

Assignment#3

Case Study



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# Case Study: Online Clinic workflow:

# Introduction:

This system will be designed to improve clinical workflow. It will connect patient and clinic online. Nowadays no one has time to visit clinic and wait for appointment. This system will help for getting online appointments. Patient can get appointment through Internet.

The purpose of this document is to provide patients this facility that they can get appointment from their home. They do not have to visit clinic just to get appointment. Everyone is busy now a days, no one has time to visit clinic for appointment. As well as patient’s medical history will be saved on this system so every time when patient visit doctor so he/she does not have to bring medical report along or doctor does not have to check B.P or weight etc. The software includes maintaining patient details, provide prescriptions, precautions and diet advice. Providing and maintaining all kinds of tests for a patient.

This system will reduce patient and doctor’s work. Patient doesn’t have to visit hospital to get appointment. It will save a lot of time.

# Functions:

## void Login (String username, String pin);

This function verifies the username and pin entered by the user. And if the username and pin does not match with the username and pin stored in the database then he will have to re-enter the username and pin till he enters the correct username and password.

## void getAppointment (String name, Date date);

In this function the user will request for appointment. He will enter date for that appointment. Then the appointment will be reserved for the specific date.

## void registerPatient (String name, String pin, String mobile);

This function allows user to register himself in the system. He will have to enter name, pin and mobile. Then he will get registered in the system.

# Black box Testing:

## Worst BVA:

### Function 1:

Total cases = 5 ^ 1 = 5

Min: 0

Min+1: 1

Normal: 50000

Max -1: 99998

Max: 99999

|  |  |  |
| --- | --- | --- |
| **Case** | **pin** | **Expected output** |
| 1 | 0 | Invalid |
| 2 | 24324 | Valid |
| 3 | 34643 | Valid |
| 4 | 59786 | Valid |
| 5 | 99999 | Invalid |

### Function 2:

Total cases = 5 ^ 1 = 5

Min: a

Min + 1: b

Normal: h

Max-1: y

Max: z

|  |  |  |
| --- | --- | --- |
| **Case** | **name** | **Expected output** |
| 1 | Hamza | Valid |
| 2 | Fahad | Valid |
| 3 | a | Invalid |
| 4 | Ali | Valid |
| 5 | z | Invalid |

