



# INFORMATICS INSTITUTE OF TECHNOLOGY

## Foundation Certificate In Higher Education

**Course:** Foundation Certificate in Programming

**Module:** DOC 333 – Introduction to Programming Principles

**Module Leader :** Mr. Sudharshan Welihinda

**Assignment Type:** Individual Course Work

**Issue Date:** 24<sup>th</sup> June 24

**Submission Date :** 19<sup>th</sup> July 2024

**Student name :** S.Piruthivi

**Student ID :** 20240084

**Group :** D

## Acknowledgement

I would like to express my sincere gratitude to Mr.Sudarshan Welihinda and Ms.Tharushi Sandamali Amarasinghe for their invaluable guidance and support throughout the [Module name] module. Their enthusiasm for the subject matter and clear explanations were instrumental in my understanding of the key concepts.

## Case

ABC Bank, a small bank in Sri Lanka, aims to streamline customer registration and account management. They plan to implement an information system to maintain details of their savings account holders efficiently. The system is designed to improve service speed and accuracy, ensuring effective account management and customer satisfaction. The system must be able to facilitate opening accounts to new customers (maximum of 5 customers) and display all the customers in the bank with their account number, name and the bank balance when needed. Also, the system should have the facility to change details of the customers (except account number and the bank balance) already registered with the bank, and to deposit and withdraw money when required for a given account

When the bank gets a new customer, the following details should be recorded and stored in the system

1. Bank Account Number: 10-digit number
2. NIC: National Identity Card Number (10 characters)
3. First Name: Maximum 10 characters
4. Last Name: Maximum 15 characters
5. Birth Date: Date format
6. Permanent Address: Maximum 15 characters
7. Telephone Number: 10 characters

## Algorithm

1. Start
2. Initialize an empty list on the name of "Public"
3. Initialize count and set the value to 5
4. Assign While 'count' is greater than 1
  - 4.1. Display the main menu
  - 4.2. Get the user input to enter a choice
5. Process the user's choice
6. If the Choice is "1 "
  - 6.1 Display the "Add a new public" menu
  - 6.2 Check if the numbers of public is less than 5
    - 6.2.1 Get user input to enter the public's account number, NIC number, first name, last name, date of birth, permanent address, phone number
    - 6.2.2 Confirm and add to public
    - 6.2.3 Set balance value to 0.0
    - 6.2.4 Ask the user to save the account details
    - 6.2.5 If user input "yes"
      - 6.2.5.1 Append the public's details to the 'public' list
      - 6.2.5.2 Display a 'Account details saved successfully' success message
    - 6.2.6 If user input "no"
      - 6.2.6.1 Display a 'Account details cannot be saved' failure message
  - 6.3 Else customers value is greater than 5
    - 6.3.1 Display the message "maximum number of Publics has reached cannot add more!!"
7. If the choice is "2"
  - 7.1. Display the "View details of a public" menu
  - 7.2. Get the user input to enter the public's account number
  - 7.3. Assign For each Public in 'public'
    - 7.3.1.If the account number matches the input
      - 7.3.1.1. Display the correct public's details (account number, NIC number, phone number, first name, last name, balance)

- 7.3.1.2. Ask the user if they want to view another account's details.
    - 7.3.1.3. If the user input "yes"
      - 7.3.1.3.1. Repeat the process
    - 7.3.1.4. If the user input "no"
      - 7.3.1.4.1. Display a "Thank you For Using Our Service" message and break the loop
  - 7.3.2.If the account number doesn't match the input
    - 7.3.2.1. Display the message "Error cannot find the account"
- 8. If the choice is "3"
  - 8.1. Display the "View details of all public" menu
  - 8.2. Assign For each publics in 'public'
    - 8.2.1. Display all publics details (NIC number, account number, first name, last name and balance)
  - 8.3. Ask the user if they want to update the account details
  - 8.4. Display a thank you message
- 9. If the choice is "4"
  - 9.1. Display the "Deposit Money" menu
  - 9.2. Get the user input to enter the public's account number
  - 9.3. Assign For each public in 'public'
    - 9.3.1.If the account number matches the input
      - 9.3.1.1. Get the user input to enter the amount to deposit
      - 9.3.1.2. Ask the user if they want to save the transaction
      - 9.3.1.3. If the user input "yes"
        - 9.3.1.3.1. Add the amount to the public's balance
        - 9.3.1.3.2. Display the message "Deposit successful. New balance"
      - 9.3.1.4. If the user input "no"
        - 9.3.1.4.1. Display the message "Deposit failed"
    - 9.4. If the account number doesn't match the input
      - 9.4.1.Display the message "Error: cannot find the account!!"
- 10. If the choice is "5"
  - 10.1. Display the "Withdraw Money" menu
  - 10.2. Get the user input to enter the public's account number

