**NotesHub**

**(noteshub.co.in)**

**STQA Lab File**

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**EXPERIMENT – 1**

**AIM –**Consider an automated banking application. The user can dial the bank from a PC, provide a 6-digit password and follow with a series of keyword commands that activate the banking function. The software for the application accepts the data in the following form:

Area Code Blank/ 3-digit number

Prefix 3-digit number not beginning with 0 or 1

Suffix 4-digit number

Password 6-character alphanumeric

Commands checkstatus, deposit, withdrawal

Design adhoc test cases to test the system.

**Source Code-**

importjava.util.Scanner;

importjava.lang.String ;

public class Banking

{

static int balance = 0;

public static void check()

{

System.out.println("Current Balance = "+balance);

}

public static void withdraw()

{

System.out.print("Enter amount to be withdrawn : ");

Scanner sc = new Scanner(System.in);

intwd = sc.nextInt();

if(balance<wd)

{

System.out.println("Not Enough balance!!!");

}

else

{

balance -= wd;

System.out.println("Withdrawn Successfully");

}

}

public static void deposit()

{

System.out.print("Enter amount to be deposited : ");

Scanner sc = new Scanner(System.in);

intdep = sc.nextInt();

if(dep>=0)

{

balance += dep;

System.out.println("Amount deposited Successfully");

}

else

{

System.out.println("Enter positive amount ");

}

}

public static void main(String []args)

{

long pass = 123456;

String alphapass="";

System.out.print("Enter 6 digit password : ");

Scanner sc = new Scanner(System.in);

String abc = sc.nextLine();

longupass = Long.parseLong(abc);

if(pass!=upass)

{

System.out.println("Invalid Password ");

return ;

}

System.out.print("Enter Area Code : ");

String areacode = sc.nextLine();

if(!(areacode.equals("")||(areacode.length()==3)))

{

System.out.println("Invalid Area Code");

return;

}

System.out.print("Enter 3 digit Prefix : ");

String pre = sc.nextLine();

int prefix = Integer.parseInt(pre);

if(!(prefix/100>1&&prefix/1000==0))

{

System.out.println("Invalid Prefix");

return;

}

System.out.print("Enter 4 digit Suffix : ");

String suffix = sc.nextLine();

if(suffix.length()!=4)

{

System.out.println("Invalid Suffix");

return;

}

System.out.print("Enter 6 character alphanumeric Password : ");

alphapass = sc.nextLine();

if(alphapass.length()!=6)

{

System.out.println("Invalid Password");

return;

}

else if(alphapass.matches("[A-Za-z0-9]+")==false)

{

System.out.println("Password not alphanumeric");

return;

}

char ch;

do

{

System.out.print("Select Command : \n1.Check Status\n2.Deposit\n3.Withdraw\n");

int command = sc.nextInt();

switch(command)

{

case 1:check();

break;

case 2:deposit();

break;

case 3:withdraw();

break;

default:System.out.println("Choice not Available");

}

System.out.print("Do you wish to continue.(y/n) ? :");

ch = sc.next().charAt(0);

}

while(ch=='y'||ch=='Y');

}

}

**Test Cases-**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | | | | | **Expected Output** | **Actual Output** | **Result** |
| **Area Code** | **Prefix** | **Suffix** | **Password** | **Command** |
| 123 | 222 | 2323 | sdf@es | checkstatus | Invalid | Invalid | Invalid |
| 123 | 122 | 3232 | 3xfcsf | withdrawl | Invalid | Invalid | Invalid |
|  | 221 | 323 | dsd2ds | deposit | Invalid | Invalid | Invalid |
| 123 | 011 | 3332 | Dfd2ss | checkstatus | Invalid | Invalid | Invalid |
| 123 | 4567 | 2232 | vg77rg | deposit | Invalid | Invalid | Invalid |
| 123 | 523 | 43332 | Sdsssf | withdrawal | Invalid | Invalid | Invalid |
| 123 | 234 | 3456 | 32232 | withdrawl | Invalid | Invalid | Invalid |
| 123 | 23 | 3457 | Efrf1d | withdrawal | Invalid | Invalid | Invalid |
|  | 234 | 12ab | Sdsssd | deposit | Invalid | Invalid | Invalid |
| 012 | 345 | 2222 | abc12fa | withdrawal | Invalid | Invalid | Invalid |
| 97 | 345 | 2221 | abde12 | deposit | Invalid | Invalid | Invalid |
| 321 | 657 | 7865 | qwer34 | withdrawal | *Accepted* | *Accepted* | *Accepted* |
|  | 345 | 6565 | pswrd1 | checkstatus | *Accepted* | *Accepted* | *Accepted* |
| 123 | 234 | 3333 | Dfew3E | deposit | *Accepted* | *Accepted* | *Accepted* |
|  | 203 | 3562 | Asc4ls | deposit | *Accepted* | *Accepted* | *Accepted* |

**EXPERIMENT – 2**

**AIM -** To form the test cases using the following black box testing techniques

Simple BVA

**Problem Statement-**

Consider an automated banking application. The user can dial the bank from a PC, provide a 6-digit password and follow with a series of keyword commands that activate the banking function. The software for the application accepts the data.

**Test Cases-**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | | | | | **Expected Output** | **Actual Output** | **Result** |
| **Area Code** | **Prefix** | **Suffix** | **Password** | **Command** |
|  | 600 | 5500 | Dgd3gs | deposit | Valid | Valid | Valid |
| 100 | 600 | 5500 | Sna1d2 | checkstatus | Valid | Valid | Valid |
| 101 | 600 | 5500 | xhwd22 | withdrawal | Valid | Valid | Valid |
| 998 | 600 | 5500 | S32523 | checkstatus | Valid | Valid | Valid |
| 999 | 600 | 5500 | hgcr32 | deposit | Valid | Valid | Valid |
| 550 | 600 | 5500 | jkfdq3 | checkstatus | Valid | Valid | Valid |
| 550 | 200 | 5500 | wrwr23 | checkstatus | Valid | Valid | Valid |
| 550 | 201 | 5500 | 1asde4 | checkstatus | Valid | Valid | Valid |
| 550 | 998 | 5500 | Q2z4zd | withdrawal | Valid | Valid | Valid |
| 550 | 999 | 5500 | Zdds1t | checkstatus | Valid | Valid | Valid |
| 550 | 600 | 1000 | Yere0d | withdrawal | Valid | Valid | Valid |
| 550 | 600 | 1001 | Jds2es | checkstatus | Valid | Valid | Valid |
| 550 | 600 | 9998 | 232wdd | withdrawal | Valid | Valid | Valid |
| 550 | 600 | 9999 | Ab2dzs | checkstatus | Valid | Valid | Valid |

**EXPERIMENT – 3**

**AIM –**To form the test cases using the following black box testing techniques

Worst BVA

**Problem Statement-**

Consider an automated banking application. The user can dial the bank from a PC, provide a 6-digit password and follow with a series of keyword commands that activate the banking function. The software for the application accepts the data.

