" " +-----+"")
    "\n | Book Details |"
    "\n +-----+-----+-----+-----+"
    "\n | Book Author | Book ISBN | Book Price | Book Stock |"
    "\n +-----+-----+-----+-----+"
    print(" |",delete_book[bid_index].get("book_author")," "*(19-
len(delete_book[bid_index].get("book_author"))),"|",
        delete_book[bid_index].get("book_isbn")," "*(13-
len(delete_book[bid_index].get("book_isbn"))),"|",
        delete_book[bid_index].get("book_price")," "*(10-
len(str(delete_book[bid_index].get("book_price"))))),"|",

```

```

        delete_book[bid_index].get("book_stock")," *(9-
len(str(delete_book[bid_index].get("book_stock")))),")
    print(" +-----+-----+-----+-----+")
    print("\n Are you sure you want to delete the book record?\n"+
        "\n Press [1] if you want to delete it OR press any other key to cancel.")
    time.sleep(1)
    option=input(" Option: ")
    if(option=="1"):
        with open("record_management.json", "w") as file:
            del delete_book[bid_index]
            json.dump(data, file, indent=4)
        print("\n |-----|" +
            "\n | Success Message: The book record has successfully |" +
            "\n | been deleted from the system. |" +
            "\n |-----|\n")
        input("\n Please press enter key to go back to main menu: ")
        return username
    else:
        print("\n |-----|" +
            "\n | Error Message: There seems to be no book record |" +
            "\n | in the system. Please add a book record first. |" +
            "\n |-----|\n")
        input("\n Please press enter key to go back to main menu: ")
        return username
except KeyboardInterrupt:
    print("\n\n |-----|" +
        "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
        "\n | It's ok we all make mistakes sometimes. |" +
        "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
        "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)

```

```

if(option=="0"):
    print("\n\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

```

Input	Process	Output
1. deletemod() <ul style="list-style-type: none"> <li>option</li> </ul> 2. deleteCustomer() <ul style="list-style-type: none"> <li>cust_pcID</li> <li>option</li> </ul> 3. deleteBook() <ul style="list-style-type: none"> <li>book_ID</li> <li>option</li> </ul>	1. deletemod() <ul style="list-style-type: none"> <li>Display the Delete Records page along with the logged in username</li> <li>Prompt user to enter option based on the numbered lists of options</li> <li>Proceed to:               <ul style="list-style-type: none"> <li>Delete One Customer Purchase Record page if user enter 1</li> <li>Delete One Book Record page if user enter 2</li> <li>Main Menu page if user enter 3</li> </ul> </li> <li>Display error message if user enter other than 1 to 3</li> <li>Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>Prompt user to enter option to continue where they left off or exit system</li> </ul> 2. deleteCustomer() <ul style="list-style-type: none"> <li>Display the Delete One Customer Purchase Record page along with the logged in username</li> </ul>	1. deletemod() <ul style="list-style-type: none"> <li>username</li> <li>Delete Records page</li> <li>Error messages</li> <li>System shutdown message</li> </ul> 2. deleteCustomer() <ul style="list-style-type: none"> <li>username</li> <li>Delete One Customer Purchase Record page</li> <li>Customer purchase record table</li> <li>Error messages</li> <li>Success message</li> <li>System shutdown message</li> </ul> 3. deleteBook() <ul style="list-style-type: none"> <li>username</li> <li>Delete One Book Record page</li> <li>Book record table</li> <li>Error messages</li> </ul>



	<ul style="list-style-type: none"> <li>• Display the customer purchase record in a table</li> <li>• Prompt user to enter customer purchase ID and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match the customer purchase ID based on the table</li> </ul> </li> <li>• Display the customer purchase record based on the customer purchase record ID in a detailed table</li> <li>• Prompt user to enter option to either delete the record or cancel: <ul style="list-style-type: none"> <li>○ Prompt user to go back to Main Menu page if user input is not 1</li> </ul> </li> <li>• Else, delete the customer purchase record from the json file</li> <li>• Display a success message when the customer purchase record has been deleted</li> <li>• Proceed back to Main menu page when prompt</li> <li>• If there is no customer purchase record in the json file, then user will be directed back to the Main Menu page instead of going thru the delete process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>3. deleteBook()</p> <ul style="list-style-type: none"> <li>• Display the Delete One Book Record page along with the logged in username</li> <li>• Display the book record in a table</li> </ul>	<ul style="list-style-type: none"> <li>• Success message</li> <li>• System shutdown message</li> </ul>
--	---	--

	<ul style="list-style-type: none"> <li>• Prompt user to enter book ID and check validation: <ul style="list-style-type: none"> <li>○ Display error message if input does not match the book ID based on the table</li> </ul> </li> <li>• Display the book record based on the book record ID in a detailed table</li> <li>• Prompt user to enter option to either delete the record or cancel: <ul style="list-style-type: none"> <li>○ Prompt user to go back to Main Menu page if user input is not 1</li> </ul> </li> <li>• Else, delete the book record from the json file</li> <li>• Display a success message when the book record has been deleted</li> <li>• Proceed back to Main menu page when prompt</li> <li>• If there is no book record in the json file, then user will be directed back to the Main Menu page instead of going thru the delete process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul>	
--	--	--

### 3.6 IPO Chart for report\_module.py file:

```
import json
import time

def report_viewmod(username):
    while True:
        try:
```

```

time.sleep(1)
print("\n"+"-"*(80)+"\n\n View Record Reports"+
      " "*(57-len(" View Record Reports"))+"Welcome back, "+username+"!\n\n"+
      "-"*(80)+"\n")
print("\n Which record reports would you want to view?\n\n" +
      " 1. View customer purchase records.\n" +
      " 2. View book records.\n" +
      " 3. Go back to main menu.\n")
print(" Please key-in a number based on the options above.\n")
time.sleep(1)
option=input(" Option[Example: 1]: ")
if option=="1":
    viewCustomer(username)
    return username
elif option=="2":
    viewBook(username)
    return username
elif option=="3":
    return username
else:
    print("\n |-----|" +
          "\n | Error Message: The option does not appear to exist. |" +
          "\n | Please only choose option 1 to 3.          |" +
          "\n |-----|\n")
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
time.sleep(2)
option=input("\n [Press 0 to exit the system] OR "+
             "\n [Press any other key to continue where you left off] : ")
time.sleep(1)

```

```

if(option=="0"):
    print("\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

```

```

def report_exportmod(username):

```

```

    while True:

```

```

        try:

```

```

            time.sleep(1)
            print("\n"+"-"*(80)+"\n\n Generate & Export Records"+
                  " "*(57-len(" Generate & Export Records"))+"Welcome back, "+username+"!\n\n"+
                  "-"*(80)+"\n")

```

```

            print("\n Which records would you want to export?\n\n" +
                  " 1. Generate & Export customer purchase records.\n" +
                  " 2. Generate & Export book records.\n" +
                  " 3. Go back to main menu.\n")
            print(" Please key-in a number based on the options above.\n")
            time.sleep(1)

```

```

            option=input(" Option[Example: 1]: ")

```

```

            if option=="1":

```

```

                exportCustomer(username)

```

```

                return username

```

```

            elif option=="2":

```

```

                exportBook(username)

```

```

                return username

```

```

            elif option=="3":

```

```

                return username

```

```

            else:

```

```

print("\n |-----|" +
      "\n | Error Message: The option does not exist. |" +
      "\n | Please only choose option 1 to 3.          |" +
      "\n |-----|\n")
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                 "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")
        exit()

```

```

def viewCustomer(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n View Customer Purchase Records"+
              " "*(57-len(" View Customer Purchase Records"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            view_customer=data["customer_purchases"]
            if len(view_customer)!=0:
                time.sleep(1)

```



```

print("\n |-----|" +
      "\n | Error Message: There seems to be no customer purchase record |" +
      "\n | in the system. Please add a customer purchase record first. |" +
      "\n |-----|\n")
input("\n Please press enter key to go back to main menu: ")
return username
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes. |" +
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                 "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")
        exit()

def viewBook(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n View Book Records"+
              "\n "+"*(57-len(" View Book Records"))+"Welcome back, "+username+"!\n\n"+
              "\n"+"-(80)+"\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            view_book=data["books"]

```

```

if len(view_book)!=0:
    time.sleep(1)
    for i in range(len(view_book)):
        print("\n Book Record #"+str(i+1))
        print(" Book ID:",view_book[i].get("book_id")," *(8-len(view_book[i].get("book_id"))),"
", " Book Title:",view_book[i].get("book_title"))
        print( " +-----+"+
"\n | Book Details |"+
"\n +-----+"+
"\n | Book Author | Book ISBN | Book Price | Book Stock |"+
"\n +-----+"+
        print(" |",view_book[i].get("book_author")," *(19-
len(view_book[i].get("book_author"))),"|",
view_book[i].get("book_isbn")," *(13-len(view_book[i].get("book_isbn"))),"|",
view_book[i].get("book_price")," *(10-len(str(view_book[i].get("book_price"))),"|",
view_book[i].get("book_stock")," *(9-len(str(view_book[i].get("book_stock"))),"|")
        print(" +-----+"+
input("\n Please press enter key to go back to main menu: ")
return username
else:
    print("\n |-----|"+
"\n | Error Message: There seems to be no book record |"+
"\n | in the system. Please add a book record first. |"+
"\n |-----|\n")
    input("\n Please press enter key to go back to main menu: ")
    return username
except KeyboardInterrupt:
    print("\n\n |-----|"+
"\n | Error Message: It looks like you accidentally pressed ctrl + C. |"+
"\n | It's ok we all make mistakes sometimes. |"+
"\n |-----| \n")
time.sleep(2)
option=input("\n [Press 0 to exit the system] OR "+

```



