



اُنِيُوْكَرْسِيْتِيْ تِيْكْنُوْلُوْجِيْ مَآرَا
UNIVERSITI
TEKNOLOGI
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COLLEGE OF COMPUTING, INFORMATICS AND MEDIA

FINAL REPORT ONLINE BANKING SYSYEM

GROUP PROJECT CSC248

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DATE SUBMISSION: 9/1/2024

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Introduction of Banking System

Mr. Nadhir is the bank owner of An Bank. He wants to make a more secure and efficient banking system and is planning to develop an application for it. Below is the information given by Mr. Nadhir related to his concerns about keeping the banking system more efficient.

He has a lot of users that use his bank's service. The banking system provides choices of account type in two categories (Personal and Business). Individuals, businesses, and organizations utilize this banking service for savings accounts, loans, and investment. After the user creates an account, the banking system will record its user personal data, which is IC number, full name, account number, contact number, email and password. Other than that, the user's account balance will be recorded and updated each time the annual dividends credited to their account. Users who don't make any transactions using their account for more than 24 months will make their account status non-active.

After the discussion, we analyze his requirements, and these are the processes we propose to Mr. Nadhir to be applied in the application.




The application will be able to:

1. Store the details once the admin enters customer's personal information into the system and display.
2. Remove user that account status is a non-active status and display.
3. Search for data of preferences account balance and display.
4. Update user account balances after receiving a dividend of 5.25% for each active account and display.
5. Split the account types between personal accounts and business accounts and display.
6. Calculate the total number of accounts that still exist in An Bank after removing an account status that is non-active accounts and display.

Object Propose: Admin

Attributes: IC Number, Account Holder, Account Number, Account Type (Personal/Business), Account Balance, Contact Number, Email, Password.

Methods: Mutator method, accessor method, toString method, processor method.

TEAM MEMBERS	ROLES
 <p data-bbox="247 622 549 707">NUR EILZHRAA BINTI MOHD SHAMSUDDIN</p>	<ul data-bbox="667 297 1390 689" style="list-style-type: none"> • Responsible for making a data file which is "UserData.txt". • Responsible for making Users class, class node and class EmptyListException. • Direct the team to ensure goal are achieved without flaw. • Assist in writing program to ensure the project are within the required rubric.
 <p data-bbox="228 1178 568 1263">RIQQAHA IZZ ZARA BINTI RAMLE</p>	<ul data-bbox="667 831 1374 1173" style="list-style-type: none"> • Construct a main java program LinkedList which is UsersLinkedList class. • Responsible for making LinkedList class for linkedlist main program. • Mainly work on to create quality design and systems. • Ensure the system is user-friendly.
 <p data-bbox="212 1769 584 1854">SITI ZULAIKHA AMNI BINTI MOHD HUDZORI</p>	<ul data-bbox="691 1384 1366 1776" style="list-style-type: none"> • Responsible for making main java program for queue which is UsersQueue class. • Constructing class queue to enable the main program for queue. • Mainly lead in writing program based on the instruction of leader. • Making sure the writing program is suitable with the system.

User Data Text File

031215-14-5678; AINA
RASHID; 76420398157204; PERSONAL; 20000; 0123456789; AINA@GMAIL.COM; SECUREPASS123; ACTIVE
041030-07-8910; NADHIR
NASAR; 30985621470851; PERSONAL; 33000; 01123456789; NADHIR@GMAIL.COM; RAINBOW42!; NON-ACTIVE
990101-01-0945; ALIA
RIZAL; 12456789023456; PERSONAL; 45000; 0198765432; YAYA@GMAIL.COM; STARLIGHT@2023; NON-ACTIVE
991212-02-5600; ELLY
ZAMRI; 98765432109876; BUSINESS; 60000; 0131234567; ELY@GMAIL.COM; COFFELOVER99; ACTIVE
992323-03-9101; JOHHNY
SUH; 24680135792468; PERSONAL; 77000; 0145678901; JOHNNY@GMAIL.COM; BLUESKY123; ACTIVE
020161-01-1234; MARK
LEE; 50321679802134; BUSINESS; 45678; 0125738296; MORK@GMAIL.COM; SECRETP@SS; ACTIVE
021212-02-5678; LEE
HAECHAN; 87654321098765; PERSONAL; 90234; 0185372539; HAECHAN@GMAIL.COM; MOUNTAINVIEW22; ACTIVE
022323-03-9101; IKMAL
AMRY; 13579024681357; BUSINESS; 55000; 0185367329; IKMAL@GMAIL.COM; MOONLIGHT*789; ACTIVE
023434-04-1121; AZURA
ZAINUDIN; 10293847561029; BUSINESS; 98345; 01436894754; RARA@GMAIL.COM; TECHGEEK_2023; NON-ACTIVE
024545-05-3141; LEE
JENO; 89123456781234; PERSONAL; 70000; 0124648957; JENO@GMAIL.COM; FLOWERPOWER123; NON-ACTIVE

950101-01-1234;ARISYA
 AHMAD;31415926535897;BUSINESS;23333;01184795648;SYASYA@GMAIL.
 COM;HAPPYDAY\$456;NON-ACTIVE
 961212-02-5678;SARA
 ARMAN;56789012345678;BUSINESS;90000;0156797568;SARAARMAN@GMAI
 L.COM;OCEANBREEZE77;NON-ACTIVE
 972323-03-9101;ARYAN
 MALEK;43210987654321;PERSONAL;6789;01674397685;ARYAN@GMAIL.CO
 M;SILVERKEY\$999;ACTIVE
 983434-04-1121;AZAM
 MUKHLIS;78901234567890;PERSONAL;10000;0134789567;AZAM@GMAIL.C
 OM;ADVENTURETIME22;ACTIVE
 994545-05-3141;NADIA
 RUSDI;87651234098765;PERSONAL;11000;01128285678;NADDYSUSHI@GM
 AIL.COM;PURPLERAIN*678;ACTIVE
 000606-06-5162;HAFIZAH
 RAHIM;98765432198765;BUSINESS;34900;012347808;JAH@GMAIL.COM;F
 IREFLY_2026;ACTIVE
 011717-07-7183;ABDUL
 WAKEEL;98765432123456;BUSINESS;87900;0174976024;WAKEEL@GMAIL.
 COM;COOLDUDE!45;ACTIVE
 022828-08-9204;RAYYAN
 AZHAR;54321678901234;BUSINESS;98700;0154986308;RAY@GMAIL.COM;
 SUNSHINE&231;ACTIVE
 033939-09-
 1225;NOAH;87650987609875;PERSONAL;45600;01758395768;NOAH@GMAI
 L.COM;GREEN_APPLE;ACTIVE
 045050-10-
 3246;AFGAN;11223344556677;PERSONAL;76900;0165789473;AGAN@GMAI
 L.COM;P@ASSWORD7;ACTIVE
 019574-14-
 0234;JENIFERRRR;23356483967483;PERSONAL;2000;0127346958;JENO@
 GMAIL.COM;1108@JENO;ACTIVE

984757-08-4839;SITI
AMIRAH;57385967583756;BUSINESS;5400;0167328943;MIRA@GMAIL.COM
;BRUNOMARD234;ACTIVE
658395-06-5748;RIQQA
AMNI;75839289565748;BUSINESS;6789;0127789356;RIQQ@GMAIL.COM;S
TRAWBERRY124;NON-ACTIVE
873932-14-
8957;GISELLE;37583757463920;PERSONAL;11000;0145678254;GISS@GM
AIL.COM;AESPA127;NON-ACTIVE
016473-08-4748;HAKIM
KHALID;83758394756396;PERSONAL;2300;01126738293;HAKIMMM@GMAIL
.COM;NC2Y67;ACTIVE