**Test Cases-**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | | | | | **Expected Output** | **Actual Output** | **Result** |
| **Area Code** | **Prefix** | **Suffix** | **Password** | **Command** |
| Blank | 200 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| Blank | 200 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| Blank | 200 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| Blank | 200 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| Blank | 200 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| Blank | 201 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| Blank | 201 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| Blank | 201 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| Blank | 201 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| Blank | 201 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| Blank | 600 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| Blank | 600 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| Blank | 600 | 5500 | Qazw3x | deposit | Valid | Valid | Valid |
| Blank | 600 | 9998 | Sfwq78 | withdrawal | Valid | Valid | Valid |
| Blank | 600 | 9999 | Abc5ef | checkstatus | Valid | Valid | Valid |
| Blank | 998 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| Blank | 998 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| Blank | 998 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| Blank | 998 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| Blank | 998 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| Blank | 999 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| Blank | 999 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| Blank | 999 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| Blank | 999 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| Blank | 999 | 9999 | Abc5ef | Withdrawal | Valid | Valid | Valid |
| 100 | 200 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 100 | 200 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 100 | 200 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 100 | 200 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 100 | 200 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 100 | 201 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 100 | 201 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 100 | 201 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 100 | 201 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 100 | 201 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 100 | 600 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 100 | 600 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 100 | 600 | 5500 | Qazw3x | deposit | Valid | Valid | Valid |
| 100 | 600 | 9998 | Sfwq78 | withdrawal | Valid | Valid | Valid |
| 100 | 600 | 9999 | Abc5ef | checkstatus | Valid | Valid | Valid |
| 100 | 998 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 100 | 998 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 100 | 998 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 100 | 998 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 100 | 998 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 100 | 999 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 100 | 999 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 100 | 999 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 100 | 999 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 100 | 999 | 9999 | Abc5ef | Withdrawal | Valid | Valid | Valid |
| 101 | 200 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 101 | 200 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 101 | 200 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 101 | 200 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 101 | 200 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 101 | 201 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 101 | 201 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 101 | 201 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 101 | 201 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 101 | 201 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 101 | 600 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 101 | 600 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 101 | 600 | 5500 | Qazw3x | deposit | Valid | Valid | Valid |
| 101 | 600 | 9998 | Sfwq78 | withdrawal | Valid | Valid | Valid |
| 101 | 600 | 9999 | Abc5ef | checkstatus | Valid | Valid | Valid |
| 101 | 998 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 101 | 998 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 101 | 998 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 101 | 998 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 101 | 998 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 101 | 999 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 101 | 999 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 101 | 999 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 101 | 999 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 101 | 999 | 9999 | Abc5ef | Withdrawal | Valid | Valid | Valid |
| 550 | 200 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 550 | 200 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 550 | 200 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 550 | 200 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 550 | 200 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 550 | 201 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 550 | 201 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 550 | 201 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 550 | 201 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 550 | 201 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 550 | 600 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 550 | 600 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 550 | 600 | 5500 | Qazw3x | deposit | Valid | Valid | Valid |
| 550 | 600 | 9998 | Sfwq78 | withdrawal | Valid | Valid | Valid |
| 550 | 600 | 9999 | Abc5ef | checkstatus | Valid | Valid | Valid |
| 550 | 998 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 550 | 998 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 550 | 998 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 550 | 998 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 550 | 998 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 550 | 999 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 550 | 999 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 550 | 999 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 550 | 999 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 550 | 999 | 9999 | Abc5ef | Withdrawal | Valid | Valid | Valid |
| 998 | 200 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 998 | 200 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 998 | 200 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 998 | 200 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 998 | 200 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 998 | 201 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 998 | 201 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 998 | 201 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 998 | 201 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 998 | 201 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 998 | 600 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 998 | 600 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 998 | 600 | 5500 | Qazw3x | deposit | Valid | Valid | Valid |
| 998 | 600 | 9998 | Sfwq78 | withdrawal | Valid | Valid | Valid |
| 998 | 600 | 9999 | Abc5ef | checkstatus | Valid | Valid | Valid |
| 998 | 998 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 998 | 998 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 998 | 998 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 998 | 998 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 998 | 998 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 998 | 999 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 998 | 999 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 998 | 999 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 998 | 999 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 998 | 999 | 9999 | Abc5ef | Withdrawal | Valid | Valid | Valid |
| 999 | 200 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 999 | 200 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 999 | 200 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 999 | 200 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 999 | 200 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 999 | 201 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 999 | 201 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 999 | 201 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 999 | 201 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 999 | 201 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 999 | 600 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 999 | 600 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 999 | 600 | 5500 | Qazw3x | deposit | Valid | Valid | Valid |
| 999 | 600 | 9998 | Sfwq78 | withdrawal | Valid | Valid | Valid |
| 999 | 600 | 9999 | Abc5ef | checkstatus | Valid | Valid | Valid |
| 999 | 998 | 1000 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 999 | 998 | 1001 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 999 | 998 | 5500 | Qazw3x | checkstatus | Valid | Valid | Valid |
| 999 | 998 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 999 | 998 | 9999 | Abc5ef | withdrawal | Valid | Valid | Valid |
| 999 | 999 | 1000 | Zx2vbn | withdrawal | Valid | Valid | Valid |
| 999 | 999 | 1001 | Zx2vbn | checkstatus | Valid | Valid | Valid |
| 999 | 999 | 5500 | Qazw3x | withdrawal | Valid | Valid | Valid |
| 999 | 999 | 9998 | Sfwq78 | deposit | Valid | Valid | Valid |
| 999 | 999 | 9999 | Abc5ef | Withdrawal | Valid | Valid | Valid |

**EXPERIMENT – 4**

**AIM –**To form the test cases using the following black box testing techniques

Robust BVA

**Problem Statement-**

Consider an automated banking application. The user can dial the bank from a PC, provide a 6-digit password and follow with a series of keyword commands that activate the banking function.

**Test Cases-**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | | | | | **Expected Output** | **Actual Output** | **Result** |
| **Area Code** | **Prefix** | **Suffix** | **Password** | **Command** |
|  | 600 | 5500 | Abd34s | Checkstatus | *Valid* | *Valid* | *Valid* |
| 099 | 600 | 5500 | Abddds | Checkstatus | Invalid | Invalid | Invalid |
| 100 | 600 | 5500 | Zsss22 | withdrawal | *Valid* | *Valid* | *Valid* |
| 101 | 600 | 5500 | Yup1op | Checkstatus | *Valid* | *Valid* | *Valid* |
| 550 | 600 | 5500 | Zsss22 | Deposit | *Valid* | *Valid* | *Valid* |
| 998 | 600 | 5500 | Abc1ef | withdrawal | *Valid* | *Valid* | *Valid* |
| 999 | 600 | 5500 | Zsss22 | Withdrawal | *Valid* | *Valid* | *Valid* |
| 1000 | 600 | 5500 | Ytre5q | checkstatus | Invalid | Invalid | Invalid |
| 550 | 199 | 5500 | Zsss22 | withdrawal | Invalid | Invalid | Invalid |
| 550 | 200 | 5500 | Zxc1bn | Deposit | *Valid* | *Valid* | *Valid* |
| 550 | 201 | 5500 | Zsss24 | withdrawal | *Valid* | *Valid* | *Valid* |
| 550 | 998 | 5500 | Jan4eb | checkstatus | *Valid* | *Valid* | *Valid* |
| 550 | 999 | 5500 | Zsss22 | Withdrawal | *Valid* | *Valid* | *Valid* |
| 550 | 1000 | 5500 | A56def | Deposit | Invalid | Invalid | Invalid |
| 550 | 600 | 999 | Zsss22 | Deposit | Invalid | Invalid | Invalid |
| 550 | 600 | 1000 | Abc34z | Checkstatus | *Valid* | *Valid* | *Valid* |
| 550 | 600 | 1001 | Zsss22 | withdrawal | *Valid* | *Valid* | *Valid* |
| 550 | 600 | 9998 | Y1234p | Checkstatus | *Valid* | *Valid* | *Valid* |
| 550 | 600 | 9999 | Zsss22 | Deposit | *Valid* | *Valid* | *Valid* |
| 550 | 600 | 10000 | Abcd2f | withdrawal | Invalid | Invalid | Invalid |

**EXPERIMENT – 5**

**AIM –**To form the test cases using the following black box testing techniques

Robust Worst BVA

**Problem Statement-**

Consider an automated banking application. The user can dial the bank from a PC, provide a 6-digit password and follow with a series of keyword commands that activate the banking function.