### Function 3:

**Input values of name:**

Min: a

Min + 1: b

Normal: h

Max-1: y

Max: z

**Input values of pin:**

Min: 0

Min+1: 1

Normal: 50000

Max -1: 99998

Max: 99999

**Input values of email:**

Min: a

Min + 1: b

Normal: h

Max-1: y

Max: z

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Case | name | pin | email | Expected output |
| 1 | Ali | 00000 | Bse301053@cust.pk | Invalid |
| 2 | Ali | 00001 | Bse301053@cust.pk | Valid |
| 3 | Ali | 00002 | Bse301053@cust.pk | Valid |
| 4 | Ali | 00003 | Bse301053@cust.pk | Valid |
| 5 | Ali | 00005 | Bse301053@cust.pk | Valid |
| 6 | Ali | 00006 | Bse301053@cust.pk | Valid |
| 7 | Ali | 00007 | Bse301053@cust.pk | Valid |
| 8 | Ali | 00008 | Bse301053@cust.pk | Valid |
| 9 | Ali | 00009 | Bse301053@cust.pk | Valid |
| 10 | Ali | 000010 | Bse301053@cust.pk | Valid |
| 11 | Ali | 00011 | Bse301053@cust.pk | Valid |
| 12 | Ali | 00012 | Bse301053@cust.pk | Valid |
| 13 | Ali | 00013 | Bse301053@cust.pk | Valid |
| 14 | Ali | 00014 | Bse301053@cust.pk | Valid |
| 15 | Ali | 00015 | Bse301053@cust.pk | Valid |
| 16 | Ali | 00016 | Bse301053@cust.pk | Valid |
| 17 | Ali | 00017 | Bse301053@cust.pk | Valid |
| 18 | Ali | 00018 | Bse301053@cust.pk | Valid |
| 19 | Ali | 00019 | Bse301053@cust.pk | Valid |
| 20 | Ali | 00020 | Bse301053@cust.pk | Valid |
| 21 | Ali | 00021 | Bse301053@cust.pk | Valid |
| 22 | Ali | 00022 | Bse301053@cust.pk | Valid |
| 23 | Ali | 00023 | Bse301053@cust.pk | Valid |
| 24 | Ali | 00024 | Bse301053@cust.pk | Valid |
| 25 | Ali | 00025 | Bse301053@cust.pk | Valid |
| 26 | Hamza | 00026 | Bse181053@cust.pk | Valid |
| 27 | Hamza | 00027 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 28 | Hamza | 00028 | [Bse181053@cust.pk](mailto:Bse181056@cust.pk) | Valid |
| 29 | Hamza | 00029 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 30 | Hamza | 00030 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 31 | Hamza | 00031 | [Bse181053@cust.pk](mailto:Bse181056@cust.pk) | Valid |
| 32 | Hamza | 00032 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 33 | Hamza | 12300 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 34 | Hamza | 12311 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 35 | Hamza | 12323 | [Bse181053@cust.pk](mailto:Bse181056@cust.pk) | Valid |
| 36 | Hamza | 12367 | [Bse181053@cust.pk](mailto:Bse181056@cust.pk) | Valid |
| 37 | Hamza | 12343 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 38 | Hamza | 12327 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 39 | Hamza | 34560 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 40 | Hamza | 34561 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 41 | Hamza | 34562 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 42 | Hamza | 34563 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 43 | Hamza | 34564 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 44 | Hamza | 34565 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 45 | Hamza | 34566 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 46 | Hamza | 34567 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 47 | Hamza | 34568 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 48 | Hamza | 34569 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 49 | Hamza | 34510 | [Bse181053@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 50 | Hamza | 67800 | Bse181053@cust.pk | Valid |
| 51 | Fahad | 67890 | Bse181056@cust.pk | Valid |
| 52 | Fahad | 67891 | [Bse181056@cust.pk](mailto:Bse181056@cust.pk) | Valid |
| 53 | Fahad | 67892 | [Bse181056@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 54 | Fahad | 67893 | [Bse181056@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 55 | Fahad | 67894 | [Bse181056@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 56 | Fahad | 67895 | Bse181056@cust.pk | Valid |
| 57 | Fahad | 67896 | [Bse181056@cust.pk](mailto:Bse181053@cust.pk) | Valid |
| 58 | Fahad | 67897 | [Bse181056@cust.pk](mailto:Bse181056@cust.pk) | Valid |
| 59 | Fahad | 67897 | Bse181056@cust.pk | Valid |
| 60 | Fahad | 99999 | Bse181056@cust.pk | Invalid |

**Strong Robust Equivalence:**

## Function 1: void Login (String username, String pin);

Pin>=0 and Pin<=99999

Test cases are:

(-1,55555,100000)

## Function 2: void getAppointment (String name, Date date);

NameLength>=5 and <=10

Test cases are:

(Ham, Shahzad, RajaFarhanaa)

## Function 3: void registerPatient (String name, String pin, String mobile);

1) Pin>=0 and Pin<=99999

Test cases are:

(-1,55555,100000)

2) NameLength>=5 and <=10

Test cases are:

(Ham, Shahzad, RajaFarhanaa)

3) Mobile number >= 0 and <= 11

Test cases are:

(-1,6,12)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| case | Pin | Name | Mobile | Output |
| 1 | -1 | Ham | -1 | Invalid |
| 2 | -1 | Shahzad | 6 | Invalid |
| 3 | -1 | RajaFarhanaa | 12 | Invalid |
| 4 | -1 | RajaFarhanaa | -1 | Invalid |
| 5 | 55555 | Faha | 6 | Invalid |
| 6 | 55555 | Ham | 12 | Invalid |
| 7 | 55555 | RajaFarhanaa | -1 | Invalid |
| 8 | 55555 | Fahad | 6 | valid |
| 9 | 99999 | Hamza | 12 | valid |
| 10 | 100000 | RajaFarhan | 1 | valid |
| 11 | 100000 | Faha | 6 | Invalid |
| 12 | 100000 | Hamza | 12 | Invalid |

Function 1 Requirements:

## Function 1: void Login (String username, String pin);

If username is less than 5 words and pin is less than 9 words then user will not get login in the system.

If username is greater 5 words and pin is equal to 8 words then user will get login into the system.

If username is greater than 5 words and less than 9 words then user will get login into the system.

If pin is greater than 5 words and less than 9 words then user will get login into the system.

If username is less than 9 words and pin is greater than 8 words then user will not get login into the system.

# Causes/Effects:

C1: username<5

C2: pin<9

C3: username>5

C4: pin=8

C5: username>5

C6: pin>5

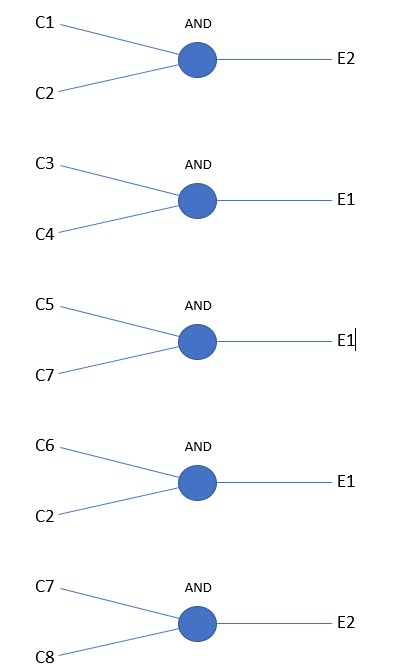
C7: username<9

C8: pin>8

E1: Login

E2: not Login

## Graph



## Decision Table

|  |  |
| --- | --- |
| Conditions/Effects | 1 2 3 4 5 |
| C1: username<5 | 1 0 0 0 0 |
| C2: pin<9 | 1 0 0 1 0 |
| C3: username>5 | 0 1 1 0 0 |
| C4: pin=8 | 0 1 0 0 0 |
| C5: username>5 | 0 0 1 0 0 |
| C6: pin>5 | 0 0 0 1 0 |
| C7: username<9 | 0 0 0 0 1 |
| C8: pin>8 | 0 0 0 0 1 |
| E1: Login | 0 1 1 1 0 |
| E2: Not Login | 1 0 0 0 1 |

## BVA Test Cases:

Pin: 8,9,10,11,12

Username: 5,6,7,8,9

Testcases: (10,5) (10,6) (10,7) (10,8) (10,9) (7,8) (7,9) (7,11) (7,12)

|  |  |  |  |
| --- | --- | --- | --- |
| Testcases | username | pin | Expected Output |
| 1 | 5 | 10 | Valid |
| 2 | 6 | 10 | Valid |
| 3 | 7 | 10 | Valid |
| 4 | 8 | 10 | Valid |
| 5 | 9 | 10 | Valid |
| 6 | 8 | 7 | Valid |
| 7 | 9 | 7 | Valid |
| 8 | 11 | 7 | Valid |
| 9 | 12 | 7 | Valid |

# Reason to use BVA:

We used BVA because of small number of test cases.

# Function 2 Requirements:

## Function 2: void getAppointment (String name, Date date);

If name is not valid then patient will not get appointment.

If name is valid then patient will get appointment.

