



*Green University of Bangladesh*

*Department of Computer Science and Engineering (CSE)  
Semester: (Spring, Year: 2023), B.Sc. in CSE (Day)*

---

## **Transaction System using Shell Script**

---

*Course Title: Operating System Lab  
Course Code: CSE 310  
Section: 203D3*

Students Details

<b>Name</b>	<b>ID</b>
Joy Pal	201002418

*Submission Date: 22nd June, 2023  
Course Teacher's Name: Md. Jahidul Islam*

[For teachers use only: **Don't write anything inside this box**]

<u>Lab Project Status</u>	
<b>Marks:</b>	<b>Signature:</b>
<b>Comments:</b>	<b>Date:</b>

# Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
1.1	Overview . . . . .	3
1.2	Motivation . . . . .	3
1.3	Problem Definition . . . . .	3
1.3.1	Problem Statement . . . . .	3
1.3.2	Complex Engineering Problem . . . . .	4
1.4	Design Goals/Objectives . . . . .	4
1.5	Application . . . . .	4
<b>2</b>	<b>Design/Development/Implementation of the Project</b>	<b>5</b>
2.1	Introduction . . . . .	5
2.2	Project Details . . . . .	5
2.3	Implementation . . . . .	5
2.3.1	Shell Scripting Code . . . . .	6
<b>3</b>	<b>Performance Evaluation</b>	<b>9</b>
3.1	Simulation Environment/ Simulation Procedure . . . . .	9
3.2	Results Analysis/Testing . . . . .	9
3.2.1	Start with security key . . . . .	10
3.2.2	Make a New Transaction . . . . .	10
3.2.3	Update a Transaction . . . . .	11
3.2.4	Remove a Transaction . . . . .	11
3.2.5	Display all Transaction . . . . .	12
3.2.6	Find a Transaction . . . . .	12
3.2.7	Exit . . . . .	12
<b>4</b>	<b>Conclusion</b>	<b>13</b>
4.1	Discussion . . . . .	13

4.2	Limitations . . . . .	13
4.3	Scope of Future Work . . . . .	13

# Chapter 1

## Introduction

### 1.1 Overview

Transaction system is a system software that helps the authorities to keep track of every transaction made by the students for different purposes like mid-term exams, final exams, registration, and others. This system is beneficial and very easy to use. This system can be used as a tool for any kind of transaction or payment management system. This system provides features like inserting records, deleting records, searching records, updating records, and displaying all the information. As it is a software-based product so it will help to remove the manual work and also will save time. This system is fully built at the administrative end thus only the authorities grant to access

### 1.2 Motivation

- Difficulties to make transactions for our payments at our university.
- Manual work takes too much time and sometimes mistakes have done so students and the authorities suffer.
- Difficult to keep track of every record manually.
- To build an automatic system which will reduce the manual work and save time and also important records.

### 1.3 Problem Definition

#### 1.3.1 Problem Statement

- The script should be able to create new transactions between different entities.
- This may involve prompting the user for input.
- It should be able to record each transaction.

- This script should be able to search the transaction records for specific transactions or groups of transactions.
- It should ensure that only authorized users can create or modify transactions and that the transaction records are secure from unauthorized access.

### 1.3.2 Complex Engineering Problem

Table 1.1: Summary of the attributes touched by the mentioned projects

Name of the P Attributes	Explain how to address
<b>P1:</b> Depth of knowledge required	shell scripting languages such as Bash or PowerShell are essential.
<b>P2:</b> Range of conflicting requirements	Security, Usability, Accuracy, Functionality, etc.
<b>P3:</b> Depth of analysis required	—
<b>P4:</b> Familiarity of issues	—
<b>P5:</b> Extent of applicable codes	—
<b>P6:</b> Extent of stakeholder involvement and conflicting requirements	—
<b>P7:</b> Interdependence	Interdependent with other systems, processes, and stakeholders within the organization.

## 1.4 Design Goals/Objectives

- Make the transaction system easy and safe.
- Replace the manual workforce with a computerized system.
- Reduce time and cost.
- To create a system that can automate the process of creating, recording, and querying transactions.

## 1.5 Application

- Green University Student Portal  
This student portal control by an admin, where students can make transactions, students can see their profile, result, exam routine, and so on.

## **Chapter 2**

# **Design/Development/Implementation of the Project**

### **2.1 Introduction**

In a transaction system, transactions are sets of operations that are executed as a single unit. A transaction system aims to ensure data integrity and consistency by providing a mechanism to group-related operations and guarantee their atomicity, consistency, isolation, and durability (ACID properties).

### **2.2 Project Details**

The system allows users to initiate, monitor, and manage transactions. It provides a user-friendly interface for creating, modifying, and deleting transactions.

The personnel of the institutions will benefit from the automated Transaction management system provided by this project. The employees at the school or institution can simply obtain any information pertaining to the student's transaction. To use this knowledge later, they can add to the software. The task of institution authorities will be significantly reduced and simplified by this project.