**Test Cases-**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | | | | | **Expected Output** | **Actual Output** | **Result** |
| **Area Code** | **Prefix** | **Suffix** | **Password** | **Command** |
|  | 199 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 199 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
|  | 199 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
|  | 199 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
|  | 199 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
|  | 199 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
|  | 199 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
|  | 200 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 200 | 1000 | Ftgy67 | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 200 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
|  | 200 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
|  | 200 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 200 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
|  | 200 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
|  | 201 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 201 | 1000 | Ftgy67 | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 201 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
|  | 201 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
|  | 201 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 201 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
|  | 201 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
|  | 600 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 600 | 1000 | Ftgy67 | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 600 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
|  | 600 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
|  | 600 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 600 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
|  | 600 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
|  | 998 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 998 | 1000 | Ftgy67 | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 998 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
|  | 998 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
|  | 998 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 998 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
|  | 998 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
|  | 999 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 999 | 1000 | Ftgy67 | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 999 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
|  | 999 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
|  | 999 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
|  | 999 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
|  | 999 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
|  | 1000 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 1000 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
|  | 1000 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
|  | 1000 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
|  | 1000 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
|  | 1000 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
|  | 1000 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 99 | 199 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 99 | 199 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 99 | 199 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 99 | 199 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 99 | 199 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 99 | 199 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 99 | 199 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 99 | 200 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 99 | 200 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 99 | 200 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 99 | 200 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 99 | 200 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 99 | 200 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 99 | 200 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 99 | 201 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 99 | 201 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 99 | 201 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 99 | 201 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 99 | 201 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 99 | 201 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 99 | 201 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 99 | 600 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 99 | 600 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 99 | 600 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 99 | 600 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
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| 99 | 998 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 99 | 998 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
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| 99 | 999 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
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| 99 | 999 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 99 | 999 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
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| 99 | 1000 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
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| 100 | 199 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
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| 100 | 200 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
| 100 | 200 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
| 100 | 200 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
| 100 | 200 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
| 100 | 200 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 100 | 201 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 100 | 201 | 1000 | Ftgy67 | Withdrawal | *Valid* | *Valid* | *Valid* |
| 100 | 201 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
| 100 | 201 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
| 100 | 201 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
| 100 | 201 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
| 100 | 201 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 100 | 600 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
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| 100 | 600 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
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| 101 | 999 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
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| 550 | 201 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
| 550 | 201 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
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| 550 | 999 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
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| 550 | 1000 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
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| 998 | 201 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
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| 998 | 600 | 9999 | 6f6vgh | Check Status | *Valid* | *Valid* | *Valid* |
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| 998 | 998 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
| 998 | 998 | 5500 | ftgyu3 | Deposit | *Valid* | *Valid* | *Valid* |
| 998 | 998 | 9998 | 678h9a | Withdrawal | *Valid* | *Valid* | *Valid* |
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| 999 | 998 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
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| 999 | 999 | 1001 | Hy78ga | Check Status | *Valid* | *Valid* | *Valid* |
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| 1000 | 200 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 200 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 200 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 1000 | 200 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 201 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 201 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 201 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 1000 | 201 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 201 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 201 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 1000 | 201 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 600 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 600 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 600 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 1000 | 600 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 600 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 600 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 1000 | 600 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 998 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 998 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 998 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 1000 | 998 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 998 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 998 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 1000 | 998 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 999 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 999 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 999 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 1000 | 999 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 999 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 999 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 1000 | 999 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 1000 | 999 | zsss22 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 1000 | 1000 | Ftgy67 | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 1000 | 1001 | Hy78ga | Check Status | Invalid | Invalid | Invalid |
| 1000 | 1000 | 5500 | ftgyu3 | Deposit | Invalid | Invalid | Invalid |
| 1000 | 1000 | 9998 | 678h9a | Withdrawal | Invalid | Invalid | Invalid |
| 1000 | 1000 | 9999 | 6f6vgh | Check Status | Invalid | Invalid | Invalid |
| 1000 | 1000 | 10000 | yurtf6 | Deposit | Invalid | Invalid | Invalid |

**EXPERIMENT – 6**

**AIM –**To form the test cases using the following black box testing techniques

Equivalence Class Testing

**Problem Statement-**

Consider an automated banking application. The user can dial the bank from a PC, provide a 6-digit password and follow with a series of keyword commands that activate the banking function

**Test Cases-**

I1 : { A:Blank & P:3-digit number not beginning with 1 & S:4-digit number }

I2 : { A:Blank & P:3-digit number beginning with 1 & S:4-digit number }

I3 : { A:3-digit number & P:3-digit number not beginning with 1 & S:4-digit number }

I4 : { A:3-digit number & P:3-digit number beginning with 1 & S:4-digit number }

I5 : { A:3-digit number & P:3-digit number & S<4-digit number }

I6 : { A:3-digit number & P:3-digit number & S>4-digit number }

I7 : { A:3-digit number & P<3-digit number & S:4-digit number }

I8 : { A:3-digit number & P<3-digit number & S<4-digit number }

I9 : { A:3-digit number & P<3-digit number & S>4-digit number }

I10 : { A:3-digit number & P>3-digit number & S:4-digit number }

I11 : { A:3-digit number & P>3-digit number & S<4-digit number }

I12 : { A:3-digit number & P>3-digit number & S>4-digit number }

I13 : { A<3-digit number & P:3-digit number & S:4-digit number }

I14 : { A<3-digit number & P:3-digit number & S<4-digit number }

I15 : { A<3-digit number & P:3-digit number & S>4-digit number }

I16 : { A<3-digit number & P<3-digit number & S:4-digit number }

I17 : { A<3-digit number & P<3-digit number & S<4-digit number }

I18 : { A<3-digit number & P<3-digit number & S>4-digit number }

I19 : { A<3-digit number & P>3-digit number & S:4-digit number }

I20 : { A<3-digit number & P>3-digit number & S<4-digit number }

I21 : { A<3-digit number & P>3-digit number & S>4-digit number }

I22 : { A>3-digit number & P:3-digit number & S:4-digit number }

I23 : { A>3-digit number & P:3-digit number & S<4-digit number }

I24 : { A>3-digit number & P:3-digit number & S>4-digit number }

I25 : { A>3-digit number & P<3-digit number & S:4-digit number }

I26 : { A>3-digit number & P<3-digit number & S<4-digit number }

I27 : { A>3-digit number & P<3-digit number & S>4-digit number }

I28 : { A>3-digit number & P>3-digit number & S:4-digit number }

I29 : { A>3-digit number & P>3-digit number & S<4-digit number }

I30 : { A>3-digit number & P>3-digit number & S>4-digit number }

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | | | | | **Expected Output** | **Actual Output** | **Result** |
| **Area Code** | **Prefix** | **Suffix** | **Password** | **Command** |
|  | 211 | 2121 | Zsss22 | Deposit | *Valid* | *Valid* | *Valid* |
|  | 111 | 2121 | ftuy78 | Withdrawal | Invalid | Invalid | Invalid |
| 454 | 556 | 6566 | Abd5ds | Deposit | *Valid* | *Valid* | *Valid* |
| 454 | 156 | 6566 | aghy7s | Withdrawal | Invalid | Invalid | Invalid |
| 454 | 143 | 500 | Zsss22 | Check status | Invalid | Invalid | Invalid |
| 454 | 143 | 99985 | Yup23p | Withdrawal | Invalid | Invalid | Invalid |
| 454 | 34 | 1322 | Zsss22 | Check status | Invalid | Invalid | Invalid |
| 454 | 23 | 500 | Ab77ef | Deposit | Invalid | Invalid | Invalid |
| 454 | 90 | 97889 | Zsss22 | Withdrawal | Invalid | Invalid | Invalid |
| 454 | 3333 | 1322 | Y2re7q | Withdrawal | Invalid | Invalid | Invalid |
| 454 | 3233 | 978 | Zsss22 | Check status | Invalid | Invalid | Invalid |
| 454 | 3233 | 13222 | zxc0bn | Check status | Invalid | Invalid | Invalid |
| 9 | 323 | 5000 | Zsss22 | Withdrawal | Invalid | Invalid | Invalid |
| 9 | 299 | 500 | Jan4eb | Check status | Invalid | Invalid | Invalid |
| 9 | 299 | 97845 | Zsss22 | Deposit | Invalid | Invalid | Invalid |
|  | 29 | 1323 | Zsss22 | Withdrawal | Invalid | Invalid | Invalid |
|  | 10 | 500 | ab18ds | Deposit | Invalid | Invalid | Invalid |
|  | 10 | 97856 | Zsss22 | Check status | Invalid | Invalid | Invalid |
| 67 | 1033 | 1322 | yu67op | Withdrawal | Invalid | Invalid | Invalid |
| 67 | 3233 | 978 | Zsss22 | Check status | Invalid | Invalid | Invalid |
| 67 | 3233 | 13222 | ab12ef | Withdrawal | Invalid | Invalid | Invalid |
| 5689 | 323 | 5000 | Zsss22 | Deposit | Invalid | Invalid | Invalid |
| 5689 | 299 | 500 | ytr6wq | Withdrawal | Invalid | Invalid | Invalid |
| 5689 | 299 | 97823 | Zsss22 | Check status | Invalid | Invalid | Invalid |
| 5689 | 19 | 1322 | zxc945 | Deposit | Invalid | Invalid | Invalid |
| 5689 | 10 | 500 | Zsss22 | Withdrawal | Invalid | Invalid | Invalid |
| 5689 | 10 | 97856 | j34561 | Withdrawal | Invalid | Invalid | Invalid |
| 5689 | 1033 | 1322 | Zsss22 | Check status | Invalid | Invalid | Invalid |
| 5689 | 3233 | 978 | Zsss22 | Withdrawal | Invalid | Invalid | Invalid |
| 5689 | 3233 | 13222 | a66dds | Deposit | Invalid | Invalid | Invalid |