10.3. Assign For each public in 'publics'

10.3.1. If the account number matches the input

10.3.1.1. Get the user input to enter the amount to withdraw

10.3.1.2. If the balance is equal or greater than the input amount

10.3.1.2.1. Ask the user if they want to save the transaction

10.3.1.2.2. If the user input is "yes"

10.3.1.2.2.1. Subtract the amount from the public's balance

10.3.1.2.2.2. Display the message "Withdraw successful. New balance"

10.3.1.2.3. If the user input "no"

10.3.1.2.3.1. Display the message "Withdraw unsuccessful"

10.3.1.3. If the balance is less than input amount

10.3.1.3.1. Display the message "Insufficient balance in the account"

10.3.2. If the account number doesn't match the input

10.3.2.1. Display the message "Error: cannot find the account"

11. If the choice is "6"

11.1. Display the "Update publics Details" menu

11.2. Get the user input to enter the public's account number

11.3. Assign For each public in 'public'

11.3.1. If the account number matches the input

11.3.1.1. Display the message "public Found!!!"

11.3.1.2. Get the user input to confirm the update public details

11.3.1.3. If the user input is "yes"

11.3.1.3.1. Get the user to enter the new details (NIC number, first name, last name, date of birth, address, phone number, balance)

11.3.1.3.2. Update the public details according to user input

11.3.1.3.3. Display the message "publics details updated successfully"

11.3.1.4. If the user input is "no"

11.3.1.4.1. Display the message "Cannot updated customer details"

11.3.2. If the account number doesn't match the input

11.3.2.1. Display the message "Error: cannot find the account"

12. If the choice is "7"
  - 12.1. Display the message "EXIT, thank you For Using Our Services"
  - 12.2. Break the loop
13. If the choice is not a valid one
  - 13.1. Display the message "Invalid choice! Please Try Again...."
14. Repeat the main loop until the user chooses to exit
15. Stop

## Table of Contents

<b>Acknowledgement .....</b>	<b>2</b>
<b>Case .....</b>	<b>3</b>
<b>Algorithm .....</b>	<b>4</b>
<b>Table Of Figures .....</b>	<b>9</b>
<b>List of Tables.....</b>	<b>10</b>
<b>Test case 01 .....</b>	<b>11</b>
Main menu.....	11
<b>Test case 02 .....</b>	<b>12</b>
Choice 1 .....	12
<b>Test case 03 .....</b>	<b>13</b>
Choice 2 .....	13
<b>Test case 04 .....</b>	<b>16</b>
Choice 03 .....	16
<b>Test case 05 .....</b>	<b>18</b>
Choice 04 .....	18
<b>Test case 06 .....</b>	<b>19</b>
Choice 05 .....	19
<b>Test Case 07.....</b>	<b>21</b>
Choice 6 .....	21
<b>Test Case 08.....</b>	<b>23</b>
Choice 7 .....	23
<b>Test Case 09.....</b>	<b>24</b>
Choice .....	24



## Table Of Figures

Figure 1 Test case 01(main menu).....	12
Figure 2(Test case 02) .....	13
Figure 3(test case 03 ) .....	14
Figure 4(Test case 03) .....	15
Figure 5(Test case 03) .....	15
Figure 6(Test case 03) .....	16
Figure 7(Test case 04 ) .....	17
Figure 8(Test case 4) .....	18
Figure 9(Test case 04) .....	18
Figure 10(Test case 05) .....	19
Figure 11(Test case 05) .....	19
Figure 12(Test case 06) .....	20
Figure 13(Test case 06) .....	21
Figure 14(Test case 06) .....	21
Figure 15(Test case 07) .....	22
Figure 16(Test case 07) .....	23
Figure 17(Test case 07) .....	23
Figure 18(Test case 08) .....	24
Figure 19(Test case 09) .....	25

