**Software Quality Engineering**

**Assignment # 1 & 2**

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**Github link:** https://github.com/minahilx/SQE

**Section # 1**

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# 

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# CASE STUDY

**Hospital Management System**

Taking care of our Health is the most prior thing in our lives and there is always in times of needs when our health is at risk and due to some reason we could not reach to clinics immediately and sometimes due to our hectic schedule we could not just go the clinic and waiting long queue just to take an appointment for the check up so we need some automated system which should be reliable, fast and accurate which should be there for us in times of needs

Hospital Management System is aimed to maintain the day-to-day state of admission/discharge of patients, a list of doctor's reports generation, etc.

This system will be designed to improve clinical workflow, and perform advanced appointment scheduling. This application will connect clinics and patient online through web based application. Now days no one has time to visit clinic and wait for appointment. This application will help for getting online appointment. Patient can get appointment through SMS or Internet.

Receptionist will manage all the appointment. Doctors can make their schedule according to patient’s appointments, which should not be more than 10 in a day and not less than 3**.** Patient can see online how many people are waiting queue for appointment. Doctor will upload all the patient medical history on website. This information is will be visible to the patient and the visiting Doctors only to maintain the privacy with help of provided their own personal login system which they have to provide their name which should not more 20 alphabet character but not less than 6, password which should contain 6 characters at least but no more than 10 and contact number with 15 digit but no less than 7 digit. As patient and clinic will be connected online, if a patient gets transferred from one clinic to another clinic, visited clinics doctor can see medical history of that patient and personal information of patient using the portal. It will be a waiting room solution. Patient can pay the doctor’s bill through online payment system, which will be starting, from PRs.300 to PRs. 3000 according to patient treatment. Once the payment has been made, a receipt is provided to the patient, which includes what services provided and their respective costs that have been paid for.

Importance of web-based application is increasing day by day, it is important to manage all the healthcare data online. Now everyone has Internet connection and it is easy to use web application. This application will reduce the work of patient as well as doctor. Doctor does not need to take patient’s initial description such as weight, patient’s blood group repeatedly, because all this information will be entered at the time of registration of patient on website. Doctor will automatically see patient’s information. There is no more hardware required for patient and doctor. Efficient appointment schedules will reduce patient waiting time while keeping doctor’s idle time as low as possible without adding extra resources. Efficient and effective management of healthcare is imperative due to the efficient appointment scheduling.

# FUNCTIONS:

1. Manage\_Appointment (int appointment)
2. PayBill(Double amount)
3. Sign-up(String name, String password, String contact\_no)

# 

# BLACK BOX TESTING

## Boundary Value Analysis Testing:

### Function 1:*Manage\_Appointment (int noOfappointment)*

* **Constarint:**

3<= noOfappointment >=10

* **Boundary**:

noOfappointment = 3 and 10

* **Test** **cases**: 4(n) + 1 => 4(1) +1 = 5
* **Input values :**

min = 3

min+1= 4

normal = 7

max-1 = 9

max = 10

|  |  |  |
| --- | --- | --- |
| **Case** | **noOfappointment** | **Expected output** |
| 1 | 3 | ✓ |
| 2 | 4 | ✓ |
| 3 | 7 | ✓ |
| 4 | 9 | ✓ |
| 5 | 10 | ✓ |

✓ => Valid input

### Function 2: PayBill(Double amount)

* **Constraint:**

300<=amount>=3000

* **Boundary**:

amount = 300 and 3000

* **Test** **cases**: 4(n) + 1 => 4(1) +1 = 5
* **Input values :**

min = 300

min+1= 301

normal = 1800

max-1 = 2999

max = 3000

|  |  |  |
| --- | --- | --- |
| **Case** | **amount** | **Expected output** |
| 1 | 300 | ✓ |
| 2 | 301 | ✓ |
| 3 | 1800 | ✓ |
| 4 | 2999 | ✓ |
| 5 | 3000 | ✓ |

**✓** => Valid input

### Function 3: Sign-up (String name, String password, String contact\_no)

* **Total Test cases**: 4n+1 => 4(3)+1 = 13
* **Constraint:**

6<=name>=20

6<=password>=10

7<=contact\_no>=15

* **Boundaries**:

Name = 6 and 20

Password = 6 and 10

Contact\_no = 7 and 15

* **Input values:**

**For name**

min = Newton

min+1= Thommas

normal = Mark Zukerburg

max-1 = Mahenoor Haider Ali

max = Aleaxander Hamillton

**For Password**

min = 123abc

min+1= 567mnop

normal = gho34566

max-1 = code22246

max = pinx123456

**For Contact\_no**

min = 1234567

min+1= 12345678

normal = 12345678910

max-1 = 12345678911234

max = 123456789112345

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **name** | **password** | **contact\_no** | **Expected output** |
| 1 | Mark Zukerburg | gho34566 | 1234567 | ✓ |
| 2 | Mark Zukerburg | gho34566 | 12345678 | ✓ |
| 3 | Mark Zukerburg | gho34566 | 12345678910 | ✓ |
| 4 | Mark Zukerburg | gho34566 | 12345678911234 | ✓ |
| 5 | Mark Zukerburg | gho34566 | 123456789112345 | ✓ |
| 6 | Newton | gho34566 | 12345678910 | ✓ |
| 7 | Thommas | gho34566 | 12345678910 | ✓ |
| 8 | Mahenoor Haider Ali | gho34566 | 12345678910 | ✓ |
| 9 | Aleaxander Hamillton | gho34566 | 12345678910 | ✓ |
| 10 | Mark Zukerburg | 123abc | 12345678910 | ✓ |
| 11 | Mark Zukerburg | 567mnop | 12345678910 | ✓ |
| 12 | Mark Zukerburg | code22246 | 12345678910 | ✓ |
| 13 | Mark Zukerburg | pinx123456 | 12345678910 | ✓ |

## Robust Boundary Value Analysis Testing:

## Function 1: Manage\_Appointment (int noOfappointment)

* **Constarint:**

3<= noOfappointment >=10

* **Boundary**:

noOfappointment = 3 and 10

* **Test** **cases**: 6(n) + 1 => 6(1) +1 = 7
* **Input values :**

Min-1= 2

Min = 3

Min+1= 4

Normal = 7

Max-1 = 9

Max = 10

Max+1= 11

|  |  |  |
| --- | --- | --- |
| **Case** | **noOfappointment** | **Expected output** |
| 1 | 2 | 🗶 |
| 2 | 3 | ✓ |
| 3 | 4 | ✓ |
| 4 | 7 | ✓ |
| 5 | 9 | ✓ |
| 6 | 10 | ✓ |
| 7 | 11 | 🗶 |

✓ => Valid input

🗶 => Invalid input

## Function 2: PayBill(Double amount)

* **Constraint:**

300<=amount>=3000

* **Boundary**:

amount = 300 and 3000

* **Test** **cases**: 6(n) + 1 => 6(1) +1 = 7
* **Input values :**

Min-1= 299

Min = 300

Min+1= 301

Normal = 1800

Max-1 = 2999

Max = 3000

Max+1= 3001

|  |  |  |
| --- | --- | --- |
| **Case** | **amount** | **Expected output** |
| 1 | 299 | 🗶 |
| 2 | 300 | ✓ |
| 3 | 301 | ✓ |
| 4 | 1800 | ✓ |
| 5 | 2999 | ✓ |
| 6 | 3000 | ✓ |
| 7 | 3001 | 🗶 |

✓ => Valid input

🗶 => Invalid input

## Function3 : Sign-up (String name, String password, String contact\_no)

* **Total Test cases**: 6n+1 => 6(3)+1 = 19
* **Constraint:**

6<=name>=20

6<=password>=10

7<=contact\_no>=15

* **Boundaries**:

Name = 6 and 20

Password = 6 and 10

Contact\_no = 7 and 15

* **Input values:**

**For name**

Min-1= Jonas

Min = Newton

Min+1= Thommas

Normal = Mark Zukerburg

Max-1 = Mahenoor Haider Ali

Max = Aleaxander Hamillton

Max+1= Hubert Blaine Grayson

**For Password**

min-1= 123ab

min = 123abc

min+1= 567mnop

normal = gho34566

max-1 = code22246

max = pinx123456

max+1= putx4445556

**For Contact\_no**

min-1= 123456

min = 1234567

min+1= 12345678

normal = 12345678910

max-1 = 12345678911234

max = 123456789112345

max+1=224466889977551

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **name** | **password** | **Contact\_no** | **Expexted output** |
| 1 | Mark Zukerburg | gho34566 | 123456 | 🗶 |
| 2 | Mark Zukerburg | gho34566 | 1234567 | ✓ |
| 3 | Mark Zukerburg | gho34566 | 12345678 | ✓ |
| 4 | Mark Zukerburg | gho34566 | 12345678910 | ✓ |
| 5 | Mark Zukerburg | gho34566 | 12345678911234 | ✓ |
| 6 | Mark Zukerburg | gho34566 | 123456789112345 | ✓ |
| 7 | Mark Zukerburg | gho34566 | 224466889977551 | 🗶 |
| 8 | Mark Zukerburg | 123ab | 12345678910 | 🗶 |
| 9 | Mark Zukerburg | 123abc | 12345678910 | ✓ |
| 10 | Mark Zukerburg | 567mnop | 12345678910 | ✓ |
| 11 | Mark Zukerburg | code22246 | 12345678910 | ✓ |
| 12 | Mark Zukerburg | pinx123456 | 12345678910 | ✓ |
| 13 | Mark Zukerburg | putx4445556 | 12345678910 | 🗶 |
| 14 | Jonas | gho34566 | 12345678910 | 🗶 |
| 15 | Newton | gho34566 | 12345678910 | ✓ |
| 16 | Thommas | gho34566 | 12345678910 | ✓ |
| 17 | Mahenoor Haider Ali | gho34566 | 12345678910 | ✓ |
| 18 | Aleaxander Hamillton | gho34566 | 12345678910 | ✓ |
| 19 | Hubert Blaine Grayson | gho34566 | 12345678910 | 🗶 |