**EXPERIMENT – 7**

**AIM –**To generate the test cases to test the valid & invalid numbers.

**Problem Statement-**

Consider an application that is required to validate a number according to the following simple rules:-

1. A number can start with an optional sign.

2. The optional sign can be followed by any no. of digits.

3. The digits can be optionally followed by a decimal point, represented by a period.

4. If there is a decimal point, then there should be two digits after the decimal.

5. Any number whether or not it has a decimal point, should be terminated by a blank.

Generate the test cases & find out if the given number is valid or invalid using Cause-Effect Graph

**Source Code-**

#include<iostream>

using namespace std;

int main()

{

intnum[20],x=-1;

printf("Enter the number : ");

do

num[++x]=(int)getchar();

while(num[x]!=32);

if ((!(num[0]==43 || num[0]==45 || (num[0]>47 &&num[0]<58)))||(x+1>20))

{

err:

printf("\nInvalid number supplied as input");

goto z;

}

if((num[1]==46)&&((num[0]<48 || x>57)||(x+1!=5)))

goto err;

for(int i=1;i<x;i++)

{

if((num[i]<48 || num[i]>57)&&(!(num[i]==46 && (x+1==i+4))))

goto err;

}

if(num[x]!=32)

goto err;

printf("\nEntered number is valid");

z: ;

return 1;

}

**Decision Table-**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Stubs** | **R1** | **R2** | **R3** | **R4** | **R5** | **R6** | **R7** | **R8** | **R9** | **R10** |
| **C1** | T | T | T | T | T | F | F | F | F | F |
| **C2** | T | F | F | F | F | T | T | T | T | F |
| **C3** | \_ | T | T | T | F | T | T | T | F | - |
| **C4** | \_ | T | T | F | - | T | T | F | - | - |
| **C5** | \_ | T | F | - | - | T | F | - | - | - |
| **Rule Count** | 8 | 1 | 1 | 2 | 4 | 1 | 1 | 2 | 4 | 8 |
| **e1** |  | X |  | X |  | X |  | X |  |  |
| **e2** |  |  | X |  | X |  | X |  | X |  |
| **e3** | X |  |  |  |  |  |  |  |  | X |

**Cause and Effect Graph-**

The causes are:-

C1: Number starting with a digit

C2: Number starting with an optional sign

C3: Number terminated by a blank

C4: Occurrence of decimal point

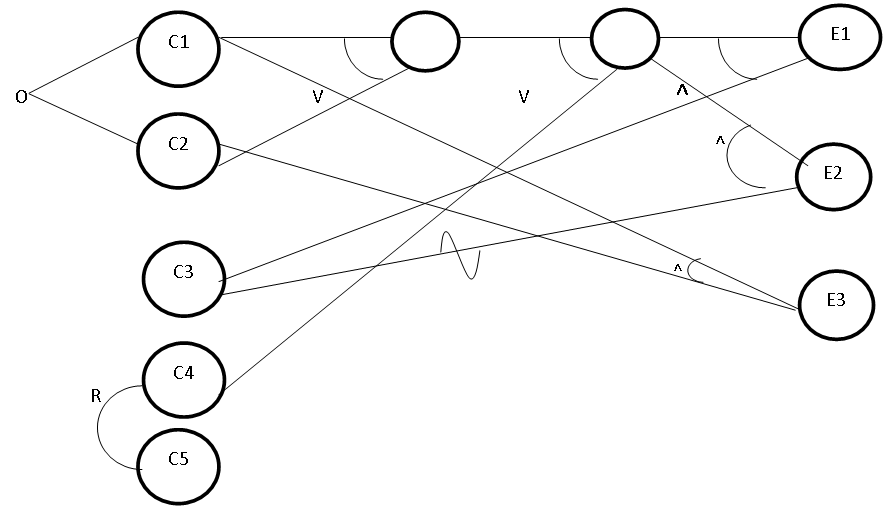
C5: Following of minimum 2 digits

The effects are:-

e1: Valid number

e2: Invalid number

e3: Impossible



**Test Cases-**

|  |  |  |  |
| --- | --- | --- | --- |
| **Number** | **Expected Output** | **Actual Output** | **Result** |
| 22.4786\_ | Valid | Valid | Valid |
| 523.2\_ | Invalid | Invalid | Invalid |
| 92232\_ | Valid | Valid | Valid |
| 344435 | Invalid | Invalid | Invalid |
| +555.26\_ | Valid | Valid | Valid |
| -26567 | Invalid | Invalid | Invalid |
| +34593\_ | Valid | Valid | Valid |
| -256.6\_ | Invalid | Invalid | Invalid |

**EXPERIMENT – 8**

**AIM –**Study of Selenium – an open source testing tool.

***INTRODUCTION***

**Selenium** is a portable [software-testing](https://en.wikipedia.org/wiki/Software_testing) [framework](https://en.wikipedia.org/wiki/Software_framework) for [web applications](https://en.wikipedia.org/wiki/Web_application). Selenium provides a playback (formerly also recording) tool for authoring tests without the need to learn a test [scripting language](https://en.wikipedia.org/wiki/Scripting_language) (Selenium IDE). It also provides a test [domain-specific language](https://en.wikipedia.org/wiki/Domain-specific_language)(Selenese) to write tests in a number of popular programming languages, including [C#](https://en.wikipedia.org/wiki/C_Sharp_(programming_language)), [Groovy](https://en.wikipedia.org/wiki/Groovy_(programming_language)), [Java](https://en.wikipedia.org/wiki/Java_(software_platform)), [Perl](https://en.wikipedia.org/wiki/Perl), [PHP](https://en.wikipedia.org/wiki/PHP), [Python](https://en.wikipedia.org/wiki/Python_(programming_language)), [Ruby](https://en.wikipedia.org/wiki/Ruby_(programming_language)) and [Scala](https://en.wikipedia.org/wiki/Scala_(programming_language)). The tests can then run against most modern [web browsers](https://en.wikipedia.org/wiki/Web_browser). Selenium deploys on [Windows](https://en.wikipedia.org/wiki/Microsoft_Windows), [Linux](https://en.wikipedia.org/wiki/Linux), and [OS X](https://en.wikipedia.org/wiki/OS_X) platforms. It is [open-source software](https://en.wikipedia.org/wiki/Open-source_software), released under the [Apache 2.0 license](https://en.wikipedia.org/wiki/Apache_License): web developers can download and use it without charge.