```

        "\n [Press any other key to continue where you left off] : ")
time.sleep(1)
if(option=="0"):
    print("\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
        "\n Goodbye :)\n\n")
    exit()

def exportCustomer(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Export Customer Purchase Records"+
            " "*(57-len(" Export Customer Purchase Records"))+"Welcome back, "+username+"!\n\n"+
            "-"*(80)+"\n\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            export_customer=data["customer_purchases"]
            if len(export_customer)!=0:
                while True:
                    time.sleep(1)
                    for i in range(len(export_customer)):
                        print("\n Customer Purchase Record #"+str(i+1))
                        print(" Purchase ID:", " "+export_customer[i].get("purchase_id"), " "*(14-
len(export_customer[i].get("purchase_id"))), " ", "Customer Name:", "
"+export_customer[i].get("customer_name"))
                        print(" Phone Number:",export_customer[i].get("phone_number"), " "*(14-
len(export_customer[i].get("phone_number"))), " ", "Date of
Purchase:",export_customer[i].get("purchase_date"))
                        print(" +-----+ "+"
                        "\n | Purchased Product |"

```

```

"\n +---+-----+-----+-----+-----+-----+"
"\n | No. | Book Product ID | Product Price | Product Quantity | Subtotal |"+
"\n +---+-----+-----+-----+-----+-----+")
for booknum in range(len(export_customer[i]["purchased_product"])):
    print(" |",str(booknum+1)+".", " *(2-len(str(booknum+1)+".")), "|",
          export_customer[i]["purchased_product"][booknum].get("book_product")," *(14-
len(str(export_customer[i]["purchased_product"][booknum].get("book_product")))), "|",
          export_customer[i]["purchased_product"][booknum].get("product_price")," *(12-
len(export_customer[i]["purchased_product"][booknum].get("product_price")))," |",
          export_customer[i]["purchased_product"][booknum].get("product_quantity")," *(15-
len(str(export_customer[i]["purchased_product"][booknum].get("product_quantity")))), "|",
          export_customer[i]["purchased_product"][booknum].get("subtotal")," *(10-
len(export_customer[i]["purchased_product"][booknum].get("subtotal")))," |")
    print(" +---+-----+-----+-----+-----+-----+")
    if(booknum==(len(export_customer[i]["purchased_product"])-1)):
        print(" |","Total", " |",export_customer[i].get("total_quantity"),"
*(15-len(str(export_customer[i].get("total_quantity")))), "|",
              export_customer[i].get("total_price")," *(10-
len(str(export_customer[i].get("total_price")))), "|")
        print(" +-----+-----+-----+-----+-----+")
print("\n Are you sure you want to export all customer purchase records?\n"+
      " Press [1] if you want to export them OR press any other key to cancel.")
time.sleep(1)
option=input("\n Option[Example: 1]: ")
if(option=="1"):
    print("\n What do you want to name the file?"+
          "\n The filename cannot contain any of these *|\/:'?><')
    filename=input(" Filename[Example: myFile ]: ")
    filename=filename.replace('*|\/:'?><',")
    time.sleep(1)
    filetype=".json"
    with open(str("Exported_custpurchasefiles/"+filename+filetype), "w") as file:
        json.dump(export_customer, file, indent=4)

```

```

        print( "\n |-----|" +
              "\n | Success Message: All customer purchase records  |" +
              "\n | have successfully been exported to the JSON file. |" +
              "\n |-----|\n")
        input("\n Please press enter key to go back to main menu: ")
        return username
    else:
        input("\n Please press enter key to go back to main menu: ")
        return username
    else:
        print("\n |-----|" +
              "\n | Error Message: There seems to be no customer purchase record |" +
              "\n | in the system. Please add a customer purchase record first. |" +
              "\n |-----|\n")
        input("\n Please press enter key to go back to main menu: ")
        return username
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes.          |" +
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)
    if(option=="0"):
        print("\n\n Shutting down system.... in 5")
        for i in range(4,0,-1):
            time.sleep(1)
            print("\n ...",i)
        print("\n Thank you "+username+" for using the MPH Record Management System." +
              "\n Goodbye :)\n\n")
    exit()

```

```

def exportBook(username):
    try:
        time.sleep(1)
        print("\n"+"-"*(80)+"\n\n Export Book Records"+
              " "*(57-len(" Export Book Records"))+"Welcome back, "+username+"!\n\n"+
              "-"*(80)+"\n")
        with open("record_management.json", "r") as file:
            data = json.load(file)
            export_book=data["books"]
            if len(export_book)!=0:
                time.sleep(1)
                for i in range(len(export_book)):
                    print("\n Book Record #"+str(i+1))
                    print(" Book ID:",export_book[i].get("book_id")," "*(8-
len(export_book[i].get("book_id")))," ", " Book Title:",export_book[i].get("book_title"))
                    print( " +-----+-----+-----+-----+")+
                          "\n |               Book Details               |"+
                          "\n +-----+-----+-----+-----+")+
                          "\n | Book Author      | Book ISBN      | Book Price | Book Stock |"+
                          "\n +-----+-----+-----+-----+")+
                          print(" |",export_book[i].get("book_author")," "*(19-
len(export_book[i].get("book_author"))),"|",
                              export_book[i].get("book_isbn")," "*(13-len(export_book[i].get("book_isbn"))),"|",
                              export_book[i].get("book_price")," "*(10-len(str(export_book[i].get("book_price")))),"|",
                              export_book[i].get("book_stock")," "*(9-len(str(export_book[i].get("book_stock")))),"|")
                    print(" +-----+-----+-----+-----+")
                time.sleep(1)
                print("\n Are you sure you want to export all book records?\n"+
                      "\n Press [1] if you want to export them OR press any other key to cancel.")
                time.sleep(1)
                option=input(" Option[Example: 1]: ")
                if(option=="1"):

```

```

print("\n What do you want to name the file?"+
      "\n The filename cannot contain any of these *|\/:\""?"><')
filename=input(" Filename[Example: myFile ]: ")
filename=filename.replace('*|\/:\""?"><',")
time.sleep(1)
filetype=".json"
with open(str("Exported_bookfiles/"+filename+filetype), "w") as file:
    json.dump(export_book, file, indent=4)
print( "\n |-----|" +
      "\n | Success Message: All book records have successfully |" +
      "\n | been exported to the JSON file. |" +
      "\n |-----|\n")
input("\n Please press enter key to go back to main menu: ")
return username
else:
    input("\n Please press enter key to go back to main menu: ")
    return username
else:
    print("\n |-----|" +
          "\n | Error Message: There seems to be no book record |" +
          "\n | in the system. Please add a book record first. |" +
          "\n |-----|\n")
    input("\n Please press enter key to go back to main menu: ")
    return username
except KeyboardInterrupt:
    print("\n\n |-----|" +
          "\n | Error Message: It looks like you accidentally pressed ctrl + C. |" +
          "\n | It's ok we all make mistakes sometimes. |" +
          "\n |-----| \n")
    time.sleep(2)
    option=input("\n [Press 0 to exit the system] OR "+
                 "\n [Press any other key to continue where you left off] : ")
    time.sleep(1)

```