## List of Tables

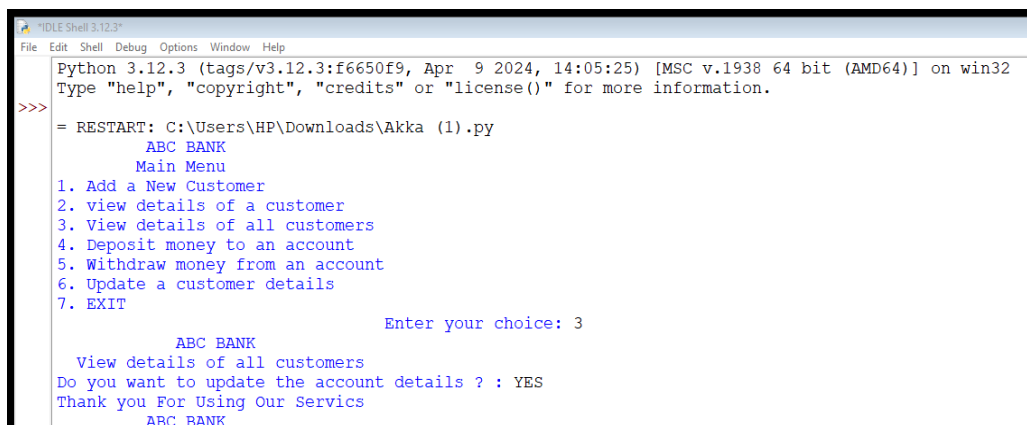
Table 1 .....	12
Table 2 .....	13
Table 3 .....	14
Table 4 Test case 04.....	17
Table 5(Test case 5) .....	19
Table 6(Test case 06) .....	20
Table 7 (Test case 07) .....	22
Table 8(Test case 08) .....	25
Table 9( Test case 09) .....	26

## Test case 01

### Main menu

Table 1

Test case 01	Description	Expected output	Pass / Fail
1	Display the main menu	Display the main menu: Print all the customer needed options  1.Add a New Customer 2.View details of a customer 3.View details of all customers 4.Deposit money to an account 5.Withdraw money from an account 6.Update a customer detail	Pass
2	Display Condition	Display “Your Choice”	Pass
3	Display “EXIT”	Display “7. EXIT”	Pass



```
Python 3.12.3 (tags/v3.12.3:f6650f9, Apr 9 2024, 14:05:25) [MSC v.1938 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\HP\Downloads\Akka (1).py
      ABC BANK
      Main Menu
      1. Add a New Customer
      2. view details of a customer
      3. View details of all customers
      4. Deposit money to an account
      5. Withdraw money from an account
      6. Update a customer details
      7. EXIT
      Enter your choice: 3
      ABC BANK
      View details of all customers
      Do you want to update the account details ? : YES
      Thank you For Using Our Services
      ABC BANK
```

Figure 1 Test case 01(main menu)

## Test case 02

### Choice 1

Table 2

Test Case 02	Description	Input	Expected Output	Pass / Fail
1	Display the “Add customers” menu	1	ABC BANK Add a new customer Enter Customer's Account Number: Enter Customer's NIC Number: Enter Customer's First Name: Enter Customer's Last Name: Enter Customer's Date of Birth: Enter the Customer's Permanent Address: Enter the Customer's Phone Number:	Pass
2	Display the condition	-	Do you want to save the account	Pass
3	Display Account saved confirmation	yes	Display “Account saved successfully”	Pass
		no	Display “Account saved unsuccessful”	Pass

```

Enter your choice: 1

ABC BANK
Add a new customer
Enter Customer's Account Number: 5555555555
Enter Customer's NIC Number: 88888888888
Enter Customer's First Name: lala
Enter Customer's Last Name: juke
Enter Customer's Date Of Birth: 10/10/2006
Enter the Customer's Permanent Address: kerla
Enter the Customer's Telephone Number: 7894561230
DO you want to save the Account details ? : yes
Account details saved successfully.