User Class

```
public class Users
{
    private String icNum;
    private String accHolder;
    private String accNum;
    private String accType;
    private double accBalance;
    private String contactNum;
    private String email;
    private String password;
    private String accStatus;

    public Users (String ic,String accH, String accN, String
accT, double accB,String contN, String e,String p, String
accS)
    {
        icNum = ic;
        accHolder = accH;
        accNum = accN;
        accType = accT;
        accBalance = accB;
        contactNum = contN;
        email = e;
```



```

        password = p;

        accStatus = accS;
    }

    public void setUsers (String ic,String accH, String accN,
String accT, double accB,String contN, String e,String p,
String accS)

    {

        icNum = ic;

        accHolder = accH;

        accNum = accN;

        accType = accT;

        this.accBalance = accB;

        contactNum = contN;

        email = e;

        password = p;

        accStatus = accS;

    }

    //setter / mutator

    public void setAccBalance (double accB) {

        this.accBalance = accB;

    }

    public String getIcNum() {return icNum; }

    public String getAccHolder() { return accHolder; }

```

```

public String getAccNum() {return accNum; }

public String getAccType() { return accType;}

public double getAccBalance() { return accBalance;}

public String getContactNum() { return contactNum; }

public String getEmail() { return email ;}

public String getPassword() {return password;}

public String getAccStatus() { return accStatus;}


public String toString()

{

    return ("\nIC Number : " + icNum + "\nAccount Holder :
" + accHolder + "\nAccount Number : " + accNum + "\nAccount
Type : " + accType +

    "\nAccount Balance : " + accBalance  + "\nContact
Number : " + contactNum + "\nEmail : " + email + "\nPassword
:"
    + password + "\nAccount Status : " + accStatus + "\n")
;

}

}

```

CLASS BUILDING A LINKEDLIST

Class Empty List Exception:

```
public class EmptyListException extends RuntimeException
{
    public EmptyListException ()
    {
        super ("The list is empty");
    }
}
```

Class Node :

```
public class Node // class Node is used to create a
Node
{
    Object data;
    Node link;

    //Default constructor
    public Node()
    {
        data = null;
        link = null;
    }

    //Normal constructor
    public Node(Object data)
    {
        this.data = data;
        link = null;
    }

    public Node(Object data, Node next)
    {
        this.data = data;
        this.link = link;
    }

    //Update data
    public void setData(Object newData)
    {
        data = newData;
    }

    //Update the reference to the next node
    public void setNext(Node newNext)
    {
        link = newNext;
    }
}
```

```

    }

    //To get the data
    public Object getData()
    {
        return data;
    }

    //To get the next data
    public Node getNext()
    {
        return link;
    }

    //To print
    public String toString()
    {
        if (link == null)
            return data.toString() + "";
        else
            return data.toString() + " " + link.toString();
    }
}

```

Class LinkedList :

```

public class LinkedList
{
    private Node head, tail, current;

    //Default LinkedList Class
    public LinkedList() { head = tail
= current = null; }

    //To check whether is the linked list empty
    public boolean isEmpty() { return head ==
null; }

    // to print data
    public String print()
    {
        if (isEmpty())
            return "( empty list )";
        else
            return head.toString() ;
    }

    //To add new Object data at the front of the LinkedList

```

```

public void insertAtFront(Object data)
{
    if(isEmpty())
        head = tail = new Node(data);
    else
        head = new Node(data, head);
}
// Return the number of elements in the list
public int size()
{
    int count = 0;
    if (isEmpty())
        return count;

    current = head;
    while(current != null)
    {
        ++count;
        current = current.link;
    }
    return count;
}
//To add new Object data at the back of linked list
public void insertAtBack(Object data)
{
    if(isEmpty())
        head = tail = new Node(data);
    else
        tail = tail.link = new Node(data);

}

// Return the first element in the linked list
public Object getFirst() throws EmptyListException
{
    if(isEmpty())
        throw new EmptyListException();

    current = head;
    return current.data;
}

// Return the next element in the linked list
public Object getNext()
{
    if(current != tail)
    {
        current = current.link;
        return current.data;
    }
}

```

```

        }
        else
            return null;
    }

    // Return the last element in the linked list
    public Object getLast() throws EmptyListException
    {
        if(isEmpty())
            throw new EmptyListException();

        return tail.data;
    }

    // Remove the first element in the linked list
    public Object removeFromFront() throws EmptyListException
    {
        if(isEmpty())
            throw new EmptyListException();

        Object d = head.data;

        if(head==tail)
            head=tail=null;
        else
        {
            Node curr = head;
            head = head.link;
            curr.link = null;
        }

        return d;
    }

    // Remove the last element in the linked list
    public Object removeFromBack() throws EmptyListException
    {
        if(isEmpty())
            throw new EmptyListException();

        Object d = tail.data;

        if(head==tail)
            head=tail=null;
        else
        {
            Node curr = head;
            while(curr.link != tail)
                curr = curr.link;

```

```

        tail = curr;
        curr.link = null;
    }

    return d;
}
}

```

Class UserLinkedList

```

import java.util.Scanner;
import java.io.File;
import java.util.StringTokenizer;

public class UserLinkedList
{
    public static void main(String arg[]){
        File inputFile = new File("UserData.txt");
        LinkedList userll = new LinkedList();
        try {
            Scanner inFile = new Scanner(inputFile);
            while (inFile.hasNextLine()) {
                String s = inFile.nextLine();
                String delimiter = ";";
                StringTokenizer st = new StringTokenizer(s,
delimiter);

                String icNum = st.nextToken();
                String accHolder = st.nextToken();
                String accNum = st.nextToken();
                String accType = st.nextToken();
                double accBalance =
Double.parseDouble(st.nextToken());
                String contactNum = st.nextToken();
                String email = st.nextToken();
                String password = st.nextToken();
                String accStatus = st.nextToken();

                Users u = new Users(icNum, accHolder, accNum,
accType, accBalance, contactNum, email, password, accStatus);
                userll.insertAtBack(u);
            }
        }catch (Exception e)
        {
            System.out.println(e);
        }

        System.out.println("AN BANK CUSTOMER PERSONAL INFO");
    }
}

```

```

System.out.println("\n=====
=====");
    Scanner in = new Scanner(System.in);

    //user input data
    Scanner userInput = new Scanner(System.in);
    String enter = "yes"; // Initialize to enter the loop
    while (enter.equalsIgnoreCase("yes")) {
        System.out.println("\nDo you want to make a
registration? (yes/no): ");
        enter = userInput.nextLine();

        if (enter.equalsIgnoreCase("yes")) {
            System.out.println("\nEnter the IC number: ");
            String icNum = in.nextLine();

            System.out.println("\nEnter the name of an
account holder: ");
            String accHolder = in.nextLine();

            System.out.println("\nEnter an account number:
");
            String accNum = in.nextLine();

            System.out.println("\nEnter an account type
(PERSONAL/BUSINESS): ");
            String accType = in.nextLine();

            System.out.println("\nEnter the amount of
money to open a new account bank: ");
            double accBalance = in.nextDouble();
            in.nextLine();

            System.out.println("\nEnter the contact
number: ");
            String contactNum = in.nextLine();

            System.out.println("\nEnter your email: ");
            String email = in.nextLine();

            System.out.println("\nEnter your password: ");
            String password = in.nextLine();

            System.out.println("\nEnter the status Account
(ACTIVE/NON-ACTIVE) : ");
            String accStatus = in.nextLine();

```



```

        Users usr = new Users(icNum, accHolder,
accNum, accType, accBalance, contactNum, email, password,
accStatus);
        userll.insertAtBack(usr);
    }
}

    System.out.println("\nLIST OF DATA IN AN BANK");

System.out.println("\n=====
=====");

    Object obj = userll.getFirst();
    obj = userll.getFirst();
    while(obj != null)
    {
        Users usr = (Users) obj;
        System.out.println(usr.toString() +
"\n");
        obj = userll.getNext();
    }

    //2
    System.out.println("\n Accounts that have been remove
because non-active");

System.out.println("=====
=====");
    LinkedList tempLL = new LinkedList();
    while(!userll.isEmpty()){
        obj = userll.removeFromFront();
        Users usr = (Users)obj;

        if(usr.getAccStatus().equalsIgnoreCase("non-
active"))
            System.out.println(usr.toString() + "\n");
        else
            tempLL.insertAtBack(usr);
    }
    System.out.println("Current account bank that still
active");

System.out.println("=====
=====");
    System.out.println(tempLL.print() + "\n" );

    //3
    System.out.println("Do you want to search account
balance for less than : ");
    double userInsert = in.nextDouble();