```

if(option=="0"):
    print("\n\n Shutting down system.... in 5")
    for i in range(4,0,-1):
        time.sleep(1)
        print("\n ...",i)
    print("\n Thank you "+username+" for using the MPH Record Management System." +
          "\n Goodbye :)\n\n")
    exit()

```

Input	Process	Output
1. report_viewmod() <ul style="list-style-type: none"> <li>option</li> </ul> 2. report_exportmod() <ul style="list-style-type: none"> <li>option</li> </ul> 3. viewCustomer() <ul style="list-style-type: none"> <li>option</li> </ul> 4. viewBook() <ul style="list-style-type: none"> <li>option</li> </ul> 5. exportCustomer() <ul style="list-style-type: none"> <li>option</li> <li>filename</li> </ul> 6. exportBook() <ul style="list-style-type: none"> <li>option</li> <li>filename</li> </ul>	1. report_viewmod() <ul style="list-style-type: none"> <li>Display the View Record Reports page along with the logged in username</li> <li>Prompt user to enter option based on the numbered lists of options.</li> <li>Proceed to: <ul style="list-style-type: none"> <li>View Customer Purchase Records page if user enter 1</li> <li>View Book Records page if user enter 2</li> <li>Main Menu page if user enter 3</li> <li>Display error message if user enter other than 1 to 3</li> </ul> </li> <li>Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>Prompt user to enter option to continue where they left off or exit system</li> </ul> 2. report_exportmod() <ul style="list-style-type: none"> <li>Display the Generate &amp; Export Records page along with the logged in username</li> <li>Prompt user to enter option based on the numbered lists of options.</li> <li>Proceed to:</li> </ul>	1. report_viewmod() <ul style="list-style-type: none"> <li>username</li> <li>View Record Reports page</li> <li>Error messages</li> <li>System shutdown message</li> </ul> 2. report_exportmod() <ul style="list-style-type: none"> <li>username</li> <li>Generate &amp; Export Records page</li> <li>Error messages</li> <li>System shutdown message</li> </ul> 3. viewCustomer() <ul style="list-style-type: none"> <li>username</li> <li>View Customer Purchase Record page</li> <li>Customer purchase record table</li> <li>Error messages</li> <li>System shutdown message</li> </ul> 4. viewBook()

	<ul style="list-style-type: none"> <li>○ Export Customer Purchase Records page if user enter 1</li> <li>○ Export Book Records page if user enter 2</li> <li>○ Main Menu page if user enter 3</li> <li>○ Display error message if user enter other than 1 to 3</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>3. viewCustomer()</p> <ul style="list-style-type: none"> <li>• Display the View Customer Purchase Records along with the logged in username</li> <li>• Display all the customer purchase records from the json file to detailed tables</li> <li>• Prompt user to go back to Main Menu page</li> <li>• If there is no customer purchase record in the json file, then user will be directed back to the Main Menu page instead of going thru the viewing process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul>	<ul style="list-style-type: none"> <li>• username</li> <li>• View Book record page</li> <li>• Book record table</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul> <p>5. exportCustomer()</p> <ul style="list-style-type: none"> <li>• username</li> <li>• Export Customer Purchase Record page</li> <li>• Customer purchase record table</li> <li>• Success message</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul> <p>6. exportBook()</p> <ul style="list-style-type: none"> <li>• username</li> <li>• Export Customer Purchase Record page</li> <li>• Book record table</li> <li>• Success message</li> <li>• Error messages</li> <li>• System shutdown message</li> </ul>
--	--	--

	<p>4. viewBook()</p> <ul style="list-style-type: none"> <li>• Display the View Book Records along with the logged in username</li> <li>• Display all the book records from the json file to detailed tables</li> <li>• Prompt user to go back to Main Menu page</li> <li>• If there is no book record in the json file, then user will be directed back to the Main Menu page instead of going thru the viewing process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>5. exportCustomer()</p> <ul style="list-style-type: none"> <li>• Display the Export Customer Purchase Records along with the logged in username</li> <li>• Display all the customer purchase records from the json file to detailed tables</li> <li>• Prompt user to either export the records or cancel: <ul style="list-style-type: none"> <li>○ Prompt user to go back to Main Menu page if user input is not 1</li> </ul> </li> <li>• Else, prompt user to enter filename</li> <li>• Export a copy of all customer purchase records to a new file inside a folder named Exported_custpurchasefiles</li> </ul>	
--	--	--



	<ul style="list-style-type: none"> <li>• Display success message when data has been exported and prompt user to go back to Main Menu page</li> <li>• If there is no customer purchase record in the json file, then user will be directed back to the Main Menu page instead of going thru the exporting process</li> <li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li> <li>• Prompt user to enter option to continue where they left off or exit system</li> </ul> <p>6. exportBook()</p> <ul style="list-style-type: none"> <li>• Display the Export Book Records along with the logged in username</li> <li>• Display all the book records from the json file to detailed tables</li> <li>• Prompt user to either export the records or cancel: <ul style="list-style-type: none"> <li>○ Prompt user to go back to Main Menu page if user input is not 1</li> </ul> </li> <li>• Else, prompt user to enter filename</li> <li>• Export a copy of all book records to a new file inside a folder named Exported_bookfiles</li> <li>• Display success message when data has been exported and prompt user to go back to Main Menu page</li> <li>• If there is no book record in the json file, then user will be directed back to the Main Menu page instead of going thru the exporting process</li> </ul>	
--	--	--

	<ul style="list-style-type: none"><li>• Alternatively, display error message if user accidentally pressed ctrl+c when prompt to enter input</li><li>• Prompt user to enter option to continue where they left off or exit system</li></ul>	
--	--	--

## 4.0 Sample Output with Explanation

### 4.1 MPH Staff Login Page

```
-----  
MPH Staff Login                               Welcome, MPH Staff!  
-----  
  
Please enter user credentials to login to the system.  
Username: █
```

To start off, the program will display the MPH Staff Login page which the user needs to enter their authorized credentials. The user will be prompted to enter their username.

```
-----  
MPH Staff Login                               Welcome, MPH Staff!  
-----  
  
Please enter user credentials to login to the system.  
Username: fik  
Password: █
```

After that, user will be prompted to enter their password.

```
-----  
MPH Staff Login                               Welcome, MPH Staff!  
-----  
  
Please enter user credentials to login to the system.  
Username: fik  
Password: aym  
  
|-----|  
| Error Message: It seems you've entered the wrong Username/Password. |  
| Please enter the correct Username and Password to login.           |  
|-----|  
  
-----  
MPH Staff Login                               Welcome, MPH Staff!  
-----  
  
Please enter user credentials to login to the system.  
Username: █
```

If either the username or password is wrong, then the system will display an error message indicating that they have entered the wrong username and/or password. The MPH Staff Login page will be displayed again for the users to enter their respective username and password. As long as either the username or password is incorrect, then the MPH Staff Login page will keep on repeating until valid credentials has been entered accordingly.

```

"staffs": [
  {
    "username": "Ayman",
    "password": "a123"
  },
  {
    "username": "Fikry",
    "password": "f321"
  }
]

```

To check the staff credentials, simply go to the record\_management.json file to see the username and password. From the above image, we could see there are 2 staff credentials with their respective username and password. For instance, the first staff's username is Ayman and the password is a123, while the second staff's username is Fikry and the password is f321. Both of the username and password are interdependent with each other, as such cannot be combined or mixed.

```

-----
MPH Staff Login                               Welcome, MPH Staff!
-----

Please enter user credentials to login to the system.

Username: Ayman
Password: a123

|-----|
| Success Message: Everything checks out. Logging into the system now.. |
|-----|

-----
MPH Record Management                         Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 

```

After the user has entered the correct username and password, the program will display a success message and user will be directed to the Main Menu page. When logged in, all page headers will display the current user's username on the right side while the name of the current page will be displayed on the left side. The Main Menu page will display all of the options that user may proceed with. The user will be prompted to enter their option based on the given numbers from 1 to 8.

## 4.2 MPH Record Management Page

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 1
-----

Add New Records                                     Welcome back, Ayman!
-----

Which records would you like to add?

1. Add new customer purchase records.
2. Add new book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 
```

If the user enters 1, then the user will be directed to the Add Records Page where they could add a new record into the record\_management.js on file.

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 2
-----

Search Records                                     Welcome back, Ayman!
-----

Which records would you like to search for?

1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 
```

If the user enters 2, then the user will be directed to the Search Records Page where they could search for an existing record from the record\_management.js on file.

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 3
-----

Update Records                                       Welcome back, Ayman!
-----

Which records would you like to update?

1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]:  
```

If the user enters 3, then the user will be directed to the Update Records Page where they could update an existing record from the record\_management.js on file.

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 4
-----

Delete Records                                       Welcome back, Ayman!
-----

Which records would you like to delete?

1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]:  
```

If the user enters 4, the user will be directed to the Delete Records page where they could delete an existing record from the record\_management.json file.

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 5
-----

View Record Reports                               Welcome back, Ayman!
-----

Which record reports would you want to view?

1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]:
```

If the user enters 5, the user will be directed to the View Record Reports page where they could view all existing records from the record\_management.json file.

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 6
-----

Generate & Export Records                           Welcome back, Ayman!
-----

Which records would you want to export?

1. Generate & Export customer purchase records.
2. Generate & Export book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]:
```

If the user enters 6, the user will be directed to the Generate & Export Records page where they could export specific records from the record\_management.json file into a new file.

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 7

Logging out...

-----

MPH Staff Login                                     Welcome, MPH Staff!
-----

Please enter user credentials to login to the system.

Username: 
```

If the user enters 7, a logout message will appear, and the user logged out back to the MPH Staff Login page. This will be useful when another user wants to use the program so they could log in using their own credentials.

```
-----
MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: 8

Shutting down system.... in 5
... 4
... 3
... 2
... 1

Thank you Ayman for using the MPH Record Management System.
Goodbye :)
```

If the user enters 8, a system shutdown message will appear whereby the program will ultimately be terminated and shut down.



```
-----
Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: -

|-----|
| Error Message: The option does not appear to exist. |
| Please only choose option 1 to 8. |
|-----|

-----

MPH Record Management                               Welcome back, Ayman!

-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]: [ ]
```

Else, if for some reason the user enters a non-existing option, an error message will be displayed indicating the option does not exist, and the Main Menu page will be displayed again for the user to enter an existing option from number 1 to 8. As long as the option entered does not exists, then the Main Menu page will keep on repeating until an existing option has been entered accordingly.