```

Figure 2(Test case 02)

## Test case 03

Choice 2

Table 3

Test Case 03	Description	Input	Expected Output	Pass / Fail
1	Ask customer account number	Account number	Enter account number	Pass
2	Display customer details	-	Customer Account number: xxxxxxxxxxxx Customer NIC number: xxxxxxxxxxxx Customer Phone number: xxxxxxxxxxxx Customer First name: xxxxxxxxxxxx Customer Last name: xxxxxxxxxxxx Bank balance: xxxxx.x	Pass
3	Display Account opened confirmation	yes	Display the “Main menu”	Pass
		no	Display the message “Thank you for using our service” & display the Main menu	Pass
4	Error message	Incorrect account number	Display “Error: cannot find the account”	Pass

```

ABC BANK
Add a new customer
Enter Customer's Account Number: 5555555555
Enter Customer's NIC Number: 88888888888
Enter Customer's First Name: lala
Enter Customer's Last Name: juke
Enter Customer's Date Of Birth: 10/10/2006
Enter the Customer's Permanent Address: kerla
Enter the Customer's Telephone Number: 7894561230
DO you want to save the Account details ? : yes
Account details saved successfully.
ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT

```

Figure 3(test case 03 )

```
ABC BANK
Add a new customer
Enter Customer's Account Number: 5555555555
Enter Customer's NIC Number: 8888888888
Enter Customer's First Name: lala
Enter Customer's Last Name: juke
Enter Customer's Date Of Birth: 10/10/2006
Enter the Customer's Permanent Address: kerala
Enter the Customer's Telephone Number: 7894561230
DO you want to save the Account details ? : no
Account details cannot be saved.
ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
```

Figure 4(Test case 03)

```
ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT

Enter your choice: 2

ABC BANK
View details of a customer
Enter Account Number: 1236549545
Error: Cannot Find The Account!!
```

Figure 5(Test case 03)

```

      ABC BANK
View details of all customers
Customer NIC Number:  8888888888
Customer Account Number:  5555555555
Customer First Name:  lala
Customer Last Name:  juke
Bank Balance:  0.0
Do you want to update the account details ? : yes
Thank you For Using Our Services
      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
```

*Figure 6(Test case 03)*

## Test case 04

Choice 03

Table 4 Test case 04

Test case 04	Description	Input	Expected output	Pass / Fail
1	Display all customer details	-	NIC-xxxxxxxxxx Account number- xxxxxxxxxxxx First Name- xxxxxxxxxxxx Last Name- xxxxxxxxxxxx Balance-xxxxxx.x	Pass
2	Display update customer details	Yes	Display the main menu	Pass
		No	Display the message “Thank you for using our service” & display the main menu	

```
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT

Enter your choice: 3

ABC BANK
View details of all customers
Customer NIC Number: 9876543210
Customer Account Number: 1234567890
Customer First Name: ABC
Customer Last Name: BANK
Bank Balance: 0.0
Customer NIC Number: 0123456789
Customer Account Number: 0987654321
Customer First Name: abc
Customer Last Name: bank
Bank Balance: 0.0
```

Figure 7(Test case 04 )



```

      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
Enter your choice: 3

      ABC BANK
      View details of all customers
Customer NIC Number: 8888888888
Customer Account Number: 5555555555
Customer First Name: lala
Customer Last Name: juke
Bank Balance: 0.0
Do you want to update the account details ? : yes
Thank you For Using Our Services
      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
Enter your choice:
```

Figure 8(Test case 4)

```

Enter your choice: 3

      ABC BANK
      View details of all customers
Customer NIC Number: 8888888888
Customer Account Number: 5555555555
Customer First Name: lala
Customer Last Name: juke
Bank Balance: 0.0
Do you want to update the account details ? : no
Thank you For Using Our Services
      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
Enter your choice:
```

Figure 9(Test case 04)

## Test case 05

Choice 04

Table 5(Test case 5)

Test case 05	Description	Input	Expected output	Pass / Fail
1	Ask to enter the account	Account number	Enter account number	Pass
2	Ask the customer for the amount to deposit	Amount	Enter the amount to deposit	Pass
3	Ask the condition “Do you want to save? :”	Yes	Display “Deposit successful. New Balance”	Pass
		No	Display “Deposit failed”	Pass

```
Thank you For Using Our Services
ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
Enter your choice: 4
ABC BANK
Deposit Money
Enter Account Number: 555555555
Enter the amount to deposit: 50000
Do you want to save ? : yes
Deposit successful. New Balance: 50000.0
```

Figure 10(Test case 05)

```
7. EXIT
Enter your choice: 4
ABC BANK
Deposit Money
Enter Account Number: 555555555
Enter the amount to deposit: 10000
Do you want to save ? : no
Deposit Failed.
ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
```

Figure 11(Test case 05)

## Test case 06

Choice 05

Table 6(Test case 06)