```

```

        System.out.println("Search info from the list if
their account balance is less than"+" "+ userInsert);

System.out.println("=====
=====");
        boolean found = false;
        Users searchAccBalance = null;
        obj = tempLL.getFirst();
        while (obj != null)
        {
            Users usr = (Users) obj;
            if (usr.getAccBalance() < userInsert)
            {
                searchAccBalance = usr;
                found = true;

                System.out.println("\nSearch data found : " +
searchAccBalance.toString());
            }
            obj = tempLL.getNext();
        }
        if(!found){
            System.out.println("\nSearch data not found");
        }

        //4
        System.out.println("\n List update Account Balance
for each Accounts after Dividends ");

System.out.println("=====
=====");
        Users searchUsers = null;
        obj = tempLL.getFirst();
        double dividen = 0.0525;
        while (obj != null)
        {
            Users usr = (Users) obj;
            if (usr.getAccStatus().equalsIgnoreCase("active"))
            {
                searchUsers = usr;
                found = true;

                System.out.println("\nSearch item found: " +
searchUsers.toString());
                double updatedBalance = (usr.getAccBalance()
* dividen) + usr.getAccBalance();
                usr.setAccBalance(updatedBalance);
            }
        }
    }
}

```

```

        System.out.println("After Updated Balance: "
+ updatedBalance);
    }
    obj = tempLL.getNext();
}

//5
System.out.println("\nSplit the account between
personal and business account");
LinkedList PersonalAcc = new LinkedList();
LinkedList BusinessAcc = new LinkedList();
obj = tempLL.getFirst();
while(obj != null)
{
    Users usr = (Users) obj;

    if(usr.getAccType().equalsIgnoreCase("PERSONAL"))
    {

        PersonalAcc.insertAtBack(usr);
    }

    if(usr.getAccType().equalsIgnoreCase("BUSINESS"))
    {
        BusinessAcc.insertAtBack(usr);
    }
    obj = tempLL.getNext();
}

System.out.println("\nList of Accounts Type
'PERSONAL'");

System.out.println("=====
=====");
obj = PersonalAcc.getFirst();
while(obj != null)
{
    Users usr = (Users) obj;
    System.out.println(usr.toString() + "\n");
    obj = PersonalAcc.getNext();
}

System.out.println("\nList of Accounts Type
'BUSINESS'");

System.out.println("=====
=====");

```

```

        obj = BusinessAcc.getFirst();
        while(obj != null)
        {
            Users usr = (Users) obj;
            System.out.println(usr.toString() + "\n");
            obj = BusinessAcc.getNext();
        }

        //6
        int count = 0;
        System.out.println("\n Total Account in AnBank");

        System.out.println("=====
        =====");
        obj = tempLL.getFirst();
        while(obj != null)
        {
            Users usr = (Users) obj;

            if(usr.getAccStatus().equalsIgnoreCase("active"))
            {
                System.out.println(usr.toString() + "\n");
                count++;
            }
            obj = tempLL.getNext();
        }
        System.out.println("\nTotal Account in ANBank: : "+
        count );
    }
}

```

Class Queue using Linked Class :

```
public class Queue extends LinkedList
{
    public Queue()
    {
        super();
    }

    public void enqueue (Object obj)
    {
        insertAtBack(obj);
    }

    public Object dequeue()
    {
        return removeFromFront();
    }

    public Object getFront()
    {
        return getFirst();
    }

    public Object getEnd()
    {
        Object obj = removeFromBack();
        insertAtBack(obj);
        return obj;
    }

    public boolean isEmpty()
    {
        return super.isEmpty();
    }

    public String print()
    {
        return super.print();
    }
}
```

Class UserQueue :

```
import java.io.*;
import java.util.StringTokenizer;
import java.util.Scanner;

public class UserQueue {
    public static void main(String[] args) {
        Queue userll = new Queue();
        File input = new File("UserData.txt");
        try {
            Scanner in = new Scanner(input);
            while (in.hasNextLine()) {
                String s = in.nextLine();
                StringTokenizer st = new StringTokenizer(s,
";");

                String icNum = st.nextToken();
                String accHolder = st.nextToken();
                String accNum = st.nextToken();
                String accType = st.nextToken();
                double accBalance =
Double.parseDouble(st.nextToken());
                String contactNum = st.nextToken();
                String email = st.nextToken();
                String password = st.nextToken();
                String accStatus = st.nextToken();

                Users u = new Users(icNum, accHolder, accNum,
accType, accBalance, contactNum, email, password, accStatus);
                userll.enqueue(u);
            }
        } catch (Exception e) {
            System.out.println(e);
        }

        System.out.println("AN BANK CUSTOMER PERSONAL INFO");
        System.out.println("\n=====
=====");

        Scanner in = new Scanner(System.in);
        //user input data
        Scanner UserInput = new Scanner(System.in);
        String enter = "yes"; // Initialize to enter the loop
        while (enter.equalsIgnoreCase("yes")) {
            System.out.println("\nDo you want to make a
registration? (yes/no): ");
            enter = UserInput.nextLine();
        }
    }
}
```

```

        if (enter.equalsIgnoreCase("yes")) {
            System.out.println("\nEnter the IC number: ");
            String icNum = in.nextLine();

            System.out.println("\nEnter the name of an
account holder: ");
            String accHolder = in.nextLine();

            System.out.println("\nEnter an account number:
");
            String accNum = in.nextLine();

            System.out.println("\nEnter an account type
(PERSONAL/BUSINESS): ");
            String accType = in.nextLine();

            System.out.println("\nEnter the amount of
money to open a new account bank: ");
            double accBalance = in.nextDouble();
            in.nextLine(); // Consume the newline
            character

            System.out.println("\nEnter the contact
number: ");
            String contactNum = in.nextLine();

            System.out.println("\nEnter your email: ");
            String email = in.nextLine();

            System.out.println("\nEnter your password: ");
            String password = in.nextLine();

            System.out.println("\nEnter the status Account
(ACTIVE/NON-ACTIVE) : ");
            String accStatus = in.nextLine();

            Users usr = new Users(icNum, accHolder,
accNum, accType, accBalance, contactNum, email, password,
accStatus);
            userll.enqueue(usr);

        }
    }
    Queue qTemp = new Queue();
    //move data into qTemp
    while(!qTemp.isEmpty()){
        Object obj = qTemp.dequeue();
        userll.enqueue(obj);
    }
}

```

```

        //Display data in queue
        System.out.println("\nLIST OF DATA IN AN BANK");

System.out.println("\n=====
=====");
        System.out.println(userll.print() + "\n");

        //(2) Remove an account that not active anymore
        System.out.println("\nAccounts that have been remove
because non-active");

System.out.println("=====
=====");
        while(!userll.isEmpty())
        {
            Object obj = userll.dequeue();
            Users usr = (Users) obj;

            if(usr.getAccStatus().equalsIgnoreCase("Non-
Active"))
            {
                System.out.println(usr.toString() + "\n");
            }
            else
            {
                qTemp.enqueue(usr); //store data
            }
        }
        //move data in qTemp to original queue
        while(!qTemp.isEmpty())
        {
            userll.enqueue(qTemp.dequeue());
        }
        //Display after remove
        System.out.println("Current account bank that still
active");

System.out.println("=====");
        System.out.println(userll.print() + "\n" );

        //(3) serach account have <10,000
        System.out.println("Do you want to search account
balance for less than : ");
        double userInsert = in.nextDouble();
        in.nextLine();

        System.out.println("Search info from the list if
their account balance is less than"+" "+ userInsert);