## 4.3 Add New Records Page

```
-----
Add New Records                               Welcome back, Ayman!
-----

Which records would you like to add?
1. Add new customer purchase records.
2. Add new book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 3
-----

MPH Record Management                         Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.
Option[Example: 1]:
```

The Add New Records page will display options that user may proceed with. The user will be prompted to enter their option based on the given numbers from 1 to 3. If the user enters 3, then the user will be directed back to the Main Menu page.

```
-----
Add New Records                               Welcome back, Ayman!
-----

Which records would you like to add?
1. Add new customer purchase records.
2. Add new book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: g
-----
|-----|
| Error Message: The option does not appear to exist. |
| Please only choose option 1 to 3. |
|-----|
-----

Add New Records                               Welcome back, Ayman!
-----

Which records would you like to add?
1. Add new customer purchase records.
2. Add new book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]:
```

Else, if for some reason the user enters a non-existing option, an error message will be displayed indicating the option does not exist, and the Add New Records page will be displayed again for the user to enter an existing option from number 1 to 3. As long as the option entered does not exist, then the Add New Records page will keep on repeating until an existing option has been entered accordingly.

#### 4.3.1 Add Customer Purchase Records Page

```
-----
Add New Records                               Welcome back, Ayman!
-----

Which records would you like to add?
1. Add new customer purchase records.
2. Add new book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

Add Customer Purchase Records                 Welcome back, Ayman!
-----

|-----|
| Error Message: There seems to be no book records |
| in the system. Please add a book record first.   |
|-----|

Please press enter key to go back to main menu: 
```

If the user enters 1, then the user will be directed to the Add Customer Purchase Records page where they could add a new customer purchase record into the record\_management.json file. If there are no existing book records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```
-----
Add New Records                               Welcome back, Ayman!
-----

Which records would you like to add?

1. Add new customer purchase records.
2. Add new book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 1
-----

Add Customer Purchase Records                 Welcome back, Ayman!
-----

Please enter the required information for the customer purchase record.

Purchase ID[Auto Generated]: PID556

Customer Name[Example: Ali bin Abu]: 
```

If there is at least one book record in the record\_management.json file, then the purchase ID will start to auto generate and displayed to the user. The purchase ID is unique so each customer purchase record can be identified seamlessly. After that, the user will be prompted to enter the customer name with an input validation.

```
Customer Name[Example: Ali bin Abu]: aq

|-----|
| Error Message: The customer name must be between |
| 3 to 20 characters only. Please try again.         |
|-----|
```

If the length of the customer name is not between 3 to 20 characters, then an error message will be displayed.

```
Customer Name[Example: Ali bin Abu]: 233

|-----|
| Error Message: The customer name can only be in   |
| alphabet letters. Please try again.                |
|-----|
```

Else if the customer name contains other than alphabet letters, then an error message will be displayed as well.

```
Customer Name[Example: Ali bin Abu]: john doe  
Phone Number[Example: 0123456789]: 
```

After the customer name is validated, then the user is prompted to enter the phone number with an input validation.

```
Phone Number[Example: 0123456789]: 012345678910  
  
|-----|  
| Error Message: The phone number must be between |  
| 10 to 11 numbers only. Please try again. |  
|-----|
```

If the phone number length is not between 10 to 11 numbers, then an error message will pop up.

```
Phone Number[Example: 0123456789]: po123  
  
|-----|  
| Error Message: The phone number can only contain |  
| numeral numbers. Please try again. |  
|-----|
```

Else if the phone number contains other than numbers, then an error message will pop up as well.

```
Phone Number[Example: 0123456789]: 01256734412  
  
Is this a Malaysian number?  
  
Type [1] for Yes OR Type [2] for No: 
```

After phone number is validated, then the user will be prompted to enter the phone number type with input validation. If 1, the phone number will have a, additional Malaysian country code number, though if its 2, then the phone number will not have additional Malaysian country code number.

```

Is this a Malaysian number?

Type [1] for Yes OR Type [2] for No: 3

|-----|
| Error Message: The option does not appear to exist. |
| Please choose only option 1 or 2. |
|-----|

Is this a Malaysian number?

Type [1] for Yes OR Type [2] for No: 

```

Else, if for some reason the user does not enter 1 or 2, an error message will be displayed indicating the option does not exist, and the number type prompt will be displayed again for the user until the correct option is selected.

```

Is this a Malaysian number?

Type [1] for Yes OR Type [2] for No: 1

Please key-in a number to choose a book from the options below:

+-----+-----+-----+-----+
| No. | Book Title                | Book Price | Book Stock |
+-----+-----+-----+-----+
| 1.  | Ace Of Spades (Uk)        | RM45.00    | 10         |
+-----+-----+-----+-----+

Book Product Number[Example: 1]: 

```

After the number type is validated, a table containing book records will appear. The user will be prompted to enter the book product number based on the No. inside the table and with input validation.

```

Please key-in a number to choose a book from the options below:

+-----+-----+-----+-----+
| No. | Book Title                | Book Price | Book Stock |
+-----+-----+-----+-----+
| 1.  | Ace Of Spades (Uk)        | RM45.00    | 10         |
+-----+-----+-----+-----+

Book Product Number[Example: 1]: 2

|-----|
| Error Message: The book product number does not appear |
| to exist. Please choose from the options above only. |
|-----|

```

If the book product number does not exist, then an error message will pop up.

Please key-in a number to choose a book from the options below:

No.	Book Title	Book Price	Book Stock
1.	Ace Of Spades (Uk)	RM45.00	7
2.	King Of Scars	RM55.90	0

Book Product Number[Example: 1]: 2

```
|-----|
| Error Message: The product is currently out of stock. |
| Please choose another product. |
|-----|
```

If the correct book product number is selected but the book stock is 0, then an error message will also pop up as well as the book cannot be selected since it ran out of stock.

Please key-in a number to choose a book from the options below:

No.	Book Title	Book Price	Book Stock
1.	Ace Of Spades (Uk)	RM45.00	10

Book Product Number[Example: 1]: 1

Please select the number of books.

No.	Book Title	Book Price	Book Stock
1.	Ace Of Spades (Uk)	RM45.00	10

Product Quantity[Example: 1]:

After the book product number is validated, then the user will be prompted to enter the product quantity with input validation based on the selected book product.

Please select the number of books.

No.	Book Title	Book Price	Book Stock
1.	Ace Of Spades (Uk)	RM45.00	10

Product Quantity[Example: 1]: f

Error Message: The quantity can only  
be in numerals. Please try again.

If the product quantity is not numbers, then an error message will pop up.

Please select the number of books.

No.	Book Title	Book Price	Book Stock
1.	Ace Of Spades (Uk)	RM45.00	10

Product Quantity[Example: 1]: 0

Error Message: The quantity must be more  
than 0. Please choose a higher number.

Else if, the product quantity is less than 1, then an error message will also pop up since the quantity cannot be 0 or lower.

Please select the number of books.

No.	Book Title	Book Price	Book Stock
1.	Ace Of Spades (Uk)	RM45.00	10

Product Quantity[Example: 1]: 11

Error Message: The quantity exceeds the  
product stock. Please choose accordingly.



Else if, the product quantity is more than the book stock, an error message will pop up as well.

```
Please select the number of books.

+-----+-----+-----+-----+
| No. | Book Title          | Book Price | Book Stock |
+-----+-----+-----+-----+
| 1.  | Ace Of Spades (Uk)  | RM45.00    | 10         |
+-----+-----+-----+-----+

Product Quantity[Example: 1]: 2

Total Price[Auto generated]: RM90.00

Purchase Date[Auto generated]: 20/01/2024

Do you want to add more products?
Press [1] to add more product OR press any other key to stop adding products.

Option[Example: 1]: 
```

After all of that, the user will be prompted to either continue to add more products by pressing 1 or stop adding products by pressing other keys.

```
Do you want to add more products?
Press [1] to add more product OR press any other key to stop adding products.

Option[Example: 1]: 1

Please key-in a number to choose a book from the options below:

+-----+-----+-----+-----+
| No. | Book Title          | Book Price | Book Stock |
+-----+-----+-----+-----+
| 1.  | Ace Of Spades (Uk)  | RM45.00    | 8          |
+-----+-----+-----+-----+

Book Product Number[Example: 1]: 
```

If the user choose to enter more product by entering 1, then the prompt from the selection of the book product number will be repeated again.

```

Please key-in a number to choose a book from the options below:

+-----+-----+-----+-----+
| No. | Book Title          | Book Price | Book Stock |
+-----+-----+-----+-----+
| 1.  | Ace Of Spades (Uk)  | RM45.00    | 8          |
+-----+-----+-----+-----+

Book Product Number[Example: 1]: 1

Please select the number of books.

+-----+-----+-----+-----+
| No. | Book Title          | Book Price | Book Stock |
+-----+-----+-----+-----+
| 1.  | Ace Of Spades (Uk)  | RM45.00    | 8          |
+-----+-----+-----+-----+

Product Quantity[Example: 1]: 1

Total Price[Auto generated]: RM135.00

Do you want to add more products?
Press [1] to add more product OR press any other key to stop adding products.