### **2.3 Implementation**

### 2.3.1 Shell Scripting Code

```
#!/bin/bash
echo -e "                                Welcome To The Transaction System                                "
echo -e "-----"
echo -e "....."
echo -e "\n"
while ;; do #while true condation
echo -e "Enter the security key"
read key
if [ $key -ne 2418 ];
then
    exit 1
else
while ;; do
echo -e "1) Make a new transection--"
echo -e "2) Update a transection--"
echo -e "3) Remove a transection--"
echo -e "4) Display all transections--"
echo -e "5) Find a transection--"
echo -e "6) Quite from the system"
echo -e "....."
echo -e "....."
echo -e "Now Enter your choice:-->"
read option
case $option in
1)
echo -e "To make a new transection please fillup this options"
echo -e "....."
echo -e "Enter a Student id: "
read sid # scaning student id
echo -e "Enter Department: "
read dept #scaning department
echo -e "Enter Student name: "
read snam #scaning student name
echo -e "Enter transection id: "
read tid # input transection number
echo -e "Enter phone number: "
read phn #input student phone number
echo -e "Enter amount"
read amount
echo -e "....."
echo -e "....."
echo -e "\n"
echo -e "Recipt is complete"
echo -e "....."
echo -e "....."
echo -e "Here is your transection detailes"
```

```

echo -e "....."
echo -e "....."
record="$sid\t\t$dept \t\t $snam \t\t$t\tid \t\t$phn \t\t$t$amount"
echo $record>>database
echo -e " "
;;
2)
echo -e "To modify a transection please fillup the option"
echo -e "....."
echo -e "....."
echo -e "Please enter the student id first"

read sid1
if [ $? -ne 0 ];
then
    echo -e "Student id does not match"
else
    echo -e "Enter Student id"
    read sid
    echo -e "Enter Department: "
    read dept
    echo -e "Enter Student name: "
    read snam
    echo -e "Enter Transection id"
    read tid
    echo -e "Enter phone number: "
    read phn
    echo -e "Enter amount: "
    read amount
    echo -e "....."
    echo -e "....."
    echo -e "Successfully updated."
    echo -e "....."
    echo -e "....."
    echo -e "Here is the detailes"
    echo -e "....."
    echo -e "....."
    record="$sid \t\t\t $dept \t\t\t $snam\t\t\t$t\tid \t\t\t$phn \t\t\t$t$amount"
    raj='grep -n ^$sid1 database | cut -c 4'
    echo $raj
    raj1='expr $raj - 4'
    head -$raj1 database>temp
    echo $record>>database
    raj3='wc -4 < lib'
    raj2='expr $raj3 - $raj '
    tail -$raj2 database>>temp
    cp temp database
fi

```



```

    echo -e " "
    ;;
3)
echo -e "To remove any record please fillup theforms"
echo -e "....."
echo -e "....."
echo -e "Please enter the Student id first: "
read sid
grep ^$sid database
if [ $? -ne 0 ];
then
    echo -e "Student ID does not matched"
else
    grep -v $sid database>>tempo
    cp tempo database
    echo -e "Succesfully Removed "
fi
;;
4)
echo -e "Here is the details of all transections"
echo -e "....."
echo -e "....."
echo -e "ID Dept Name TransectionId PhoneNumber Amount"
echo -e "....."
cat database
echo -e " "
;;
5)
echo -e "To search a information please insert Student id: "
read sid
echo -e "ID      Dept      Name      TransectionId  PhoneNumber      Amount"
echo -e "....."
grep ^$sid database
echo -e " "
;;
6)
exit 1
echo -e "Quite from the program"
;;
esac
done
    #Joy Pal
fi
done

```

# Chapter 3

## Performance Evaluation

### 3.1 Simulation Environment/ Simulation Procedure

To run this project I used an Ubuntu terminal. The required commands are shown below:

A screenshot of a Linux terminal window. The title bar shows a red icon and the text 'joy@JOY-DESKTOP-HB683C5: ~/Dell'. The terminal content shows the following commands and their outputs: 'cd Dell' is executed, changing the directory; 'ls' is executed, listing the contents of the 'Dell' directory as 'TS.sh', 'database', 'temp', and 'tempo'; and './TS.sh' is executed, running the script. The prompt changes from '~\$' to '~/Dell\$' after the first two commands.

```
joy@JOY-DESKTOP-HB683C5: ~/Dell
joy@JOY-DESKTOP-HB683C5:~$ cd Dell
joy@JOY-DESKTOP-HB683C5:~/Dell$ ls
TS.sh  database  temp  tempo
joy@JOY-DESKTOP-HB683C5:~/Dell$ ./TS.sh
```

Figure 3.1: Linux Commands to start the project

### 3.2 Results Analysis/Testing

The output of the features are given below :