```



```

System.out.println("=====
=====");
        boolean found = false;
        Users searchAccBalance = null;
        while (!userll.isEmpty()) {
            Object obj = userll.dequeue();
            Users usr = (Users) obj;
            qTemp.enqueue(usr);

            if (usr.getAccBalance() < userInsert) {
                searchAccBalance = usr;
                found = true;
                System.out.println("Seach data found : " +
searchAccBalance.toString());
            }
        }
        if(!found){
            System.out.println("Search data not found");
        }
        //move data to original queue
        while(!qTemp.isEmpty()){
            Object obj = qTemp.dequeue();
            userll.enqueue(obj);
        }

        // (4) Update
        System.out.println("List update Account Balance for
each Accounts after Dividends");

System.out.println("=====
=====");
        double dividen = 0.0525;
        while (!userll.isEmpty()) {
            Object obj = userll.dequeue();
            Users usr = (Users) obj;

            if (usr.getAccStatus().equalsIgnoreCase("Active"))
{
                System.out.println("\nSearch item found: " +
usr.toString());
                double originalBalance = usr.getAccBalance();
                double updatedBalance = (originalBalance *
dividen) + originalBalance;
                usr.setAccBalance(updatedBalance); // Update
the balance in the user
                objectSystem.out.println(usr.toString());

```

```

        System.out.println("Updated Balance: " +
updatedBalance);

        qTemp.enqueue(usr); // Store the user in the
temporary queue
    }
}
// Move data back to the original queue
while (!qTemp.isEmpty()) {
    userll.enqueue(qTemp.dequeue());
}

//(5) split personal account and bussiness account
System.out.println("\nSplit the account between
personal and business account");
Queue PersonalQueue = new Queue();
Queue BusinessQueue = new Queue();
while(!userll.isEmpty()){
    Object obj = userll.dequeue();
    Users usr = (Users) obj;
    qTemp.enqueue(usr);
    if
(usr.getAccType().equalsIgnoreCase("PERSONAL"))
    {
        PersonalQueue.enqueue(usr);
    }
    else if
(usr.getAccType().equalsIgnoreCase("BUSINESS"))
    {
        BusinessQueue.enqueue(usr);
    }
}
//move data to original queue
while(!qTemp.isEmpty())
{
    userll.enqueue(qTemp.dequeue());
}
//output Personal acc
System.out.println("\nList of Accounts Type
'PERSONAL' ");

System.out.println("=====
=====");
    System.out.println(PersonalQueue.print() + "\n");
//output Business acc
System.out.println("\nList of Accounts Type
'BUSINESS' ");

```

```

System.out.println("=====
=====");
    System.out.println(BusinessQueue.print() + "\n");

    // (6) calculate active acc
    int count = 0;
    System.out.println("Total accounts in An Bank");

System.out.println("=====
=====");
    while (!userll.isEmpty())
    {
        Object obj = userll.dequeue();
        Users usr = (Users) obj;
        qTemp.enqueue(usr);

        if(usr.getAccStatus().equalsIgnoreCase("Active"))
        {
            System.out.println(usr.toString() + "\n");
            count++;
        }
    }
    System.out.println("Total Account in ANBank:" +
count);
    }
}

```

SAMPLE INPUT AND OUTPUT

Using Linked List Method

1. Store the details once the admin enters customer's personal information into the system and display.

```
BlueJ: Terminal Window - User
Options
AN BANK CUSTOMER PERSONAL INFO
=====
Do you want to make a registration? (yes/no):
YES
Enter the IC number:
040408080120
Enter the name of an account holder:
SITI EIL ZARA BINTI MOHD
Enter an account number:
12345678901234
Enter an account type (PERSONAL/BUSINESS):
PERSONAL
Enter the amount of money to open a new account bank:
1000
Enter the contact number:
01131392934
Enter your email:
SITI04@GMAIL.COM
Enter your password:
IZZ123
Enter the status Account (ACTIVE/NON-ACTIVE) :
ACTIVE
Do you want to make a registration? (yes/no):
NO
```

```
BlueJ: Terminal Window - User
Options

LIST OF DATA IN AN BANK

=====

IC Number : 031215-14-5678
Account Holder : AINA RASHID
Account Number : 76420398157204
Account Type : PERSONAL
Account Balance : 20000.0
Contact Number : 0123456789
Email : AINA@GMAIL.COM
Password : SECUREPASS123
Account Status : ACTIVE

IC Number : 041030-07-8910
Account Holder : NADHIR NASAR
Account Number : 30985621470851
Account Type : PERSONAL
Account Balance : 33000.0
Contact Number : 01123456789
Email : NADHIR@GMAIL.COM
Password : RAINBOW42!
Account Status : NON-ACTIVE

IC Number : 990101-01-0945
Account Holder : ALIA RIZAL
Account Number : 12456789023456
Account Type : PERSONAL
Account Balance : 45000.0
Contact Number : 0198765432
Email : YAYA@GMAIL.COM
Password : STARLIGHT@2023
Account Status : NON-ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 991212-02-5600
Account Holder : ELLY ZAMRI
Account Number : 98765432109876
Account Type : BUSINESS
Account Balance : 60000.0
Contact Number : 0131234567
Email : ELY@GMAIL.COM
Password :COFFELOVER99
Account Status : ACTIVE

IC Number : 992323-03-9101
Account Holder : JOHNNY SUH
Account Number : 24680135792468
Account Type : PERSONAL
Account Balance : 77000.0
Contact Number : 0145678901
Email : JOHNNY@GMAIL.COM
Password :BLUESKY123
Account Status : ACTIVE

IC Number : 020161-01-1234
Account Holder : MARK LEE
Account Number : 50321679802134
Account Type : BUSINESS
Account Balance : 45678.0
Contact Number : 0125738296
Email : MORK@GMAIL.COM
Password :SECRETP@SS
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 021212-02-5678
Account Holder : LEE HAECHAN
Account Number : 87654321098765
Account Type : PERSONAL
Account Balance : 90234.0
Contact Number : 0185372539
Email : HAECHAN@GMAIL.COM
Password : MOUNTAINVIEW22
Account Status : ACTIVE

IC Number : 022323-03-9101
Account Holder : IKMAL AMRY
Account Number : 13579024681357
Account Type : BUSINESS
Account Balance : 55000.0
Contact Number : 0185367329
Email : IKMAL@GMAIL.COM
Password : MOONLIGHT*789
Account Status : ACTIVE

IC Number : 023434-04-1121
Account Holder : AZURA ZAINUDIN
Account Number : 10293847561029
Account Type : BUSINESS
Account Balance : 98345.0
Contact Number : 01436894754
Email : RARA@GMAIL.COM
Password : TECHGEEK_2023
Account Status : NON-ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 024545-05-3141
Account Holder : LEE JENO
Account Number : 89123456781234
Account Type : PERSONAL
Account Balance : 70000.0
Contact Number : 0124648957
Email : JENO@GMAIL.COM
Password : FLOWERPOWER123
Account Status : NON-ACTIVE

IC Number : 950101-01-1234
Account Holder : ARISYA AHMAD
Account Number : 31415926535897
Account Type : BUSINESS
Account Balance : 23333.0
Contact Number : 01184795648
Email : SYASYA@GMAIL.COM
Password : HAPPYDAY$456
Account Status : NON-ACTIVE

IC Number : 961212-02-5678
Account Holder : SARA ARMAN
Account Number : 56789012345678
Account Type : BUSINESS
Account Balance : 90000.0
Contact Number : 0156797568
Email : SARAARMAN@GMAIL.COM
Password : OCEANBREEZE77
Account Status : NON-ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 972323-03-9101
Account Holder : ARYAN MALEK
Account Number : 43210987654321
Account Type : PERSONAL
Account Balance : 6789.0
Contact Number : 01674397685
Email : ARYAN@GMAIL.COM
Password :SILVERKEY$999
Account Status : ACTIVE

IC Number : 983434-04-1121
Account Holder : AZAM MUKHLIS
Account Number : 78901234567890
Account Type : PERSONAL
Account Balance : 10000.0
Contact Number : 0134789567
Email : AZAM@GMAIL.COM
Password :ADVENTURETIME22
Account Status : ACTIVE

IC Number : 994545-05-3141
Account Holder : NADIA RUSDI
Account Number : 87651234098765
Account Type : PERSONAL
Account Balance : 11000.0
Contact Number : 01128285678
Email : NADDYSUSHI@GMAIL.COM
Password :PURPLERAIN*678
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 000606-06-5162
Account Holder : HAFIZAH RAHIM
Account Number : 98765432198765
Account Type : BUSINESS
Account Balance : 34900.0
Contact Number : 012347808
Email : JAH@GMAIL.COM
Password :FIREFLY_2026
Account Status : ACTIVE

IC Number : 011717-07-7183
Account Holder : ABDUL WAKEEL
Account Number : 98765432123456
Account Type : BUSINESS
Account Balance : 87900.0
Contact Number : 0174976024
Email : WAKEEL@GMAIL.COM
Password :COOLDUDE!45
Account Status : ACTIVE

IC Number : 022828-08-9204
Account Holder : RAYYAN AZHAR
Account Number : 54321678901234
Account Type : BUSINESS
Account Balance : 98700.0
Contact Number : 0154986308
Email : RAY@GMAIL.COM
Password :SUNSHINE&231
Account Status : ACTIVE
```



```
BlueJ: Terminal Window - User
Options

IC Number : 033939-09-1225
Account Holder : NOAH
Account Number : 87650987609875
Account Type : PERSONAL
Account Balance : 45600.0
Contact Number : 01758395768
Email : NOAH@GMAIL.COM
Password :GREEN_APPLE
Account Status : ACTIVE

IC Number : 045050-10-3246
Account Holder : AFGAN
Account Number : 11223344556677
Account Type : PERSONAL
Account Balance : 76900.0
Contact Number : 0165789473
Email : AGAN@GMAIL.COM
Password :P@ASSW0RD7
Account Status : ACTIVE

IC Number : 019574-14-0234
Account Holder : JENIFERRRR
Account Number : 23356483967483
Account Type : PERSONAL
Account Balance : 2000.0
Contact Number : 0127346958
Email : JENO@GMAIL.COM
Password :1108@JENO
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 984757-08-4839
Account Holder : SITI AMIRAH
Account Number : 57385967583756
Account Type : BUSINESS
Account Balance : 5400.0
Contact Number : 0167328943
Email : MIRA@GMAIL.COM
Password :BRUNOMARD234
Account Status : ACTIVE

IC Number : 658395-06-5748
Account Holder : RIQQA AMNI
Account Number : 75839289565748
Account Type : BUSINESS
Account Balance : 6789.0
Contact Number : 0127789356
Email : RIQQ@GMAIL.COM
Password :STRAWBERRY124
Account Status : NON-ACTIVE

IC Number : 873932-14-8957
Account Holder : GISELLE
Account Number : 37583757463920
Account Type : PERSONAL
Account Balance : 11000.0
Contact Number : 0145678254
Email : GISS@GMAIL.COM
Password :AESPA127
Account Status : NON-ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 016473-08-4748
Account Holder : HAKIM KHALID
Account Number : 83758394756396
Account Type : PERSONAL
Account Balance : 2300.0
Contact Number : 01126738293
Email : HAKIMMM@GMAIL.COM
Password : NC2Y67
Account Status : ACTIVE

IC Number : 040408080120
Account Holder : SITI EIL ZARA BINTI MOHD
Account Number : 12345678901234
Account Type : PERSONAL
Account Balance : 1000.0
Contact Number : 01131392934
Email : SITI04@GMAIL.COM
Password : IZZ123
Account Status : ACTIVE
```