Option[Example: 1]: 

```

If the user is satisfied and wanted to stop adding products they could press a key other than 1.

```

Do you want to add more products?
Press [1] to add more product OR press any other key to stop adding products.

Option[Example: 1]:

+-----+-----+
| Success Message: Well done! The customer purchase record |
| has successfully been recorded in the database.             |
+-----+-----+

Please press enter key to go back to main menu: 

```

When the add book product process is stopped, a success message will be displayed indicating that the customer purchase record has successfully been added to the record\_management.json file. Then, user will be prompted to press enter key to go back to Main Menu page.

```

"customer_purchases": [
  {
    "purchase_id": "PID556",
    "customer_name": "John Doe",
    "phone_number": "+601256734412",
    "purchased_product": [
      {
        "book_product": "BID5711",
        "product_price": "RM45.00",
        "product_quantity": 3,
        "subtotal": "RM135.00"
      }
    ],
    "total_quantity": 3,
    "total_price": "RM135.00",
    "purchase_date": "20/01/2024"
  }
],

```

The record will be displayed in the record\_management.json file as shown above.

```

    "books": [
      {
        "book_id": "BID5711",
        "book_title": "Ace Of Spades (Uk)",
        "book_author": "Faridah Hani",
        "book_isbn": "9605563435503",
        "book_price": "RM45.00",
        "book_stock": 7
      }
    ],

```

At the same time, the selected book product's book stock will also be reduced inside the book record\_management.json file.

### 4.3.2 Add Book Records Page

```

-----
Add New Records                               Welcome back, Ayman!
-----

Which records would you like to add?

1. Add new customer purchase records.
2. Add new book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2
-----

Add Book Records                               Welcome back, Ayman!
-----

Please enter the required information for the book record.

Book ID[Auto Generated]: BID5711
Book Title[Example:The Story of Life #1]: 

```

If the user enters 2, then the user will be directed to the Add Book Records page where they could add a new book record into the record\_management.json file. To start off, the book ID will auto generate and be displayed to the user. The book ID is unique so each book record can be identified seamlessly. After that, the user will be prompted to enter the book title with input validation.

```
Book Title[Example:The Story of Life #1]: h
```

```
|-----|  
| Error Message: The book title must be between |  
| 3 to 30 characters only. Please try again. |  
|-----|
```

If the book title length is not between 3 to 30 characters, then an error message will pop up.

```
Book Author[Example: Ali bin Abu]: 
```

After the book title is validated, the user will be prompted to enter the book author with validation.

```
Book Author[Example: Ali bin Abu]: Abike-Iyimide, Faridah
```

```
|-----|  
| Error Message: The book author must be between |  
| 3 to 20 characters only. Please try again. |  
|-----|
```

If the book author length is not between 3 to 20 characters, then an error message will pop up.

```
Book Author[Example: Ali bin Abu]: Abike-Iyimide
```

```
|-----|  
| Error Message: The book author can only be in |  
| alphabet letters. Please try again. |  
|-----|
```

Else if, the book author contains other than alphabet letters, an error message will pop up as well.

```
Book Author[Example: Ali bin Abu]: Faridah Hani
```

```
Book ISBN[Auto Generated]: 9605563435503
```

```
Book Price[Example: 54.96]: RM
```

After the book author is validated, the program will auto generate and display a book ISBN that is unique from other book records in the record\_management.json file just like the book ID. Then, the user will be prompted to enter the book price with validation.

```
Book Price[Example: 54.96]: Rmp
```

```
|-----|  
| Error Message: The book price can only |  
| be in numeral numbers. Please try again. |  
|-----|
```

If the book price contains other than numbers, then an error message will pop up.

```
Book Price[Example: 54.96]: RM-1
```

```
|-----|  
| Error Message: The book price must be |  
| more than 0. Please try again. |  
|-----|
```

Else if, the book price is not more than 0, then an error message will pop up.

```
Book Price[Example: 54.96]: RM45
```

```
Book Stock[Example: 10]: 
```

After the book price is validated, the user will be prompted to enter the book stock with validation.

```
Book Stock[Example: 10]: 0
```

```
|-----|  
| Error Message: The book stock must be |  
| more than 0. Please try again. |  
|-----|
```

If the book stock is not more than 0, then an error message will pop up.

```
Book Stock[Example: 10]: ten
```

```
|-----|  
| Error Message: The book stock can only be |  
| in numeral numbers. Please try again. |  
|-----|
```

Else if, the book stock contains other than numbers, then an error message will pop up as well.

```
Book Stock[Example: 10]: 10

-----
| Success Message: Well done! The book record has |
| successfully been recorded in the database.      |
|-----|

Please press enter key to go back to main menu: 
```

After the book stock is validated, a success message will be displayed as the user successfully added a book record to the record\_management.json file. Then, the user will be prompted to press enter key to go back to Main Menu page.

```
"books": [
  {
    "book_id": "BID5711",
    "book_title": "Ace Of Spades (Uk)",
    "book_author": "Faridah Hani",
    "book_isbn": "9605563435503",
    "book_price": "RM45.00",
    "book_stock": 10
  }
],
```

The above image shows the book record inside the record\_magement.json file.

## 4.4 Search Records Page

```
-----
Search Records                                     Welcome back, Ayman!
-----

Which records would you like to search for?
1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 3
-----

MPH Record Management                             Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.
Option[Example: 1]: 
```

The Search Records page will display options that user may proceed with. The user will be prompted to enter their option based on the given numbers from 1 to 3. If the user enters 3, then the user will be directed back to the Main Menu page.

```
-----
Search Records                               Welcome back, Ayman!
-----

Which records would you like to search for?
1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: e

|-----|
| Error Message: The option does not appear to exist. |
| Please only choose option 1 to 3. |
|-----|

-----
Search Records                               Welcome back, Ayman!
-----

Which records would you like to search for?
1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]:
```

Else, if for some reason the user enters a non-existing option, an error message will be displayed indicating the option does not exist, and the Search Records page will be displayed again for the user to enter an existing option from number 1 to 3. As long as the option entered does not exists, then the Search Records page will keep on repeating until an existing option has been entered accordingly.

#### 4.4.1 Search Customer Purchase Records Page

```
-----
Search Records                               Welcome back, Ayman!
-----

Which records would you like to search for?
1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

Search Customer Purchase Records              Welcome back, Ayman!
-----

|-----|
| Error Message: There seems to be no customer purchase record |
| in the system. Please add a customer purchase record first. |
|-----|

Please press enter key to go back to main menu: 
```

If the user enters 1, then the user will be directed to the Search Customer Purchase Records page where they could search for an existing customer purchase record from the record\_management.json file. If there are no existing customer purchase records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.



```
-----
Search Records                               Welcome back, Ayman!
-----

Which records would you like to search for?

1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 1
-----

Search Customer Purchase Records             Welcome back, Ayman!
-----

Please enter the customer's Purchase ID to search for the customer record.

+-----+-----+-----+-----+
| Purchase ID | Customer Name | Phone Number | Purchase Date |
+-----+-----+-----+-----+
| PID556      | John Doe      | +601256734412 | 20/01/2024    |
+-----+-----+-----+-----+
| PID299      | Tom           | +99677863245  | 20/01/2024    |
+-----+-----+-----+-----+

Customer's Purchase ID[Example: PID138]: 
```

If there is at least one customer purchase record in the record\_management.json file, then a table containing some fields of the customer purchase records will be displayed. The user will be prompted to enter the customer's purchase ID with validation to search for a specific customer purchase record based on the given purchase ID.

```
Please enter the customer's Purchase ID to search for the customer record.

+-----+-----+-----+-----+
| Purchase ID | Customer Name | Phone Number | Purchase Date |
+-----+-----+-----+-----+
| PID556      | John Doe      | +601256734412 | 20/01/2024    |
+-----+-----+-----+-----+
| PID299      | Tom           | +99677863245  | 20/01/2024    |
+-----+-----+-----+-----+

Customer's Purchase ID[Example: PID138]: PID138

|-----|
| Error Message: The customer purchase record does not appear |
| to exist. Please choose an existing Purchase ID as above.   |
|-----|
```

If the customer purchase record does not exist based on the table, then an error message will pop up.

```

Please enter the customer's Purchase ID to search for the customer record.