# Causes/Effects:

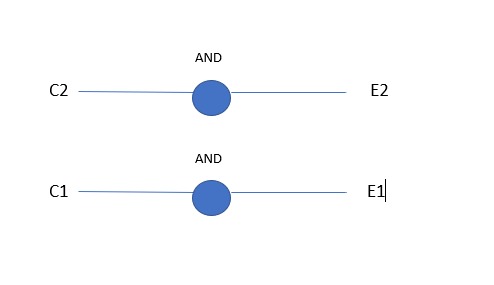
C1: username= valid

C2: username is not valid

E1: get Appointment

E2: not get Appointment

## Graph



## Decision Table

|  |  |
| --- | --- |
| Conditions/Effects | 0 1 |
| C1: username= valid | 1 0 |
| C2: username is not valid | 0 1 |
| E1: get Appointment | 1 0 |
| E2: not get Appointment | 0 1 |

## BVA Test Cases:

Username: 3,4,6,7,8

|  |  |  |
| --- | --- | --- |
| Testcases | Username | Expected Output |
| 1 | 3 | Valid |
| 2 | 4 | Valid |
| 3 | 6 | Valid |
| 4 | 7 | Valid |
| 5 | 8 | Valid |

# Function 3 Requirements:

## Function 3: void registerPatient (String name, String pin, String mobile);

If name is less than 5 words and pin is less than 9 words then patient will not get registered.

If name is greater than 5 words and pin is less than 9 words then patient will get registered.

If name is greater than 5 words and pin is less than 5 words then patient not will get registered.

If name is greater than 8 words and pin is less than 9 words then patient will get not registered.

If name is greater than 8 words and pin is greater than 9 words then patient will not get registered.

If name is greater than 5 words and less than 8 words then patient will get registered.

If pin is greater than 5 words and less than 9 words then patient will get registered.

If name is greater than 5 words and pin is greater than 5 words then patient will get registered.

# Causes/Effects:

C1: name<5

C2: name>5

C3: name<8

C4: name>8

C5: pin<9

C6: pin>9

C7: pin>5

C8: pin<5

E1: get Registered

E2: not get Registered

## Graph

C1 AND

E2

C5

C2 AND

E1

C4

C2 AND

E2

C8

C4 AND

E2

C5

C4 AND

E2

C5

C2 AND

E1

C3

C7 AND

E1

C5

C2 AND

E1

C7

## Decision Table

|  |  |
| --- | --- |
| Conditions/Effects | 0 1 2 4 5 6 7 8 |
| C1: name<5 | 1 0 0 0 0 0 0 0 |
| C2: name>5 | 0 1 1 0 0 1 0 1 |
| C3: name<8 | 0 0 0 0 0 1 0 0 |
| C4: name>8 | 0 0 0 1 1 0 0 0 |
| C5: pin<9 | 1 1 0 1 0 0 1 0 |
| C6: pin>9 | 0 0 0 0 1 0 0 0 |
| C7: pin>5 | 0 0 0 0 0 0 1 1 |
| C8: pin<5 | 0 0 1 0 0 0 0 0 |
| E1: get Registered | 0 1 0 0 0 1 1 1 |
| E2: not get Registered | 1 0 1 1 1 0 0 0 |

## BVA Test Cases:

username Length= {4,5,6, 7, 8}

pin Length= {8,9,11,12,13}

Testcases: (6,8) (6,9) (6,11) (6,12) (6,13) (4,11) (5,11) (7,11) (8,11)

|  |  |  |  |
| --- | --- | --- | --- |
| Testcases | Username | Pin | Expected Output |
| 1 | 6 | 8 | Valid |
| 2 | 6 | 9 | Valid |
| 3 | 6 | 11 | Valid |
| 4 | 6 | 12 | Valid |
| 5 | 6 | 13 | Valid |
| 6 | 4 | 11 | Valid |
| 7 | 5 | 11 | Valid |
| 8 | 7 | 11 | Valid |
| 9 | 8 | 11 | Valid |