Test case 06	Description	Input	Expected output	Pass / Fail
1	Ask to enter the account	Account number	Enter account number	Pass
2	Ask the customer for the amount to withdraw	Amount	Enter the amount to withdraw	Pass
3	Ask the condition “Do you want to save? :”	Yes	Display “Withdraw successful. New Balance”	Pass
		No	Display “Insufficient balance in the account”	Pass
4	Balance Insufficient	Limit exceeded	Display “Insufficient Balance ”	Pass

```
ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
Enter your choice: 5
ABC BANK
Withdraw Money
Enter Account Number: 555555555
Enter the amount to withdraw: 4000
Do you want to save ? : yes
Withdraw successful. New balance: 46000.0
```

Figure 12(Test case 06)

```
6. Update a Customer details
7. EXIT                                     Enter your choice: 5

      ABC BANK
      Withdraw Money
Enter Account Number: 5555555555
Enter the amount to withdraw: 4000
Do you want to save ? : no
Insufficient Balance In The Account.

      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
```

Figure 13(Test case 06)

```
      ABC BANK
      Withdraw Money
Enter Account Number: 5555555555
Enter the amount to withdraw: 60000
Do you want to save ? : yes'
Insufficient Balance In The Account.

      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT                                     Enter your choice:
```

Figure 14(Test case 06)

## Test Case 07

Choice 6

Table 7 (Test case 07)

Test case 07	Description	Input	Expected output	Pass / Fail
1	Ask to enter the account	Account number	Customer found	Pass
2	Confirm update	Yes	Update customer details	Pass
		No	Display the message “Cannot updated customer details” & display the main menu	Pass
3	Update NIC number	New NIC number	Enter customer’s NIC number	Pass
4	Update First Name	New First Name	Enter customer’s First Name	Pass
5	Update Last Name	New Last Name	Enter customer’s Last Name	Pass
6	Update date of birth	New Date of birth	Enter customer’s date of birth	Pass
7	Update New Address	New Address	Enter customer’s new address	Pass
8	Update New Phone Number	New Phone Number	Enter customer’s phone number	Pass

```
/. FAIL
                                     Enter your choice: 6
      ABC BANK
      Update Customer Details
Enter Account Number: 555555555
customer found!!!
Confirm Update:- Do you want to update your customer details: no
Cannot updated customer details.
      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
```

Figure 15(Test case 07)

```

7. EXIT
Enter your choice: 6

ABC BANK
Update Customer Details
Enter Account Number: 555555555
customer found!!!
Confirm Update:- Do you want to update your customer details: yes
Enter Customer's new NIC Number: 8888888888
Enter Customer's new First Name: lala
Enter Customer's new Last Name: juke
Enter Customer's new Date of Birth: 11/11/2006
Enter Customer's new Address: yala,kerala
Enter Customer's new Telephone Number: 7894561230
Enter The New Account Balance: 50000
Customer details updated successfully.

ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account

```

Figure 16(Test case 07)

```

ABC BANK
Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
Enter your choice: 2

ABC BANK
View details of a customer
Enter Account Number: 555555555
Customer Account Number: 555555555
Customer NIC Number: 8888888888
Customer Telephone Number: 7894561230
Customer First Name: lala
Customer Last Name: juke

```

Figure 17(Test case 07)

## Test Case 08

Choice 7

Table 8(Test case 08)

Test Case 08	Description	Input	Expected output	Pass / Fail
1	Exit the task	7	Display “Exit, thank you for using our service message”	Pass

```
      ABC BANK
      Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
                                     Enter your choice: 7
      ABC BANK
EXIT, Thank you for using our service
      ABC BANK
      Main Menu
```

Figure 18(Test case 08)

## Test Case 09

Choice

Table 9( Test case 09)

Test Case 08	Description	Input	Expected output	Pass / Fail
1	Invalid choice	Any number except 1 to 7	Display “Invalid choice! Please try again”	Pass

```

                                Enter your choice: 7
                                ABC BANK
EXIT, Thank you for using our service
                                ABC BANK
                                Main Menu
1. Add a New Customer
2. view details of a customer
3. View details of all customers
4. Deposit money to an account
5. Withdraw money from an account
6. Update a customer details
7. EXIT
                                Enter your choice: 9
Invalid Choice! Please Try Again...
                                ABC BANK
```

Figure 19(Test case 09)