+-----+-----+-----+-----+
| Purchase ID | Customer Name | Phone Number | Purchase Date |
+-----+-----+-----+-----+
| PID556      | John Doe      | +601256734412 | 20/01/2024    |
+-----+-----+-----+-----+
| PID299      | Tom           | +99677863245  | 20/01/2024    |
+-----+-----+-----+-----+

Customer's Purchase ID[Example: PID138]: PID299

+-----+
| Success Message: Gotcha! Found the customer purchase result. |
+-----+

Customer Purchase Record #2
Purchase ID: PID299      Customer Name: Tom
Phone Number: +99677863245 Date of Purchase: 20/01/2024

+-----+-----+-----+-----+-----+
| Purchased Product |
+-----+-----+-----+-----+-----+
| No. | Book Product ID | Product Price | Product Quantity | Subtotal |
+-----+-----+-----+-----+-----+
| 1.  | BID5711         | RM45.00       | 1                 | RM45.00  |
+-----+-----+-----+-----+-----+
| 2.  | BID5299         | RM55.90       | 2                 | RM111.80 |
+-----+-----+-----+-----+-----+
| Total |                 |               | 3                 | RM156.80 |
+-----+-----+-----+-----+-----+

Press enter any key to go back to main menu: 

```

Else, if the record is found, then a success message will be displayed, and the specific customer purchase record will be displayed in a detailed table report. Then, the user will be prompted to press enter key to go back to Main Menu page.

#### 4.4.2 Search Book Records Page

```

-----
Search Records                               Welcome back, Ayman!
-----

Which records would you like to search for?
1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2
-----

Search Book Records                           Welcome back, Ayman!
-----

+-----+
| Error Message: There seems to be no book record |
| in the system. Please add a book record first. |
+-----+

Please press enter key to go back to main menu: 

```

If the user enters 2, then the user will be directed to the Search Book Records page where they could search for an existing book record from the record\_management.json file. If there are no existing book records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```

-----
Search Records                               Welcome back, Ayman!
-----

Which records would you like to search for?
1. Search for customer purchase records.
2. Search for book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2
-----

Search Book Records                           Welcome back, Ayman!
-----

Please enter the Book ID to search for the book record.

+-----+-----+-----+
| Book ID | Book Title           | Book Author       |
+-----+-----+-----+
| BID5711 | Ace Of Spades (Uk)   | Faridah Hani      |
+-----+-----+-----+
| BID5299 | King Of Scars        | Bardugo, Leigh    |
+-----+-----+-----+

Book ID[Example: BID4748]: 

```

If there is at least one book record in the record\_management.json file, then a table containing some fields of the book records will be displayed. The user will be prompted to enter the book ID with validation to search for a specific book record based on the given book ID.

```

Please enter the Book ID to search for the book record.

+-----+-----+-----+
| Book ID | Book Title           | Book Author       |
+-----+-----+-----+
| BID5711 | Ace Of Spades (Uk)   | Faridah Hani      |
+-----+-----+-----+
| BID5299 | King Of Scars        | Bardugo, Leigh    |
+-----+-----+-----+

Book ID[Example: BID4748]: BID4748

|-----|
| Error Message: The book record does not appear to |
| exist. Please choose an existing Book ID as above. |
|-----|

```

If the book record does not exist based on the table, then an error message will pop up.

```
Please enter the Book ID to search for the book record.

+-----+-----+-----+
| Book ID | Book Title           | Book Author       |
+-----+-----+-----+
| BID5711 | Ace Of Spades (Uk)   | Faridah Hani      |
+-----+-----+-----+
| BID5299 | King Of Scars        | Bardugo, Leigh    |
+-----+-----+-----+

Book ID[Example: BID4748]: BID5711

|-----|
| Success Message: Gotcha! Found the book result. |
|-----|

Book Record #1
Book ID: BID5711           Book Title: Ace Of Spades (Uk)
+-----+-----+-----+
|                                     Book Details                                     |
+-----+-----+-----+
| Book Author | Book ISBN | Book Price | Book Stock |
+-----+-----+-----+
| Faridah Hani | 9605563435503 | RM45.00 | 5 |
+-----+-----+-----+

Press enter any key to go back to main menu: 
```

Else, if the record is found, then a success message will be displayed, and the specific book record will be displayed in a detailed table report. Then, the user will be prompted to press enter key to go back to Main Menu page.

## 4.5 Update Records Page

```
-----
Update Records                               Welcome back, Ayman!
-----

Which records would you like to update?

1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 3
-----

MPH Record Management                       Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.
Option[Example: 1]:
```

The Update Records page will display options that user may proceed with. The user will be prompted to enter their option based on the given numbers from 1 to 3. If the user enters 3, then the user will be directed back to the Main Menu page.

```
-----
Update Records                               Welcome back, Ayman!
-----

Which records would you like to update?

1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]:
|-----|
| Error Message: The option does not appear to exist. |
| Please only choose option 1 to 3. |
|-----|
-----

Update Records                               Welcome back, Ayman!
-----

Which records would you like to update?

1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]:
```

Else, if for some reason the user enters a non-existing option, an error message will be displayed indicating the option does not exist, and the Update Records page will be displayed again for the user to enter an existing option from number 1 to 3. As long as the option entered does not exist, then the Update Records page will keep on repeating until an existing option has been entered accordingly.

#### 4.5.1 Update Customer Purchase Records Page

```
-----
Update Records                               Welcome back, Ayman!
-----

Which records would you like to update?
1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

Update Customer Purchase Records             Welcome back, Ayman!
-----

|-----|
| Error Message: There seems to be no customer purchase record |
| in the system. Please add a customer purchase record first. |
|-----|

Please press enter key to go back to main menu: [ ]
```

If the user enters 1, then the user will be directed to the Update Customer Purchase Records page where they could update an existing customer purchase record from the record\_management.json file. If there are no existing customer purchase records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```
-----
Update Records                               Welcome back, Ayman!
-----

Which records would you like to update?
1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

Update Customer Purchase Records             Welcome back, Ayman!
-----

Please enter the customer's Purchase ID to search for the customer record.

+-----+-----+-----+-----+
| Purchase ID | Customer Name | Phone Number | Purchase Date |
+-----+-----+-----+-----+
| PID556      | John Doe      | +601256734412 | 20/01/2024    |
+-----+-----+-----+-----+
| PID299      | Tom           | +99677863245  | 20/01/2024    |
+-----+-----+-----+-----+

Customer's Purchase ID[Example: PID138]: 
```

If there is at least one customer purchase record in the record\_management.json file, then a table containing some fields of the customer purchase records will be displayed. The user will be prompted to enter the purchase ID to search for the customer purchase record to update based on the given purchase ID.

#### 4.5.2 Update Book Records Page

```
-----
Update Records                               Welcome back, Ayman!
-----

Which records would you like to update?
1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2
-----

Update Book Records                         Welcome back, Ayman!
-----

-----
| Error Message: There seems to be no book record |
| in the system. Please add a book record first. |
|-----|
-----

Please press enter key to go back to main menu: 
```

If the user enters 2, then the user will be directed to the Update Book Records page where they could update an existing book record from the record\_management.json file. If there are no

existing book records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```
-----
Update Records                               Welcome back, Ayman!
-----

Which records would you like to update?
1. Update customer purchase records.
2. Update book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2
-----

Update Book Records                           Welcome back, Ayman!
-----

Please enter the Book ID to search for the book record.

+-----+-----+-----+
| Book ID | Book Title           | Book Author       |
+-----+-----+-----+
| BID5711 | Ace Of Spades (Uk)   | Faridah Hani      |
+-----+-----+-----+
| BID5299 | King Of Scars        | Bardugo, Leigh    |
+-----+-----+-----+

Book ID[Example: BID4748]: 
```

If there is at least one book record in the record\_management.json file, then a table containing some fields of the book records will be displayed. The user will be prompted to enter the book ID to search for the book record to update based on the given book ID.



## 4.6 Delete Records Page

```
-----
Delete Records                               Welcome back, Ayman!
-----

Which records would you like to delete?
1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 3
-----

MPH Record Management                       Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.
Option[Example: 1]:
```

The Delete Records page will display options that user may proceed with. The user will be prompted to enter their option based on the given numbers from 1 to 3. If the user enters 3, then the user will be directed back to the Main Menu page.

```
-----
Delete Records                               Welcome back, Ayman!
-----

Which records would you like to delete?
1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 4

-----
| Error Message: The option does not appear to exist. |
| Please only choose option 1 to 3.                   |
|-----|
-----

Delete Records                               Welcome back, Ayman!
-----

Which records would you like to delete?
1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]:
```

Else, if for some reason the user enters a non-existing option, an error message will be displayed indicating the option does not exist, and the Delete Records page will be displayed again for

the user to enter an existing option from number 1 to 3. As long as the option entered does not exist, then the Delete Records page will keep on repeating until an existing option has been entered accordingly.

#### 4.6.1 Delete One Customer Purchase Records Page

```
-----
Delete Records                               Welcome back, Ayman!
-----

Which records would you like to delete?
1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

Delete One Customer Purchase Record           Welcome back, Ayman!
-----

|-----|
| Error Message: There seems to be no customer purchase record |
| in the system. Please add a customer purchase record first. |
|-----|

Please press enter key to go back to main menu: █
```

If the user enters 1, then the user will be directed to the Delete One Customer Purchase Record page where they could delete an existing customer purchase record from the record\_management.json file. If there are no existing customer purchase records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```
-----
Delete Records                               Welcome back, Ayman!
-----

Which records would you like to delete?

1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

Delete One Customer Purchase Record          Welcome back, Ayman!
-----

Please enter the Customer's Purchase ID to delete the customer record.

+-----+-----+-----+-----+
| Purchase ID | Customer Name | Phone Number | Purchase Date |
+-----+-----+-----+-----+
| PID556      | John Doe      | +601256734412 | 20/01/2024    |
+-----+-----+-----+-----+
| PID299      | Tom           | +99677863245  | 20/01/2024    |
+-----+-----+-----+-----+

Customer's Purchase ID[Example: PID138]: 
```

If there is at least one customer purchase record in the record\_management.json file, then a table containing some fields of the customer purchase records will be displayed. The user will be prompted to enter the purchase ID to search for the customer purchase record to delete based on the given purchase ID.