***HISTORY***

Selenium was originally developed by Jason Huggins in 2004 as an internal tool at [ThoughtWorks](https://en.wikipedia.org/wiki/ThoughtWorks" \o "ThoughtWorks). Huggins was later joined by other programmers and testers at ThoughtWorks, before Paul Hammant joined the team and steered the development of the second mode of operation that would later become "Selenium Remote Control" (RC). The tool was open sourced that year.

In 2005 Dan Fabulich and Nelson Sproul (with help from Pat Lightbody) made an offer to accept a series of patches that would transform Selenium-RC into what it became best known for. In the same meeting, the steering of Selenium as a project would continue as a committee, with Huggins and Hammant being the ThoughtWorks representatives.

In 2007, Huggins joined Google. Together with others like Jennifer Bevan, he continued with the development and stabilization of Selenium RC. At the same time, Simon Stewart at ThoughtWorks developed a superior browser automation tool called WebDriver. In 2009, after a meeting between the developers at the Google Test Automation Conference, it was decided to merge the two projects, and call the new project Selenium WebDriver, or Selenium 2.0.

In 2008, Philippe Hanrigou (then at ThoughtWorks) made "Selenium Grid", which provides a hub allowing the running of multiple Selenium tests concurrently on any number of local or remote systems, thus minimizing test execution time. Grid offered, as open source, a similar capability to the internal/private Google cloud for Selenium RC. Pat Lightbody had already made a private cloud for "HostedQA" which he went on to sell to Gomez, Inc.

The name Selenium comes from a joke made by Huggins in an email, mocking a competitor named [Mercury](https://en.wikipedia.org/wiki/Mercury_Interactive), saying that you can cure mercury poisoning by taking selenium supplements. The others that received the email took the name and ran with it.

***COMPONENTS***

Selenium is composed of several components with each taking on a specific role in aiding the development of web application test automation.

### Selenium IDE

Selenium IDE is a complete [integrated development environment](https://en.wikipedia.org/wiki/Integrated_development_environment) (IDE) for Selenium tests. It is implemented as a [Firefox Add-On](https://en.wikipedia.org/wiki/Add-on_(Mozilla)), and allows recording, editing, and debugging tests. It was previously known as Selenium Recorder. Selenium-IDE was originally created by Shinya Kasatani and donated to the Selenium project in 2006. It is little-maintained and is compatible with Selenium RC, which was deprecated.

Scripts may be automatically recorded and edited manually providing [autocompletion](https://en.wikipedia.org/wiki/Autocomplete) support and the ability to move commands around quickly. Scripts are recorded in *Selenese*, a special test scripting language for Selenium. Selenese provides commands for performing actions in a browser (click a link, select an option), and for retrieving data from the resulting pages.

The Selenium IDE for Firefox stopped working after the Firefox 55 upgrade and will be no longer maintained.

### Selenium client API

As an alternative to writing tests in Selenese, tests can also be written in various programming languages. These tests then communicate with Selenium by calling methods in the Selenium Client API. Selenium currently provides client APIs for [Java](https://en.wikipedia.org/wiki/Java_(programming_language)), [C#](https://en.wikipedia.org/wiki/C_Sharp_(programming_language)), [Ruby](https://en.wikipedia.org/wiki/Ruby_(programming_language)), [JavaScript](https://en.wikipedia.org/wiki/JavaScript) and [Python](https://en.wikipedia.org/wiki/Python_(programming_language)).

With Selenium 2, a new Client API was introduced (with *WebDriver* as its central component). However, the old API (using class *Selenium*) is still supported.

### SeleniumWebDriver

Selenium WebDriver is the successor to Selenium RC. Selenium WebDriver accepts commands (sent in Selenese, or via a Client API) and sends them to a browser. This is implemented through a browser-specific browser driver, which sends commands to a browser, and retrieves results. Most browser drivers actually launch and access a browser application (such as [Firefox](https://en.wikipedia.org/wiki/Firefox), [Chrome](https://en.wikipedia.org/wiki/Google_Chrome), [Internet Explorer](https://en.wikipedia.org/wiki/Internet_Explorer), or [Microsoft Edge](https://en.wikipedia.org/wiki/Microsoft_Edge)); there is also an [HtmlUnit](https://en.wikipedia.org/wiki/HtmlUnit" \o "HtmlUnit) browser driver, which simulates a browser using HtmlUnit.

Unlike in Selenium 1, where the Selenium server was necessary to run tests, Selenium WebDriver does not need a special server to execute tests. Instead, the WebDriver directly starts a browser instance and controls it. However, Selenium Grid can be used with WebDriver to execute tests on remote systems (see below). Where possible, WebDriver uses native operating system level functionality rather than browser-based JavaScript commands to drive the browser. This bypasses problems with subtle differences between native and JavaScript commands, including security restrictions.[[5]](https://en.wikipedia.org/wiki/Selenium_(software)#cite_note-5)

In practice, this means that the Selenium 2.0 API has significantly fewer calls than does the Selenium 1.0 API. Where Selenium 1.0 attempted to provide a rich interface for many different browser operations, Selenium 2.0 aims to provide a basic set of building blocks from which developers can create their own [Domain Specific Language](https://en.wikipedia.org/wiki/Domain_Specific_Language). One such DSL already exists: the [Watir](https://en.wikipedia.org/wiki/Watir" \o "Watir) project in the Ruby language has a rich history of good design. Watir-webdriver implements the Watir API as a wrapper for Selenium-Webdriver in Ruby. Watir-webdriver is created entirely automatically, based on the WebDriver specification and the HTML specification.

As of early 2012, Simon Stewart (inventor of WebDriver), who was then with Google and now with Facebook, and David Burns of Mozilla were negotiating with the [W3C](https://en.wikipedia.org/wiki/W3C) to make WebDriver an internet standard. In July 2012, the working draft was released. Selenium-Webdriver (Selenium 2.0) is fully implemented and supported in [Python](https://en.wikipedia.org/wiki/Python_(programming_language)), [Ruby](https://en.wikipedia.org/wiki/Ruby_(programming_language)), [Java](https://en.wikipedia.org/wiki/Java_(programming_language)), and [C#](https://en.wikipedia.org/wiki/C_Sharp_(programming_language)).

#### Selenium Remote Control

Selenium Remote Control (RC) is a server, written in [Java](https://en.wikipedia.org/wiki/Java_(programming_language)), that accepts commands for the browser via [HTTP](https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol). RC makes it possible to write automated tests for a web application in any programming language, which allows for better integration of Selenium in existing unit test frameworks. To make writing tests easier, Selenium project currently provides client drivers for [PHP](https://en.wikipedia.org/wiki/PHP), [Python](https://en.wikipedia.org/wiki/Python_(programming_language)), [Ruby](https://en.wikipedia.org/wiki/Ruby_(programming_language)), [.NET](https://en.wikipedia.org/wiki/.NET_Framework), [Perl](https://en.wikipedia.org/wiki/Perl) and [Java](https://en.wikipedia.org/wiki/Java_(programming_language)). The Java driver can also be used with [JavaScript](https://en.wikipedia.org/wiki/JavaScript) (via the [Rhino](https://en.wikipedia.org/wiki/Rhino_(JavaScript_engine)) engine). An instance of selenium RC server is needed to launch html test case - which means that the port should be different for each parallel run. However, for Java/PHP test case only one Selenium RC instance needs to be running continuously.

Selenium Remote Control was a refactoring of Driven Selenium or Selenium B designed by Paul Hammant, credited with Jason as co-creator of Selenium. The original version directly launched a process for the browser in question, from the test language of Java, .Net, Python or Ruby. The wire protocol (called 'Selenese' in its day) was reimplemented in each language port. After the refactor by Dan Fabulich, and Nelson Sproul (with help from Pat Lightbody) there was an intermediate daemon process between the driving test script, and the browser. The benefits included the ability to drive remote browsers, and the reduced need to port every line of code to an increasingly growing set of languages. *Selenium Remote Control* completely took over from the Driven Selenium code-line in 2006. The browser pattern for 'Driven'/'B' and 'RC' was response/request, which subsequently became known as [Comet](https://en.wikipedia.org/wiki/Comet_(programming)).