### 3.2.1 Start with security key

After execute the project in terminal, that interface will see an user and user have to enter their security key.

```
joy@JOY-DESKTOP-HB683C5:~/Dell$ ./TS.sh
Welcome To The Transaction System
.....
Enter the security key
2418
1) Make a new transection--
2) Update a transection--
3) Remove a transection--
4) Display all transections--
5) Find a transection--
6) Quite from the system
.....
.....
```

Figure 3.2: Landing Interface

### 3.2.2 Make a New Transaction

To make a new transaction, user have to choose option 1 and they have to provide their information.

```
Now Enter your choice:-->
1
To make a new transection please fillup this options
.....
Enter a Student id:
201002418
Enter Department:
CSE
Enter Student name:
Joy Pal
Enter transection id:
201002418
Enter phone number:
01310320385
Enter amount
15999
.....
.....
Recipt is complete
.....
.....
```

Figure 3.3: Update Transaction

### 3.2.3 Update a Transaction

Admin can be able to update a transaction, if there is wrong information that user provide.

```
Now Enter your choice:-->
2
To modify a transection please fillup the option
.....
Please enter the student id first
201002418
Enter Student id
202002814
Enter Department:
EEE
Enter Student name:
Pal Joy
Enter Transection id
202002814
Enter phone number:
01310320385
Enter amount:
16000
.....
Successfully updated.
```

Figure 3.4: Update Transaction

### 3.2.4 Remove a Transaction

Admin can be able to remove a transaction record to enter option 3.

```
Now Enter your choice:-->
3
To remove any record please fillup the forms
.....
Please enter the Student id first:
201002418
201002418 \t\t CSE \t\t JOY \t\t 201002418 \t\t 01310320385 \t\t 10000
201002418 \t\t\t\t\t CSE \t\t\t\t\t Joy Pal \t\t\t\t\t 201002418 \t\t\t\t\t 01310320385 \t\t\t\t\t 15999
Sucessefully Removed
```

Figure 3.5: Remove Transaction

### 3.2.5 Display all Transaction

Here admin can be able to see all the transaction record.

```
Now Enter your choice:-->
4
Here is the details of all transections
.....
ID      Dept      Name      TransectionId  PhoneNumber  Amount
.....
201002418 \t\t CSE \t\t JOY \t\t 201002418 \t\t 01310320385 \t\t 10000
201002163 \t\t CSE \t\t Syed Abdullah \t\t 201002163 \t\t 012345678965 \t\t 5500
201002053 \t\t CSE \t\t Jakir \t\t 201002053 \t\t 0125469873 \t\t 9999
201001005 \t\t EEE \t\t Sammo \t\t 201001005 \t\t 0123684851 \t\t 11999
201002163 \t\t CSE \t\t Syed Abdullah \t\t 201002163 \t\t 012345678965 \t\t 5500
201002053 \t\t CSE \t\t Jakir \t\t 201002053 \t\t 0125469873 \t\t 9999
201001005 \t\t EEE \t\t Sammo \t\t 201001005 \t\t 0123684851 \t\t 11999
202002814 \t\t\t\t\t EEE \t\t\t\t\t Pal Joy \t\t\t\t\t 202002814 \t\t\t\t\t 01310320385 \t\t\t\t\t 16000
```

Figure 3.6: Display all Transaction

### 3.2.6 Find a Transaction

Here admin can see specific transactions records.

```
Now Enter your choice:-->
5
To search a information please insert Student id:
201002053
ID      Dept      Name      TransectionId  PhoneNumber
mount
.....
201002053 \t\t CSE \t\t Jakir \t\t 201002053 \t\t 0125469873 \t\t 9999
201002053 \t\t CSE \t\t Jakir \t\t 201002053 \t\t 0125469873 \t\t 9999
```

Figure 3.7: Search Transaction

### 3.2.7 Exit

To exit from this system , enter 6.

```
Now Enter your choice:-->
6
joy@JOY-DESKTOP-HB683C5:~/Dell$
```

Figure 3.8: Exit from the system

# **Chapter 4**

## **Conclusion**

### **4.1 Discussion**

The Transaction System provides a reliable and efficient solution for managing transactions within an organization. By ensuring data integrity, concurrency control, and transactional consistency, the system enables businesses to process transactions accurately, maintain a trustworthy database, and make informed decisions based on transactional data.

### **4.2 Limitations**

- The number of students in each record and the stated student details cannot be counted in this student information database.
- Because of the unfriendly user interface, accessing the student information database requires more than just rudimentary computer skills.

### **4.3 Scope of Future Work**

- Provide a general understanding of the transaction management system using the Bash Shell Scripting.
- Provide interface to this system to well understanding.
- User will be able to Log in via a system.
- User will have access to a variety of data, including their acceptance date and other crucial details.

# References

- developer.shell.com. (n.d.). Homepage | Shell Developer Portal. [online] Available at: <https://developer.shell.com/> [Accessed 22 Jun. 2023].
- GeeksforGeeks. (2023). Shell Script to Perform Database Operations. [online] Available at: <https://www.geeksforgeeks.org/shell-script-to-perform-database-operations/> [Accessed 22 Jun. 2023].