```
Please enter the Customer's Purchase ID to delete the customer record.

+-----+-----+-----+-----+
| Purchase ID | Customer Name | Phone Number | Purchase Date |
+-----+-----+-----+-----+
| PID556      | John Doe      | +601256734412 | 20/01/2024    |
+-----+-----+-----+-----+
| PID299      | Tom           | +99677863245  | 20/01/2024    |
+-----+-----+-----+-----+

Customer's Purchase ID[Example: PID138]: 34

|-----|
| Error Message: The customer purchase record does not appear |
| to exist. Please choose an existing Purchase ID as above.   |
|-----|
```

Customer's Purchase ID[Example: PID138]: PID556

Customer Purchase Record #1

Purchase ID: PID556

Customer Name: John Doe

Phone Number: +601256734412

Date of Purchase: 20/01/2024

Purchased Product				
No.	Book Product ID	Product Price	Product Quantity	Subtotal
1.	BID5711	RM45.00	2	RM90.00
2.	BID5299	RM55.90	2	RM111.80
Total			4	RM201.80

Are you sure you want to delete the customer purchase record?

Press [1] if you want to delete it OR press any other key to cancel.

Option[Example: 1]:

Customer Purchase Record #1

Purchase ID: PID556

Customer Name: John Doe

Phone Number: +601256734412

Date of Purchase: 20/01/2024

Purchased Product				
No.	Book Product ID	Product Price	Product Quantity	Subtotal
1.	BID5711	RM45.00	2	RM90.00
2.	BID5299	RM55.90	2	RM111.80
Total			4	RM201.80

Are you sure you want to delete the customer purchase record?

Press [1] if you want to delete it OR press any other key to cancel.

Option[Example: 1]:

Please press enter key to go back to main menu:

Customer Purchase Record #1

Purchase ID: PID556

Customer Name: John Doe

Phone Number: +601256734412

Date of Purchase: 20/01/2024

Purchased Product				
No.	Book Product ID	Product Price	Product Quantity	Subtotal
1.	BID5711	RM45.00	2	RM90.00
2.	BID5299	RM55.90	2	RM111.80
Total			4	RM201.80

Are you sure you want to delete the customer purchase record?

Press [1] if you want to delete it OR press any other key to cancel.

Option[Example: 1]: 1

```
|-----|
| Success Message: The customer purchase record |
| has successfully been deleted from the system. |
|-----|
```

Please press enter key to go back to main menu:

```
"customer_purchases": [
  {
    "purchase_id": "PID299",
    "customer_name": "Tom",
    "phone_number": "+99677863245",
    "purchased_product": [
      {
        "book_product": "BID5711",
        "product_price": "RM45.00",
        "product_quantity": 1,
        "subtotal": "RM45.00"
      },
      {
        "book_product": "BID5299",
        "product_price": "RM55.90",
        "product_quantity": 2,
        "subtotal": "RM111.80"
      }
    ],
    "total_quantity": 3,
    "total_price": "RM156.80",
    "purchase_date": "20/01/2024"
  }
],
```

## 4.6.2 Delete One Book Records Page

```
-----
Delete Records                               Welcome back, Ayman!
-----

Which records would you like to delete?

1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 2
-----

Delete One Book Record                       Welcome back, Ayman!
-----

|-----|
| Error Message: There seems to be no book record |
| in the system. Please add a book record first.  |
|-----|

Please press enter key to go back to main menu: []
```

If the user enters 2, then the user will be directed to the Delete One Book Record page where they could delete an existing book record from the record\_management.json file. If there are no existing book records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```
-----
Delete Records                               Welcome back, Ayman!
-----

Which records would you like to delete?

1. Delete customer purchase records.
2. Delete book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 2
-----

Delete One Book Record                       Welcome back, Ayman!
-----

Please enter the Book ID to delete the book record.

+-----+-----+-----+
| Book ID | Book Title | Book Author |
+-----+-----+-----+
| BID5711 | 12 Rules For Life | Jordan Peterson |
+-----+-----+-----+
| BID5299 | King Of Scars | Bardugo, Leigh |
+-----+-----+-----+

Book ID[Example: BID4748]: []
```

If there is at least one book record in the record\_management.json file, then a table containing some fields of the book records will be displayed. The user will be prompted to enter the book ID to search for the book record to delete based on the given book ID.

Please enter the Book ID to delete the book record.

Book ID	Book Title	Book Author
BID5711	12 Rules For Life	Jordan Peterson
BID5299	King Of Scars	Bardugo, Leigh

Book ID[Example: BID4748]: BID4748

```
|-----|
| Error Message: The book record does not appear to |
| exist. Please choose an existing Book ID as above. |
|-----|
```

Please enter the Book ID to delete the book record.

Book ID	Book Title	Book Author
BID5711	12 Rules For Life	Jordan Peterson
BID5299	King Of Scars	Bardugo, Leigh

Book ID[Example: BID4748]: BID5299

Book Record #2

Book ID: BID5299      Book Title: King Of Scars

Book Details			
Book Author	Book ISBN	Book Price	Book Stock
Bardugo, Leigh	9021590487215	RM55.90	6

Are you sure you want to delete the book record?

Press [1] if you want to delete it OR press any other key to cancel.  
Option:

```

Book Record #2
Book ID: BID5299          Book Title: King Of Scars
+-----+-----+-----+-----+
|                                     |
|                               Book Details                               |
|-----+-----+-----+-----+
| Book Author   | Book ISBN   | Book Price  | Book Stock  |
|-----+-----+-----+-----+
| Bardugo, Leigh | 9021590487215 | RM55.90    | 6          |
|-----+-----+-----+-----+

Are you sure you want to delete the book record?

Press [1] if you want to delete it OR press any other key to cancel.
Option:

Please press enter key to go back to main menu: 

```

```

Book Record #2
Book ID: BID5299          Book Title: King Of Scars
+-----+-----+-----+-----+
|                                     |
|                               Book Details                               |
|-----+-----+-----+-----+
| Book Author   | Book ISBN   | Book Price  | Book Stock  |
|-----+-----+-----+-----+
| Bardugo, Leigh | 9021590487215 | RM55.90    | 6          |
|-----+-----+-----+-----+

Are you sure you want to delete the book record?

Press [1] if you want to delete it OR press any other key to cancel.
Option: 1

+-----+
| Success Message: The book record has successfully |
| been deleted from the system.                     |
+-----+

Please press enter key to go back to main menu: 

```

```

},
"books": [
  {
    "book_id": "BID5711",
    "book_title": "12 Rules For Life",
    "book_author": "Jordan Peterson",
    "book_isbn": "9605563435503",
    "book_price": "RM61.50",
    "book_stock": 12
  }
],

```



## 4.7 View Record Reports Page

```
-----
View Record Reports                               Welcome back, Ayman!
-----

Which record reports would you want to view?
1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 3
-----

MPH Record Management                             Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.
Option[Example: 1]: [ ]
```

The View Record Reports page will display options that user may proceed with. The user will be prompted to enter their option based on the given numbers from 1 to 3. If the user enters 3, then the user will be directed back to the Main Menu page.

```
-----
View Record Reports                               Welcome back, Ayman!
-----

Which record reports would you want to view?
1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: [
|-----|
|Error Message: The option does not appear to exist.|
|Please only choose option 1 to 3.|
|-----|
]
-----

View Record Reports                             Welcome back, Ayman!
-----

Which record reports would you want to view?
1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: [ ]
```

Else, if for some reason the user enters a non-existing option, an error message will be displayed indicating the option does not exist, and the View Record Reports page will be displayed again for the user to enter an existing option from number 1 to 3. As long as the option entered does not exist, then the View Record Reports page will keep on repeating until an existing option has been entered accordingly.

#### 4.7.1 View Customer Purchase Records Page

```
-----
View Record Reports                               Welcome back, Ayman!
-----

Which record reports would you want to view?

1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

View Customer Purchase Records                     Welcome back, Ayman!
-----

|-----|
| Error Message: There seems to be no customer purchase record |
| in the system. Please add a customer purchase record first. |
|-----|

Please press enter key to go back to main menu: 
```

If the user enters 1, then the user will be directed to the View Customer Purchase Records page where they could view all customer purchase records from the record\_management.json file. If there are no existing customer purchase records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```
1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 1

-----

View Customer Purchase Records                               Welcome back, Ayman!