With the release of Selenium 2, Selenium RC has been officially deprecated in favor of Selenium WebDriver.

### Selenium Grid

Selenium Grid is a server that allows tests to use web browser instances running on remote machines. With Selenium Grid, one server acts as the hub. Tests contact the hub to obtain access to browser instances. The hub has a list of servers that provide access to browser instances (WebDriver nodes), and lets tests use these instances. Selenium Grid allows running tests in parallel on multiple machines, and to manage different browser versions and browser configurations centrally (instead of in each individual test).

The ability to run tests on remote browser instances is useful to spread the load of testing across several machines, and to run tests in browsers running on different platforms or operating systems. The latter is particularly useful in cases where not all browsers to be used for testing can run on the same platform.

**EXPERIMENT – 9**

**AIM –**Generate test cases using Black box testing technique to Calculate Standard Deduction on Taxable Income

The standard deduction is higher for tax payers who are 65 or older or blind.

Use the method given below to calculate tax.

1. The first factor that determines the standard deduction is the filing status. The basic standard deduction for the various filing status are:

Single $4,750

Married, filing a joint return $9,500

Married, filing a separate return $7,000

1. If a married couple is filing separate returns and one spouse is not taking standard deduction, the other spouse also is not eligible for standard deduction.
2. An additional $1,000 is allowed as standard deduction, if either the filer is 65 yrs or the spouse is 65 yrs or older (the latter case applicable when the filing status is “married” and filing “joint”).
3. An additional $1,000 is allowed as standard deduction, if either the filer is blind or the spouse is blind (the latter case applicable when the filing status is “married” and filing “joint”).

Black box testing is a method of software testing that examines the functionality of an application without peering into its internal structures or workings. This method of can be applied to virtually every level of software testing unit, integration, system and acceptance.

**Test Case Scenarios:**

Standard deduction : higher for tax payers who are 65 or older or blind

AGE

|  |  |
| --- | --- |
| MIN=MAX | 65 |
| MIN-1 | 64 |
| MAX+1 | 66 |

BLIND

|  |  |
| --- | --- |
| MIN=MAX | 4750 |
| MIN-1 | 4749 |
| MAX+1 | 4751 |

Test case 1:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Blind | Accepted |

Analysis : No defect. Test case 1 can be closed.

Test case 2:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| 65 | Accepted |

Analysis : No defect. Test case 2 can be closed.

Test case 3:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| 60 | Rejected |

Analysis : No defect. Test case 3 can be closed.

Single : $4750

Test case 1:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $4750 | Accepted |

Analysis : No defect. Test case 1 can be closed.

Test case 2:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $4749 | Rejected |

Analysis : No defect. Test case 2 can be closed.

Test case 3:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $4751 | Rejected |

Analysis: No defect. Test case 3 can be closed.

Joint – Return : $9500

Test case 1:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $9500 | Accepted |

Analysis : No defect. Test case 1 can be closed.

Test case 2:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $9599 | Rejected |

Analysis : No defect. Test case 2 can be closed.

Test case 3:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $523 | Rejected |

Analysis: No defect. Test case 3 can be closed.

Separate – Return : $7000

Test case 1:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $7000 | Accepted |

Analysis : No defect. Test case 1 can be closed.

Test case 2:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $7023 | Rejected |

Analysis : No defect. Test case 2 can be closed.

Test case 3:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| $5067 | Rejected |

Analysis: No defect. Test case 3 can be closed.

RULE 2 : If a couple is filing separate tax returns and one spouse is not taking standard deduction, the other spouse is also not eligible for standard deduction.

|  |  |
| --- | --- |
| MAX | Both |
| MIN | One |

Test case 1:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Both | Accepted |

Analysis : No defect. Test case 1 can be closed.

Test case 2:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Spouse one (wife) | Rejected |

Analysis : No defect. Test case 2 can be closed.

Test case 3:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Spouse one (husband) | Rejected |

Analysis: No defect. Test case 3 can be closed.

RULE 3 : $1000 additional standard deduction is allowed, if either the filer is 65 years or the spouse is 65 years or older (the latter is applicable when the filing status is “married” and filing “joint”).

|  |  |
| --- | --- |
| MIN=MAX | 65 |
| MIN-1 | 64 |
| MAX+1 | 66 |

Test case 1:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| 70 | Accepted |

Analysis : No defect. Test case 1 can be closed.

Test case 2:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Spouse one age is 65 | Rejected |

Analysis : No defect. Test case 2 can be closed.

Test case 3:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Both spouses aged 63 | Rejected |

Analysis: No defect. Test case 3 can be closed.

RULE 4 : $1000 additional standard deduction is allowed, if either the filer is blind or the spouse is blind (the latter is applicable when the filing status is “married” and filing “joint”).

|  |  |
| --- | --- |
| MIN=MAX | 2 |
| MIN-1 | 1 |

Test case 1:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Both blind | Accepted |

Analysis : No defect. Test case 1 can be closed.

Test case 2:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Filer is blind | Rejected |

Analysis : No defect. Test case 2 can be closed.

Test case 3:

|  |  |
| --- | --- |
| INPUT | EXPECTED OUTPUT |
| Both are not blind | Rejected |

Analysis: No defect. Test case 3 can be closed.

**EXPERIMENT – 10**

**AIM –**Consider the following program segment:

1. int max (int i, int j, int k)

2. {

3. int max;

4. if (i>j) then

5. if (i>k) then max=i;

6. else max=k;

7. else if (j > k) max=j

8. else max=k

9. return (max);

10. }

a) Draw the control flow graph for this program segment

b) Determine the cyclomatic complexity for this program

c) Determine the independent paths

Control Flow Graph

1

10

9

6

5

8

7

4

3

2

Cyclomatic Complexity

Here, N=10 and E=12

Therefore, cyclomatic complexity = E-N+2 = 12 – 10 + 2 = 4

Independent Paths

Path 1

1->2->3->4->5->9

Path 2

1->2->3->4->5->6->9

Path 3

1->2->3->4->7->8->9

Path 4

1->2->3->4->5->7->8->9

**EXPERIMENT – 11**

**AIM –**Source code of simple insertion sort implementation using array in ascending order in c programming language

#include<stdio.h>

int main(){

1. inti,j,s,temp,a[20];

2. printf("Enter total elements: ");

3. scanf("%d",&s);

4. printf("Enter %d elements: ",s);

5. for(i=0;i<s;i++)

6. scanf("%d",&a[i]);

7. for(i=1;i<s;i++){

8. temp=a[i];

9. j=i-1;

10. while((temp<a[j])&&(j>=0)){

11. a[j+1]=a[j];

12. j=j-1;}

13. a[j+1]=temp;}

14. printf("After sorting: ");

15. for(i=0;i<s;i++)

16. printf(" %d",a[i]);

17. return 0;