2. Remove user that accounts status is a non-active status and display.

```
BlueJ: Terminal Window - User
Options

Accounts that have been remove because non-active
=====

IC Number : 041030-07-8910
Account Holder : NADHIR NASAR
Account Number : 30985621470851
Account Type : PERSONAL
Account Balance : 33000.0
Contact Number : 01123456789
Email : NADHIR@GMAIL.COM
Password : RAINBOW42!
Account Status : NON-ACTIVE

IC Number : 990101-01-0945
Account Holder : ALIA RIZAL
Account Number : 12456789023456
Account Type : PERSONAL
Account Balance : 45000.0
Contact Number : 0198765432
Email : YAYA@GMAIL.COM
Password : STARLIGHT@2023
Account Status : NON-ACTIVE

IC Number : 023434-04-1121
Account Holder : AZURA ZAINUDIN
Account Number : 10293847561029
Account Type : BUSINESS
Account Balance : 98345.0
Contact Number : 01436894754
Email : RARA@GMAIL.COM
Password : TECHGEEK_2023
Account Status : NON-ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 024545-05-3141
Account Holder : LEE JENO
Account Number : 89123456781234
Account Type : PERSONAL
Account Balance : 70000.0
Contact Number : 0124648957
Email : JENO@GMAIL.COM
Password : FLOWERPOWER123
Account Status : NON-ACTIVE

IC Number : 950101-01-1234
Account Holder : ARISYA AHMAD
Account Number : 31415926535897
Account Type : BUSINESS
Account Balance : 23333.0
Contact Number : 01184795648
Email : SYASYA@GMAIL.COM
Password : HAPPYDAY$456
Account Status : NON-ACTIVE

IC Number : 961212-02-5678
Account Holder : SARA ARMAN
Account Number : 56789012345678
Account Type : BUSINESS
Account Balance : 90000.0
Contact Number : 0156797568
Email : SARAARMAN@GMAIL.COM
Password : OCEANBREEZE77
Account Status : NON-ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 658395-06-5748
Account Holder : RIQQA AMNI
Account Number : 75839289565748
Account Type : BUSINESS
Account Balance : 6789.0
Contact Number : 0127789356
Email : RIQQ@GMAIL.COM
Password : STRAWBERRY124
Account Status : NON-ACTIVE

IC Number : 873932-14-8957
Account Holder : GISELLE
Account Number : 37583757463920
Account Type : PERSONAL
Account Balance : 11000.0
Contact Number : 0145678254
Email : GISS@GMAIL.COM
Password : AESPA127
Account Status : NON-ACTIVE
```

```
BlueJ: Terminal Window - User
Options

Current account bank that still active
=====

IC Number : 031215-14-5678
Account Holder : AINA RASHID
Account Number : 76420398157204
Account Type : PERSONAL
Account Balance : 20000.0
Contact Number : 0123456789
Email : AINA@GMAIL.COM
Password : SECUREPASS123
Account Status : ACTIVE

IC Number : 991212-02-5600
Account Holder : ELLY ZAMRI
Account Number : 98765432109876
Account Type : BUSINESS
Account Balance : 60000.0
Contact Number : 0131234567
Email : ELY@GMAIL.COM
Password : COFFELOVER99
Account Status : ACTIVE

IC Number : 992323-03-9101
Account Holder : JOHNNY SUH
Account Number : 24680135792468
Account Type : PERSONAL
Account Balance : 77000.0
Contact Number : 0145678901
Email : JOHNNY@GMAIL.COM
Password : BLUESKY123
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 020161-01-1234
Account Holder : MARK LEE
Account Number : 50321679802134
Account Type : BUSINESS
Account Balance : 45678.0
Contact Number : 0125738296
Email : MORK@GMAIL.COM
Password : SECRETPESS
Account Status : ACTIVE

IC Number : 021212-02-5678
Account Holder : LEE HAECHAN
Account Number : 87654321098765
Account Type : PERSONAL
Account Balance : 90234.0
Contact Number : 0185372539
Email : HAECHAN@GMAIL.COM
Password : MOUNTAINVIEW22
Account Status : ACTIVE

IC Number : 022323-03-9101
Account Holder : IKMAL AMRY
Account Number : 13579024681357
Account Type : BUSINESS
Account Balance : 55000.0
Contact Number : 0185367329
Email : IKMAL@GMAIL.COM
Password : MOONLIGHT*789
Account Status : ACTIVE

IC Number : 972323-03-9101
Account Holder : ARYAN MALEK
Account Number : 43210987654321
Account Type : PERSONAL
Account Balance : 6789.0
Contact Number : 01674397685
Email : ARYAN@GMAIL.COM
Password : SILVERKEY$999
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 983434-04-1121
Account Holder : AZAM MUKHLIS
Account Number : 78901234567890
Account Type : PERSONAL
Account Balance : 10000.0
Contact Number : 0134789567
Email : AZAM@GMAIL.COM
Password :ADVENTURETIME22
Account Status : ACTIVE

IC Number : 994545-05-3141
Account Holder : NADIA RUSDI
Account Number : 87651234098765
Account Type : PERSONAL
Account Balance : 11000.0
Contact Number : 01128285678
Email : NADDYSUSHI@GMAIL.COM
Password :PURPLERAIN*678
Account Status : ACTIVE

IC Number : 000606-06-5162
Account Holder : HAFIZAH RAHIM
Account Number : 98765432198765
Account Type : BUSINESS
Account Balance : 34900.0
Contact Number : 012347808
Email : JAH@GMAIL.COM
Password :FIREFLY_2026
Account Status : ACTIVE

IC Number : 011717-07-7183
Account Holder : ABDUL WAKEEL
Account Number : 98765432123456
Account Type : BUSINESS
Account Balance : 87900.0
Contact Number : 0174976024
Email : WAKEEL@GMAIL.COM
Password :COOLDUDE!45
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 022828-08-9204
Account Holder : RAYYAN AZHAR
Account Number : 54321678901234
Account Type : BUSINESS
Account Balance : 98700.0
Contact Number : 0154986308
Email : RAY@GMAIL.COM
Password :SUNSHINE&231
Account Status : ACTIVE

IC Number : 033939-09-1225
Account Holder : NOAH
Account Number : 87650987609875
Account Type : PERSONAL
Account Balance : 45600.0
Contact Number : 01758395768
Email : NOAH@GMAIL.COM
Password :GREEN_APPLE
Account Status : ACTIVE

IC Number : 045050-10-3246
Account Holder : AFGAN
Account Number : 11223344556677
Account Type : PERSONAL
Account Balance : 76900.0
Contact Number : 0165789473
Email : AGAN@GMAIL.COM
Password :P@ASSW0RD7
Account Status : ACTIVE

IC Number : 019574-14-0234
Account Holder : JENIFERRRR
Account Number : 23356483967483
Account Type : PERSONAL
Account Balance : 2000.0
Contact Number : 0127346958
Email : JENO@GMAIL.COM
Password :1108@JENO
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 984757-08-4839
Account Holder : SITI AMIRAH
Account Number : 57385967583756
Account Type : BUSINESS
Account Balance : 5400.0
Contact Number : 0167328943
Email : MIRA@GMAIL.COM
Password :BRUNOMARD234
Account Status : ACTIVE

IC Number : 016473-08-4748
Account Holder : HAKIM KHALID
Account Number : 83758394756396
Account Type : PERSONAL
Account Balance : 2300.0
Contact Number : 01126738293
Email : HAKIMMM@GMAIL.COM
Password :NC2Y67
Account Status : ACTIVE

IC Number : 040408080120
Account Holder : SITI EIL ZARA BINTI MOHD
Account Number : 12345678901234
Account Type : PERSONAL
Account Balance : 1000.0
Contact Number : 01131392934
Email : SITI04@GMAIL.COM
Password :IZZ123
Account Status : ACTIVE
```