-----

Customer Purchase Record #1
Purchase ID: PID556      Customer Name: John Doe
Phone Number: +601256734412 Date of Purchase: 20/01/2024

+-----+
| Purchased Product |
+-----+
| No. | Book Product ID | Product Price | Product Quantity | Subtotal |
+-----+
| 1.  | BID5711        | RM45.00      | 3                | RM135.00 |
+-----+
| Total |                |              | 3                | RM135.00 |
+-----+

Customer Purchase Record #2
Purchase ID: PID299      Customer Name: Tom
Phone Number: +99677863245 Date of Purchase: 20/01/2024

+-----+
| Purchased Product |
+-----+
| No. | Book Product ID | Product Price | Product Quantity | Subtotal |
+-----+
| 1.  | BID5711        | RM45.00      | 1                | RM45.00  |
+-----+
| 2.  | BID5299        | RM55.90      | 2                | RM111.80 |
+-----+
| Total |                |              | 3                | RM156.80 |
+-----+

Please press enter key to go back to main menu: [Enter]
```

If there is at least one customer purchase record in the record\_management.json file, then all the customer purchase records will be displayed in their own respective detailed table reports. The user will be prompted to press enter key if they want to go back to the Main Menu page.

## 4.7.2 View Book Records Page

```
-----

View Record Reports                               Welcome back, Ayman!

-----

Which record reports would you want to view?

1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 2

-----

View Book Records                               Welcome back, Ayman!

-----

+-----+
| Error Message: There seems to be no book record |
| in the system. Please add a book record first. |
+-----+

Please press enter key to go back to main menu: [Enter]
```

If the user enters 2, then the user will be directed to the View Book Records page where they could view all book record from the record\_management.json file. If there are no existing book records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```

-----
View Record Reports                               Welcome back, Ayman!
-----

Which record reports would you want to view?

1. View customer purchase records.
2. View book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2
-----

View Book Records                               Welcome back, Ayman!
-----

Book Record #1
Book ID: BID5711      Book Title: Ace Of Spades (Uk)
+-----+-----+-----+-----+
|                                     |
+-----+-----+-----+-----+
| Book Author | Book ISBN | Book Price | Book Stock |
+-----+-----+-----+-----+
| Faridah Hani | 9605563435503 | RM45.00 | 5 |
+-----+-----+-----+-----+

Book Record #2
Book ID: BID5299      Book Title: King Of Scars
+-----+-----+-----+-----+
|                                     |
+-----+-----+-----+-----+
| Book Author | Book ISBN | Book Price | Book Stock |
+-----+-----+-----+-----+
| Bardugo, Leigh | 9021590487215 | RM55.90 | 8 |
+-----+-----+-----+-----+

Please press enter key to go back to main menu: 

```

If there is at least one book record in the record\_management.json file, then all the book records will be displayed in their own respective detailed table reports. The user will be prompted to press enter key if they want to go back to the Main Menu page.

## 4.8 Generate & Export Records Page

```
-----
Generate & Export Records                               Welcome back, Ayman!
-----

Which records would you want to export?

1. Generate & Export customer purchase records.
2. Generate & Export book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: 3
-----

MPH Record Management                               Welcome back, Ayman!
-----

Welcome to MPH Record Management System. This is the Main Menu.

What would you like to do today?
1. Add new records.
2. Search records.
3. Update records.
4. Delete records.
5. View record reports.
6. Generate & Export records.
7. Log Out the system.
8. Exit the system.

Please key-in a number based on the options above.

Option[Example: 1]:
```

The Generate & Export Records page will display options that user may proceed with. The user will be prompted to enter their option based on the given numbers from 1 to 3. If the user enters 3, then the user will be directed back to the Main Menu page.

```
-----
Generate & Export Records                               Welcome back, Ayman!
-----

Which records would you want to export?

1. Generate & Export customer purchase records.
2. Generate & Export book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]: -1

|-----|
| Error Message: The option does not appear to exist. |
| Please only choose option 1 to 3. |
|-----|

-----

Generate & Export Records                               Welcome back, Ayman!
-----

Which records would you want to export?

1. Generate & Export customer purchase records.
2. Generate & Export book records.
3. Go back to main menu.

Please key-in a number based on the options above.

Option[Example: 1]:
```

Else, if for some reason the user enters a non-existing option, an error message will be displayed indicating the option does not exist, and the Generate & Export Records page will be displayed

again for the user to enter an existing option from number 1 to 3. As long as the option entered does not exist, then the Generate & Export Records page will keep on repeating until an existing option has been entered accordingly.

#### 4.8.1 Export Customer Purchase Records Page

```
-----
Generate & Export Records                               Welcome back, Ayman!
-----

Which records would you want to export?

1. Generate & Export customer purchase records.
2. Generate & Export book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 1
-----

Export Customer Purchase Records                         Welcome back, Ayman!
-----

|-----|
| Error Message: There seems to be no customer purchase record |
| in the system. Please add a customer purchase record first.  |
|-----|

Please press enter key to go back to main menu: 
```

If the user enters 1, then the user will be directed to the Export Customer Purchase Records page where they could export all customer purchase records from the record\_management.json file to another file. If there are no existing customer purchase records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```

Please key-in a number based on the options above.
Option[Example: 1]: 1

-----

Export Customer Purchase Records                               Welcome back, Ayman!

-----

Customer Purchase Record #1
Purchase ID: PID556      Customer Name: John Doe
Phone Number: +601256734412 Date of Purchase: 20/01/2024

+-----+
| Purchased Product |
+-----+
| No. | Book Product ID | Product Price | Product Quantity | Subtotal |
+-----+
| 1.  | BID5711        | RM45.00      | 3                | RM135.00 |
+-----+
| Total |                |              | 3                | RM135.00 |
+-----+

Customer Purchase Record #2
Purchase ID: PID299      Customer Name: Tom
Phone Number: +99677863245 Date of Purchase: 20/01/2024

+-----+
| Purchased Product |
+-----+
| No. | Book Product ID | Product Price | Product Quantity | Subtotal |
+-----+
| 1.  | BID5711        | RM45.00      | 1                | RM45.00  |
+-----+
| 2.  | BID5299        | RM55.90      | 2                | RM111.80 |
+-----+
| Total |                |              | 3                | RM156.80 |
+-----+

Are you sure you want to export all customer purchase records?
Press [1] if you want to export them OR press any other key to cancel.
Option[Example: 1]: 

```

If there is at least one customer purchase record in the record\_management.json file, then all the customer purchase records will be displayed in their own respective detailed table reports. The user will be prompted to enter the option to either confirm to export all the customer purchase records by pressing 1 or cancel the process by pressing other keys.

## 4.8.2 Export Book Records Page

```

-----

Generate & Export Records                               Welcome back, Ayman!

-----

Which records would you want to export?

1. Generate & Export customer purchase records.
2. Generate & Export book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2

-----

Export Book Records                                         Welcome back, Ayman!

-----

+-----+
| Error Message: There seems to be no book record |
| in the system. Please add a book record first. |
+-----+

Please press enter key to go back to main menu: 

```

If the user enters 2, then the user will be directed to the Export Book Records page where they could export all book records from the record\_management.json file to another file. If there are no existing book records in the record\_management.json file, then an error message will appear and the user will be prompted to go back to the Main Menu page.

```

Which records would you want to export?
1. Generate & Export customer purchase records.
2. Generate & Export book records.
3. Go back to main menu.

Please key-in a number based on the options above.
Option[Example: 1]: 2

-----

Export Book Records                                     Welcome back, Ayman!

-----

Book Record #1
Book ID: BID5711           Book Title: Ace Of Spades (uk)
+-----+-----+-----+-----+
|                               Book Details                               |
+-----+-----+-----+-----+
| Book Author | Book ISBN | Book Price | Book Stock |
+-----+-----+-----+-----+
| Faridah Hani | 9605563435503 | RM45.00 | 5 |
+-----+-----+-----+-----+

Book Record #2
Book ID: BID5299           Book Title: King Of Scars
+-----+-----+-----+-----+
|                               Book Details                               |
+-----+-----+-----+-----+
| Book Author | Book ISBN | Book Price | Book Stock |
+-----+-----+-----+-----+
| Bardugo, Leigh | 9021590487215 | RM55.90 | 8 |
+-----+-----+-----+-----+

Are you sure you want to export all book records?

Press [1] if you want to export them OR press any other key to cancel.
Option[Example: 1]: 

```

If there is at least one book record in the record\_management.json file, then all the book records will be displayed in their own respective detailed table reports. The user will be prompted to enter the option to either confirm to export all the book records by pressing 1 or cancel the process by pressing other keys.

## 4.9 Input KeyboardInterrupt Exception

```

-----
| Error Message: It looks like you accidentally pressed ctrl + C. |
| It's ok we all make mistakes sometimes.                         |
|-----|
[Press 0 to exit the system] OR
[Press any other key to continue where you left off] : 

```



Whenever the user accidentally pressed Ctrl + C when the user is prompt to enter an input, an error message will pop up to catch the keyboardinterrupt exception, so the program won't suddenly terminate just because of the exception. Then, the user will be prompted to enter either 0 to exit and terminate the program or press any other key to continue where the user left off.

```
|-----|
| Error Message: It looks like you accidentally pressed ctrl + C. |
| It's ok we all make mistakes sometimes. |
|-----|

[Press 0 to exit the system] OR
[Press any other key to continue where you left off] : 0

Shutting down system.... in 5
... 4
... 3
... 2
... 1

Thank you for using the MPH Record Management System.
Goodbye :)
```

If the user decided to press 0, then the program will be terminated and the system will shut down, displaying a thank you message at the end.