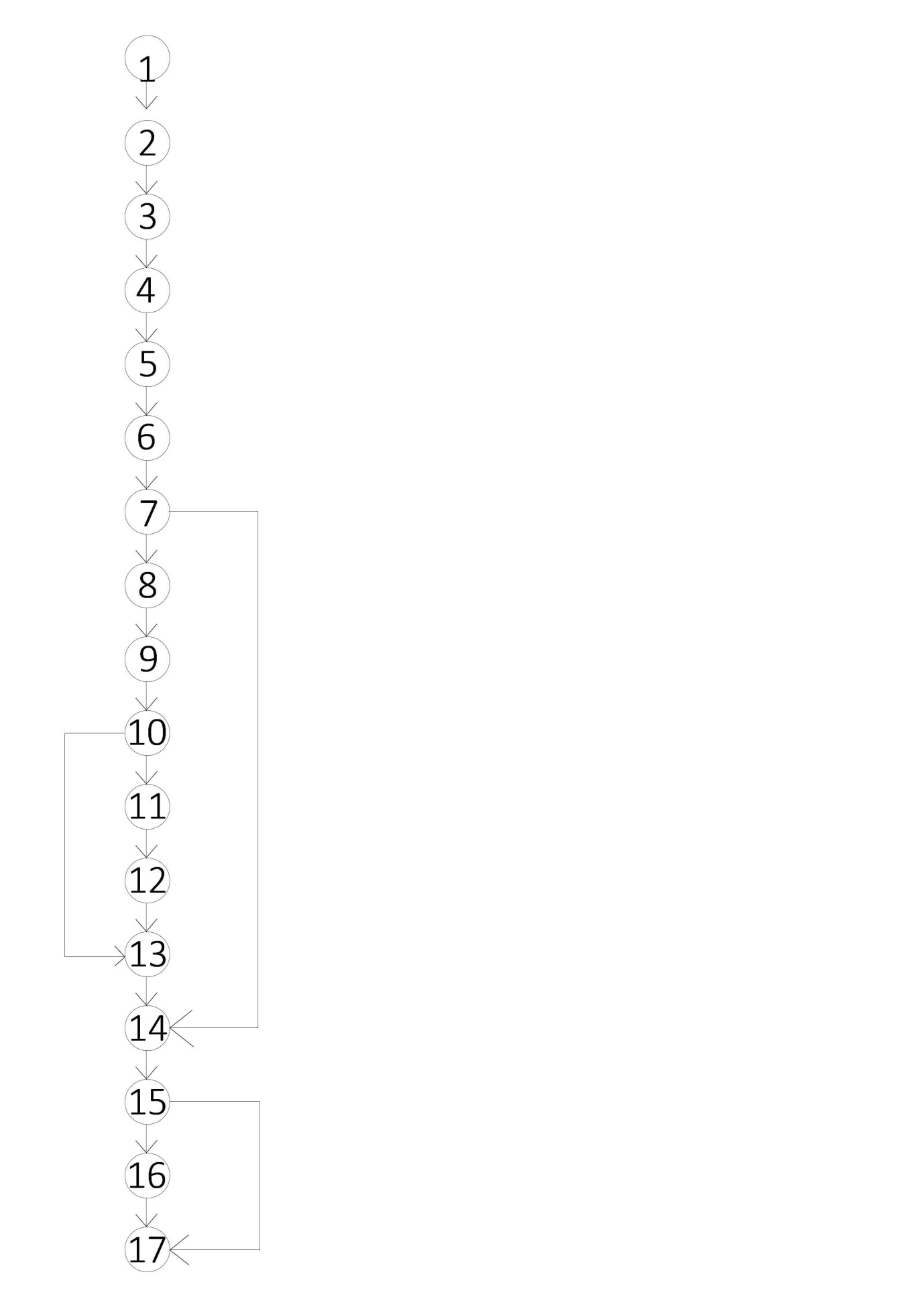
}

a) Draw the program graph for given program segment

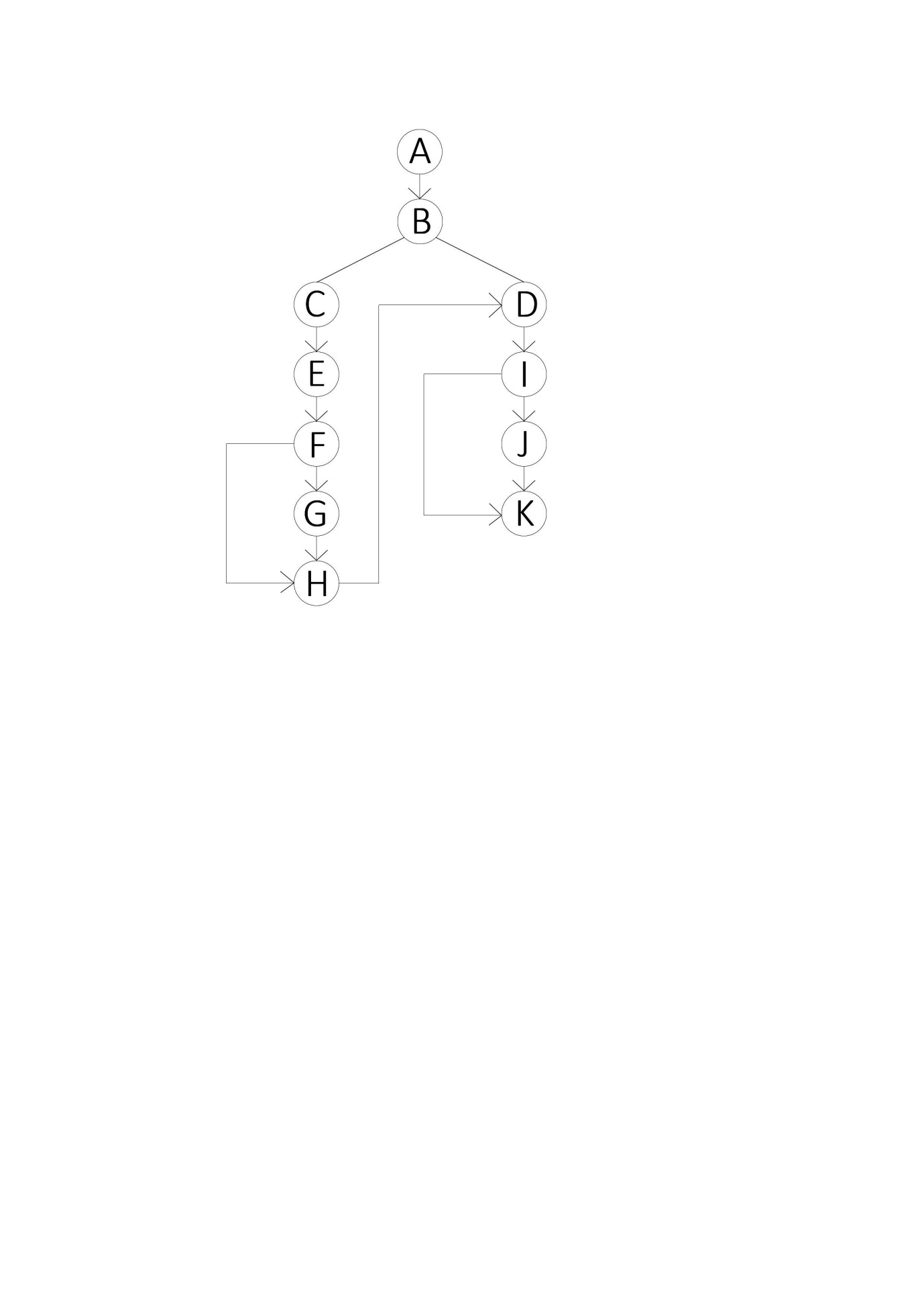
b) Determine the DD path graph

c) Determine the independent paths

Program Graph



DD Path Graph



Independent Paths

Path 1

ABDIJK

Path 2

ABCEFGDIJK

Path 3

ABCEFGDIK

Path 4

ABCFHDIJK

**EXPERIMENT – 12**

**AIM –**Consider a program to input two numbers and print them in ascending order given below.Find all du paths and identify those du-paths that are not feasible. Also find all dc paths and generatethe testcases for all paths (dc paths and non dc paths).