3. Search for data of preferences account balance and display.

```
BlueJ: Terminal Window - User
Options
Do you want to search account balance for less than :
10000
Search info from the list if their account balance is less than 10000.0
=====

Search data found :
IC Number : 972323-03-9101
Account Holder : ARYAN MALEK
Account Number : 43210987654321
Account Type : PERSONAL
Account Balance : 6789.0
Contact Number : 01674397685
Email : ARYAN@GMAIL.COM
Password : SILVERKEY$999
Account Status : ACTIVE

Search data found :
IC Number : 019574-14-0234
Account Holder : JENIFERRRR
Account Number : 23356483967483
Account Type : PERSONAL
Account Balance : 2000.0
Contact Number : 0127346958
Email : JENO@GMAIL.COM
Password : 1108@JENO
Account Status : ACTIVE

Search data found :
IC Number : 984757-08-4839
Account Holder : SITI AMIRAH
Account Number : 57385967583756
Account Type : BUSINESS
Account Balance : 5400.0
Contact Number : 0167328943
Email : MIRA@GMAIL.COM
Password : BRUNOMARD234
Account Status : ACTIVE

BlueJ: Terminal Window - User
Options

Search data found :
IC Number : 016473-08-4748
Account Holder : HAKIM KHALID
Account Number : 83758394756396
Account Type : PERSONAL
Account Balance : 2300.0
Contact Number : 01126738293
Email : HAKIMMM@GMAIL.COM
Password : NC2Y67
Account Status : ACTIVE

Search data found :
IC Number : 040408080120
Account Holder : SITI EIL ZARA BINTI MOHD
Account Number : 12345678901234
Account Type : PERSONAL
Account Balance : 1000.0
Contact Number : 01131392934
Email : SITI04@GMAIL.COM
Password : IZZ123
Account Status : ACTIVE
```