#include<stdio.h>

#include<conio.h>

1.void main()

2.{

3 inta,b,t;

4. clrscr();

5.printf(“Enter first number”);

6. scanf(“%d”,&a);

7. printf(“Enter second number”);

8.scanf(“%d”,&b);

9.if(a<b){

10. t=a;

11a=b;

12 b=t;

13}

14.printf(“%d %d”,a,b);

15 getch();

}

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | VARIABLES | DEFINED AT NODE | USED AT NODE |
| 1. | a | 6,11 | 9,10,14 |
| 2. | b | 8,12 | 9,11,14 |
| 3. | t | 10 | 12 |

All Du Paths

|  |  |  |
| --- | --- | --- |
| S. No. | VARIABLES | Du – PATH (begin, end) |
| 1. | a | 6-9, 6-10, 6-14, 11-14 |
| 2. | b | 8-9, 8-11, 8-14, 11-14 |
| 3. | t | 10-12 |

Dc Not Clear – 6-14, 8-14

Test Cases :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | a | b | t | EXPECTED OUTPUT | ACTUAL OUTPUT |
| 1. | 2 | 1 | - | - | - |
| 2. | 1 | 2 | 1 | - | - |
| 3. | 1 | 2 | 1 | 2 1 | 2 1 |
| 4. | 4 | 5 | 4 | 5 4 | 5 4 |
| 5. | 6 | 5 | - | - | - |
| 6. | 8 | 9 | 8 | - | - |
| 7. | 3 | 4 | 3 | 4 3 | 4 3 |
| 8. | 4 | 5 | 4 | 5 4 | 5 4 |
| 9. | 4 | 5 | 4 | - | - |

**EXPERIMENT – 13**

**AIM –**Consider the program in the previous experiment and generate possible program slices for all variables. Design at least one test case from every slice.

PROGRAM SLICES :

1. S(a,6)🡪1-6, 16

2. S(a,11)🡪1-11, 13, 16

3. S(a,14)🡪1-14, 16

4. S(b,8)🡪1-8, 16

5. S(b,12)🡪1-12, 13, 16

6. S(b,14)🡪1-14, 16

7. S(t,10)🡪 1-10, 13, 16

Test Cases :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | a | b | t | EXPECTED OUTPUT | ACTUAL OUTPUT |
| 1. | 5 | - | - | - | - |
| 2. | 5 | 10 | 5 | - | - |
| 3. | 5 | 10 | 5 | 10 5 | 10 5 |
| 4. | 15 | 25 | - | - | - |
| 5. | 15 | 25 | 15 | - | - |
| 6. | 15 | 25 | 15 | 25 15 | 25 15 |
| 7. | 25 | 35 | 25 | - | - |

**EXPERIMENT – 14**

**AIM –**Consider the code to arrange the nos. in ascending order. Generate the test cases for relational coverage, loop coverage and path testing. Check the adequacy of the test cases through mutation testing and also compute the mutation score for each.

i = 0;

n=4; //N-Number of nodes present in the graph

while (i<n-1) do

j = i + 1;

while (j<n) do

if A[i]<A[j] then

swap(A[i], A[j]);

end do;

i=i+1; end do;

|  |  |  |  |
| --- | --- | --- | --- |
| MUTANT No. | LINE No. | ORIGINAL LINE | MODIFIED LINE |
| M1 | 3 | while(i<n-1) | while(i=n-1) |
| M2 | 5 | while(j<n) | while(j=n) |
| M3 | 6 | if(A[i]<A[j]) | if(A[i]>A[j]) |
| M4 | 3 | while(i<n-1) | while(i<=n-1) |
| M5 | 5 | while(j<n) | while(j<=n) |

ORIGINAL TEST CASE :

|  |  |  |  |
| --- | --- | --- | --- |
| S. No. | BEFORE SWAPPING | (EXPECTED) AFTER SWAPPING | (ACTUAL) AFTER SWAPPING |
| 1. | 5, 4, 6, 1 | 1, 4, 5, 6 | 1, 4, 5, 6 |
| 2. | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 |
| 3. | 2, 3, 4, 1 | 1, 2, 3, 4 | 1, 2, 3, 4 |

MUTATION TESTING TEST CASES :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S. No. | MUTANT No. | BEFORE SWAPPING | (EXPECTED) AFTER SWAPPING | (ACTUAL) AFTER SWAPPING |
| 1. | M1 | 5, 4, 6, 1 | 1, 4, 5, 6 | 5, 4, 6, 1 |
| 2. | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 |
| 3. | 2, 3, 4, 1 | 1, 2, 3, 4 | 2, 3, 4, 1 |
| 1. | M2 | 5, 4, 6, 1 | 1, 4, 5, 6 | 5, 4, 6, 1 |
| 2. | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 |
| 3. | 2, 3, 4, 1 | 1, 2, 3, 4 | 2, 3, 4, 1 |
| 1. | M3 | 5, 4, 6, 1 | 1, 4, 5, 6 | 6, 5, 4, 1 |
| 2. | 1, 2, 3, 4 | 1, 2, 3, 4 | 4, 3, 2, 1 |
| 3. | 2, 3, 4, 1 | 1, 2, 3, 4 | 4, 3, 2, 1 |
| 1. | M4 | 5, 4, 6, 1 | 1, 4, 5, 6 | 1, 4, 5, 6 |
| 2. | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 |
| 3. | 2, 3, 4, 1 | 1, 2, 3, 4 | 1, 2, 3, 4 |
| 1. | M5 | 5, 4, 6, 1 | 1, 4, 5, 6 | 1, 4, 5, 6 |
| 2. | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 |
| 3. | 2, 3, 4, 1 | 1, 2, 3, 4 | 1, 2, 3, 4 |

**EXPERIMENT – 15**

**AIM –**Create a test plan document for Hospital Management System.

Name of  Product : Hospital Management System Test Plan

Prepared by: Ms. Anureet Kaur Bhatia

Reviewed by : Ms. VedanshiVashisht                        Date : …… / ….. /…..

———————————————————————

**1] Introduction -:**  
It is a computerized management system for Employees, Doctors (consultants), Nurses, Patients, Bills and report

**2] Scope -:**  
It can be used in any Hospital, Clinic, Dispensary or Pathology labs for maintaining patient details and their test results.

**3] Hardware Requirement -:**  
– Min 10 GB Hard Disk  
– Min 512mb RAM  
– Dual-Core Processor  
– Monitor

**4] Environment Requirement -:**  
Hardware: Dual Core or above machines  
Software: Microsoft Windows XP installed

**5] Testing Strategies -:**

**A] Unit testing -:**  
Definition -: Test individual unit of HMS  
Tested by -:Developer  
Methodology -: Test individual unit of HMS

**B] Integration and System Testing -:**  
Definition -: Integration testing test two or more than two integrated models  
System testing test functional and non functional user requirement.  
Tester by -: Tester  
Methodology -: It is used for integrated model, functional and non functional user requirement.

**C] Performance Testing -:**  
Definition -: It measure performance / response under critical, load and stress condition  
Tested by -: Tester  
Methodology -: Measure performance under critical, stress and load system

**D] Regression Testing -:**  
Definition -: Used to uncover new errors in existing functionality after changes have been made.  
Tested by -: Tester  
Methodology -: Test system response after functional enhancements in existing system.

**6] Test Schedule -:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | PARTICULARS | START TIME | END TIME | ACTUAL START TIME | ACTUAL END TIME |
| 1. | Login |  |  |  |  |
| 2. | Bill |  |  |  |  |

**7] Resource & Roles/Responsibilities -:**

|  |  |  |
| --- | --- | --- |
| S. No. | RESOURCE | REPONSIBILTY |
| 1. | Vishal | Designer |
| 2. | Kamlesh | Developer |

**8] Features to be Tested -:**  
– GUI test  
– Database test  
– Basic operations: add/update/delete/view/search query records in each table  
– Advanced operations: start/stop, backup, recover the database  
– Check-in and Check-out Patient  
– Bill

**9] Control Procedures -:**  
Database not working properly – Changed database from one DB to other  
Network is jam – We Change our Network Broadband  
Poorly documented modules – Appoint Skill person and make Schedule to Complete that module

**10] Risk and Mitigation -:**  
I] Reassigned Developer, staff in limited staff to avoid pending Work  
II] Keep battery or generator back up to avoid light problem

**11] Tools -:**  
– QTP  
– Selenium

**12] Approval -:**  
1. Mr. John  
2. Mr. Kumar