Using Queue Method

4. Update user account balances after receiving a dividend of 5.25% for each active account and display.

```
BlueJ: Terminal Window - User
Options

List update Account Balance for each Accounts after Dividends
=====

Search item found:
IC Number : 031215-14-5678
Account Holder : AINA RASHID
Account Number : 76420398157204
Account Type : PERSONAL
Account Balance : 20000.0
Contact Number : 0123456789
Email : AINA@GMAIL.COM
Password : SECUREPASS123
Account Status : ACTIVE

Updated Balance: 21050.0

Search item found:
IC Number : 991212-02-5600
Account Holder : ELLY ZAMRI
Account Number : 98765432109876
Account Type : BUSINESS
Account Balance : 60000.0
Contact Number : 0131234567
Email : ELY@GMAIL.COM
Password : COFFELOVER99
Account Status : ACTIVE

Updated Balance: 63150.0

Search item found:
IC Number : 992323-03-9101
Account Holder : JOHNNY SUH
Account Number : 24680135792468
Account Type : PERSONAL
Account Balance : 77000.0
Contact Number : 0145678901
Email : JOHNNY@GMAIL.COM
Password : BLUESKY123
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

Updated Balance: 81042.5

Search item found:
IC Number : 020161-01-1234
Account Holder : MARK LEE
Account Number : 50321679802134
Account Type : BUSINESS
Account Balance : 45678.0
Contact Number : 0125738296
Email : MORK@GMAIL.COM
Password : SECRETPESS
Account Status : ACTIVE

Updated Balance: 48076.095

Search item found:
IC Number : 021212-02-5678
Account Holder : LEE HAECHAN
Account Number : 87654321098765
Account Type : PERSONAL
Account Balance : 90234.0
Contact Number : 0185372539
Email : HAECHAN@GMAIL.COM
Password : MOUNTAINVIEW22
Account Status : ACTIVE

Updated Balance: 94971.285

Search item found:
IC Number : 022323-03-9101
Account Holder : IKMAL AMRY
Account Number : 13579024681357
Account Type : BUSINESS
Account Balance : 55000.0
Contact Number : 0185367329
Email : IKMAL@GMAIL.COM
Password : MOONLIGHT*789
Account Status : ACTIVE

Updated Balance: 57887.5
```



```
BlueJ: Terminal Window - User
Options
Updated Balance: 57887.5
Search item found:
IC Number : 972323-03-9101
Account Holder : ARYAN MALEK
Account Number : 43210987654321
Account Type : PERSONAL
Account Balance : 6789.0
Contact Number : 01674397685
Email : ARYAN@GMAIL.COM
Password :SILVERKEY$999
Account Status : ACTIVE
Updated Balance: 7145.4225
Search item found:
IC Number : 983434-04-1121
Account Holder : AZAM MUKHLIS
Account Number : 78901234567890
Account Type : PERSONAL
Account Balance : 10000.0
Contact Number : 0134789567
Email : AZAM@GMAIL.COM
Password :ADVENTURETIME22
Account Status : ACTIVE
Updated Balance: 10525.0
Search item found:
IC Number : 994545-05-3141
Account Holder : NADIA RUSDI
Account Number : 87651234098765
Account Type : PERSONAL
Account Balance : 11000.0
Contact Number : 01128285678
Email : NADDYSUSHI@GMAIL.COM
Password :PURPLERAIN*678
Account Status : ACTIVE
Updated Balance: 11577.5
```

```
BlueJ: Terminal Window - User
Options
Updated Balance: 11577.5
Search item found:
IC Number : 000606-06-5162
Account Holder : HAFIZAH RAHIM
Account Number : 98765432198765
Account Type : BUSINESS
Account Balance : 34900.0
Contact Number : 012347808
Email : JAH@GMAIL.COM
Password :FIREFLY_2026
Account Status : ACTIVE
Updated Balance: 36732.25
Search item found:
IC Number : 011717-07-7183
Account Holder : ABDUL WAKEEL
Account Number : 98765432123456
Account Type : BUSINESS
Account Balance : 87900.0
Contact Number : 0174976024
Email : WAKEEL@GMAIL.COM
Password :COOLDUDE!45
Account Status : ACTIVE
Updated Balance: 92514.75
Search item found:
IC Number : 022828-08-9204
Account Holder : RAYYAN AZHAR
Account Number : 54321678901234
Account Type : BUSINESS
Account Balance : 98700.0
Contact Number : 0154986308
Email : RAY@GMAIL.COM
Password :SUNSHINE&231
Account Status : ACTIVE
Updated Balance: 103881.75
```

```
BlueJ: Terminal Window - User
Options
Updated Balance: 103881.75

Search item found:
IC Number : 033939-09-1225
Account Holder : NOAH
Account Number : 87650987609875
Account Type : PERSONAL
Account Balance : 45600.0
Contact Number : 01758395768
Email : NOAH@GMAIL.COM
Password : GREEN_APPLE
Account Status : ACTIVE

Updated Balance: 47994.0

Search item found:
IC Number : 045050-10-3246
Account Holder : AFGAN
Account Number : 11223344556677
Account Type : PERSONAL
Account Balance : 76900.0
Contact Number : 0165789473
Email : AGAN@GMAIL.COM
Password : P@ASSW0RD7
Account Status : ACTIVE

Updated Balance: 80937.25

Search item found:
IC Number : 019574-14-0234
Account Holder : JENIFERRRR
Account Number : 23356483967483
Account Type : PERSONAL
Account Balance : 2000.0
Contact Number : 0127346958
Email : JENO@GMAIL.COM
Password : 1108@JENO
Account Status : ACTIVE

Updated Balance: 2105.0
```

```
BlueJ: Terminal Window - User
Options
Updated Balance: 2105.0

Search item found:
IC Number : 984757-08-4839
Account Holder : SITI AMIRAH
Account Number : 57385967583756
Account Type : BUSINESS
Account Balance : 5400.0
Contact Number : 0167328943
Email : MIRA@GMAIL.COM
Password : BRUNOMARD234
Account Status : ACTIVE

Updated Balance: 5683.5

Search item found:
IC Number : 016473-08-4748
Account Holder : HAKIM KHALID
Account Number : 83758394756396
Account Type : PERSONAL
Account Balance : 2300.0
Contact Number : 01126738293
Email : HAKIMMM@GMAIL.COM
Password : NC2Y67
Account Status : ACTIVE

Updated Balance: 2420.75

Search item found:
IC Number : 040408080120
Account Holder : SITI EIL ZARA BINTI MOHD
Account Number : 12345678901234
Account Type : PERSONAL
Account Balance : 1000.0
Contact Number : 01131392934
Email : SITI04@GMAIL.COM
Password : IZZ123
Account Status : ACTIVE

Updated Balance: 1052.5
```

5. Split the account types between personal accounts and business accounts and display.

```
BlueJ: Terminal Window - User
Options
Split the account between personal and business account

List of Accounts Type 'PERSONAL'
=====
IC Number : 031215-14-5678
Account Holder : AINA RASHID
Account Number : 76420398157204
Account Type : PERSONAL
Account Balance : 21050.0
Contact Number : 0123456789
Email : AINA@GMAIL.COM
Password : SECUREPASS123
Account Status : ACTIVE

IC Number : 992323-03-9101
Account Holder : JOHNNY SUH
Account Number : 24680135792468
Account Type : PERSONAL
Account Balance : 81042.5
Contact Number : 0145678901
Email : JOHNNY@GMAIL.COM
Password : BLUESKY123
Account Status : ACTIVE

IC Number : 021212-02-5678
Account Holder : LEE HAECHAN
Account Number : 87654321098765
Account Type : PERSONAL
Account Balance : 94971.285
Contact Number : 0185372539
Email : HAECHAN@GMAIL.COM
Password : MOUNTAINVIEW22
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options
IC Number : 972323-03-9101
Account Holder : ARYAN MALEK
Account Number : 43210987654321
Account Type : PERSONAL
Account Balance : 7145.4225
Contact Number : 01674397685
Email : ARYAN@GMAIL.COM
Password : SILVERKEY$999
Account Status : ACTIVE

IC Number : 983434-04-1121
Account Holder : AZAM MUKHLIS
Account Number : 78901234567890
Account Type : PERSONAL
Account Balance : 10525.0
Contact Number : 0134789567
Email : AZAM@GMAIL.COM
Password : ADVENTURETIME22
Account Status : ACTIVE

IC Number : 994545-05-3141
Account Holder : NADIA RUSDI
Account Number : 87651234098765
Account Type : PERSONAL
Account Balance : 11577.5
Contact Number : 01128285678
Email : NADDYSUSHI@GMAIL.COM
Password : PURPLERAIN*678
Account Status : ACTIVE

IC Number : 033939-09-1225
Account Holder : NOAH
Account Number : 87650987609875
Account Type : PERSONAL
Account Balance : 47994.0
Contact Number : 01758395768
Email : NOAH@GMAIL.COM
Password : GREEN_APPLE
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options
IC Number : 045050-10-3246
Account Holder : AFGAN
Account Number : 11223344556677
Account Type : PERSONAL
Account Balance : 80937.25
Contact Number : 0165789473
Email : AGAN@GMAIL.COM
Password :P@ASSW0RD7
Account Status : ACTIVE

IC Number : 019574-14-0234
Account Holder : JENIFERRRR
Account Number : 23356483967483
Account Type : PERSONAL
Account Balance : 2105.0
Contact Number : 0127346958
Email : JENO@GMAIL.COM
Password :1108@JENO
Account Status : ACTIVE

IC Number : 016473-08-4748
Account Holder : HAKIM KHALID
Account Number : 83758394756396
Account Type : PERSONAL
Account Balance : 2420.75
Contact Number : 01126738293
Email : HAKIMMM@GMAIL.COM
Password :NC2Y67
Account Status : ACTIVE

IC Number : 040408000120
Account Holder : SITI EIL ZARA BINTI MOHD
Account Number : 12345678901234
Account Type : PERSONAL
Account Balance : 1052.5
Contact Number : 01131392934
Email : SITI04@GMAIL.COM
Password :IZZ123
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options
List of Accounts Type 'BUSINESS'
=====
IC Number : 991212-02-5600
Account Holder : ELLY ZAMRI
Account Number : 98765432109876
Account Type : BUSINESS
Account Balance : 63150.0
Contact Number : 0131234567
Email : ELY@GMAIL.COM
Password :COFFELOVER99
Account Status : ACTIVE

IC Number : 020161-01-1234
Account Holder : MARK LEE
Account Number : 50321679802134
Account Type : BUSINESS
Account Balance : 48076.095
Contact Number : 0125738296
Email : MORK@GMAIL.COM
Password :SECRETP@SS
Account Status : ACTIVE

IC Number : 022323-03-9101
Account Holder : IKMAL AMRY
Account Number : 13579024681357
Account Type : BUSINESS
Account Balance : 57887.5
Contact Number : 0185367329
Email : IKMAL@GMAIL.COM
Password :MOONLIGHT*789
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options
IC Number : 000606-06-5162
Account Holder : HAFIZAH RAHIM
Account Number : 98765432198765
Account Type : BUSINESS
Account Balance : 36732.25
Contact Number : 012347808
Email : JAH@GMAIL.COM
Password : FIREFLY_2026
Account Status : ACTIVE

IC Number : 011717-07-7183
Account Holder : ABDUL WAKEEL
Account Number : 98765432123456
Account Type : BUSINESS
Account Balance : 92514.75
Contact Number : 0174976024
Email : WAKEEL@GMAIL.COM
Password : COOLDUDE!45
Account Status : ACTIVE

IC Number : 022828-08-9204
Account Holder : RAYYAN AZHAR
Account Number : 54321678901234
Account Type : BUSINESS
Account Balance : 103881.75
Contact Number : 0154986308
Email : RAY@GMAIL.COM
Password : SUNSHINE&231
Account Status : ACTIVE

IC Number : 984757-08-4839
Account Holder : SITI AMIRAH
Account Number : 57385967583756
Account Type : BUSINESS
Account Balance : 5683.5
Contact Number : 0167328943
Email : MIRA@GMAIL.COM
Password : BRUNOMARD234
Account Status : ACTIVE
```

6. Calculate the total number of accounts that still exist in An Bank after removing an account status that is non-active accounts and display.

```
BlueJ: Terminal Window - User
Options
Total acc ounts in An Bank
=====

IC Number : 031215-14-5678
Account Holder : AINA RASHID
Account Number : 76420398157204
Account Type : PERSONAL
Account Balance : 21050.0
Contact Number : 0123456789
Email : AINA@GMAIL.COM
Password : SECUREPASS123
Account Status : ACTIVE

IC Number : 991212-02-5600
Account Holder : ELLY ZAMRI
Account Number : 98765432109876
Account Type : BUSINESS
Account Balance : 63150.0
Contact Number : 0131234567
Email : ELY@GMAIL.COM
Password : COFFELOVER99
Account Status : ACTIVE

IC Number : 992323-03-9101
Account Holder : JOHHNY SUH
Account Number : 24600135792468
Account Type : PERSONAL
Account Balance : 81042.5
Contact Number : 0145678901
Email : JOHHNY@GMAIL.COM
Password : BLUESKY123
Account Status : ACTIVE
```



```
BlueJ: Terminal Window - User
Options

IC Number : 020161-01-1234
Account Holder : MARK LEE
Account Number : 50321679802134
Account Type : BUSINESS
Account Balance : 48076.095
Contact Number : 0125738296
Email : MORK@GMAIL.COM
Password :SECRETPESS
Account Status : ACTIVE

IC Number : 021212-02-5678
Account Holder : LEE HAECHAN
Account Number : 87654321098765
Account Type : PERSONAL
Account Balance : 94971.285
Contact Number : 0185372539
Email : HAECHAN@GMAIL.COM
Password :MOUNTAINVIEW22
Account Status : ACTIVE

IC Number : 022323-03-9101
Account Holder : IKMAL AMRY
Account Number : 13579024681357
Account Type : BUSINESS
Account Balance : 57887.5
Contact Number : 0185367329
Email : IKMAL@GMAIL.COM
Password :MOONLIGHT*789
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 972323-03-9101
Account Holder : ARYAN MALEK
Account Number : 43210987654321
Account Type : PERSONAL
Account Balance : 7145.4225
Contact Number : 01674397685
Email : ARYAN@GMAIL.COM
Password :SILVERKEY$999
Account Status : ACTIVE

IC Number : 983434-04-1121
Account Holder : AZAM MUKHLIS
Account Number : 78901234567890
Account Type : PERSONAL
Account Balance : 10525.0
Contact Number : 0134789567
Email : AZAM@GMAIL.COM
Password :ADVENTURETIME22
Account Status : ACTIVE

IC Number : 994545-05-3141
Account Holder : NADIA RUSDI
Account Number : 87651234098765
Account Type : PERSONAL
Account Balance : 11577.5
Contact Number : 01128285678
Email : NADDYSUSHI@GMAIL.COM
Password :PURPLERAIN*678
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 000606-06-5162
Account Holder : HAFIZAH RAHIM
Account Number : 98765432198765
Account Type : BUSINESS
Account Balance : 36732.25
Contact Number : 012347808
Email : JAH@GMAIL.COM
Password : FIREFLY_2026
Account Status : ACTIVE

IC Number : 011717-07-7183
Account Holder : ABDUL WAKEEL
Account Number : 98765432123456
Account Type : BUSINESS
Account Balance : 92514.75
Contact Number : 0174976024
Email : WAKEEL@GMAIL.COM
Password : COOLDUDE!45
Account Status : ACTIVE

IC Number : 022828-08-9204
Account Holder : RAYYAN AZHAR
Account Number : 54321678901234
Account Type : BUSINESS
Account Balance : 103881.75
Contact Number : 0154986308
Email : RAY@GMAIL.COM
Password : SUNSHINE&231
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options

IC Number : 033939-09-1225
Account Holder : NOAH
Account Number : 87650987609875
Account Type : PERSONAL
Account Balance : 47994.0
Contact Number : 01758395768
Email : NOAH@GMAIL.COM
Password : GREEN_APPLE
Account Status : ACTIVE

IC Number : 045050-10-3246
Account Holder : AFGAN
Account Number : 11223344556677
Account Type : PERSONAL
Account Balance : 80937.25
Contact Number : 0165789473
Email : AGAN@GMAIL.COM
Password : P@ASSW0RD7
Account Status : ACTIVE

IC Number : 019574-14-0234
Account Holder : JENIFERRRR
Account Number : 23356483967483
Account Type : PERSONAL
Account Balance : 2105.0
Contact Number : 0127346958
Email : JENO@GMAIL.COM
Password : 1108@JENO
Account Status : ACTIVE
```

```
BlueJ: Terminal Window - User
Options
Account Status : ACTIVE

IC Number : 984757-08-4839
Account Holder : SITI AMIRAH
Account Number : 57385967583756
Account Type : BUSINESS
Account Balance : 5683.5
Contact Number : 0167328943
Email : MIRA@GMAIL.COM
Password :BRUNOMARD234
Account Status : ACTIVE

IC Number : 016473-08-4748
Account Holder : HAKIM KHALID
Account Number : 83758394756396
Account Type : PERSONAL
Account Balance : 2420.75
Contact Number : 01126738293
Email : HAKIMMM@GMAIL.COM
Password :NC2Y67
Account Status : ACTIVE

IC Number : 040408080120
Account Holder : SITI EIL ZARA BINTI MOHD
Account Number : 12345678901234
Account Type : PERSONAL
Account Balance : 1052.5
Contact Number : 01131392934
Email : SITI04@GMAIL.COM
Password :IZZ123
Account Status : ACTIVE

Total Account in ANBank:18
```


CONCLUSION

In our banking system, there is a clear preference for using queues over linked lists. It is because our banking system prioritises tasks through the use of queues. Queues naturally prioritise operate based on their arrival time by following to the FIFO (First in First Out) principle. This can be beneficial for our banking system because the oldest recorded data can appear first and be processed in the order it is received. It also uses queues for sequential data processing. Queues stick to a tight FIFO order, guaranteeing that user data is handled in the order in which it was entered. This is necessary in the banking system to keep the sequence of bank interactions with customers. Aside from that, the code effectively updates account balances each time the annual dividends is credited to their account through the use of queues, which implies that they are handled in the same order they were enqueued. This shows how a queue can handle temporary data storage during update operations, ensuring a smooth and organised update process. While linked lists keep their parts in a sequential sequence, traversing the list to find specific nodes or conduct operations increases complexity. Unlike queues, which provide easy front-to-back traversal, linked lists require iterating through nodes, which may reduce the efficiency of sequential processing.

References

NORMAH AHMAD, N. A. (n.d.). TEACHING AND LEARNING MODULE, FUNDAMENTALS OF DATA STRUCTURES .

https://youtu.be/A5_XdiK4J8A?si=BzS-l1SAKTbND5Be

<https://youtu.be/0w8kMqrtra4?si=mmUBCzhiCrCaxzdq>

https://youtu.be/C6KjYbAarYI?si=y2_Fnt1-rCftpRK