## Worst Case Boundary value Analysis Testing:

## Function 1:Manage\_Appointment (int noOfappointment)

* **Constarint:**

3<= noOfappointment >=10

* **Boundary**:

noOfappointment = 3 and 10

* **Test** **cases**: 5^n => 5^1 => 5
* **Input values :**

min = 3

min+1= 4

normal = 7

max-1 = 9

max = 10

|  |  |  |
| --- | --- | --- |
| **Case** | **noOfappointment** | **Expected output** |
| 1 | 3 | ✓ |
| 2 | 4 | ✓ |
| 3 | 7 | ✓ |
| 4 | 9 | ✓ |
| 5 | 10 | ✓ |

✓ => Valid input

## **Function 2**:PayBill(Double amount)

* **Constraint:**

300<=amount>=3000

* **Boundary**:

Amount = 300 and 3000

* **Test** **cases**: 5^n => 5^1 => 5
* **Input values:**

min = 300

min+1= 301

normal = 1800

max-1 = 2999

max = 3000

|  |  |  |
| --- | --- | --- |
| **Case** | **amount** | **Expected output** |
| 1 | 300 | ✓ |
| 2 | 301 | ✓ |
| 3 | 1800 | ✓ |
| 4 | 2999 | ✓ |
| 5 | 3000 | ✓ |

✓ => Valid input

### Function3: Sign-up (String name, String password, String contact\_no)

* **Test** **cases**: 5^n => 5^3 => 125
* **Constraint:**

6<=name>=20

6<=password>=10

7<=contact\_no>=15

* **Boundaries**:

Name = 6 and 20

Password = 6 and 10

Contact\_no = 7 and 15

* **Input values =**

**For name**

min = Newton

min+1= Thommas

normal = Mark Zukerburg

max-1 = Mahenoor Haider Ali

max = Aleaxander Hamillton

**For Password**

min = 123abc

min+1= 567mnop

normal = gho34566

max-1 = code22246

max = pinx123456

**For Contact\_no**

min = 1234567

min+1= 12345678

normal = 12345678910

max-1 = 12345678911234

max = 123456789112345

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **name** | **password** | **contact\_no** | **Expected output** |
|  | Newton | 123abc | 1234567 | ✓ |
|  | Newton | 123abc | 12345678 | ✓ |
|  | Newton | 123abc | 12345678910 | ✓ |
|  | Newton | 123abc | 12345678911234 | ✓ |
|  | Newton | 123abc | 123456789112345 | ✓ |
|  | Newton | 567mnop | 1234567 | ✓ |
|  | Newton | 567mnop | 12345678 | ✓ |
|  | Newton | 567mnop | 12345678910 | ✓ |
|  | Newton | 567mnop | 12345678911234 | ✓ |
|  | Newton | 567mnop | 123456789112345 | ✓ |
|  | Newton | gho34566 | 1234567 | ✓ |
|  | Newton | gho34566 | 12345678 | ✓ |
|  | Newton | gho34566 | 12345678910 | ✓ |
|  | Newton | gho34566 | 12345678911234 | ✓ |
|  | Newton | gho34566 | 123456789112345 | ✓ |
|  | Newton | code22246 | 1234567 | ✓ |
|  | Newton | code22246 | 12345678 | ✓ |
|  | Newton | code22246 | 12345678910 | ✓ |
|  | Newton | code22246 | 12345678911234 | ✓ |
|  | Newton | code22246 | 123456789112345 | ✓ |
|  | Newton | pinx123456 | 1234567 | ✓ |
|  | Newton | pinx123456 | 12345678 | ✓ |
|  | Newton | pinx123456 | 12345678910 | ✓ |
|  | Newton | pinx123456 | 12345678911234 | ✓ |
|  | Newton | pinx123456 | 123456789112345 | ✓ |
|  | Thommas | 123abc | 1234567 | ✓ |
|  | Thommas | 123abc | 12345678 | ✓ |
|  | Thommas | 123abc | 12345678910 | ✓ |
|  | Thommas | 123abc | 12345678911234 | ✓ |
|  | Thommas | 123abc | 123456789112345 | ✓ |
|  | Thommas | 567mnop | 1234567 | ✓ |
|  | Thommas | 567mnop | 12345678 | ✓ |
|  | Thommas | 567mnop | 12345678910 | ✓ |
|  | Thommas | 567mnop | 12345678911234 | ✓ |
|  | Thommas | 567mnop | 123456789112345 | ✓ |
|  | Thommas | gho34566 | 1234567 | ✓ |
|  | Thommas | gho34566 | 12345678 | ✓ |
|  | Thommas | gho34566 | 12345678910 | ✓ |
|  | Thommas | gho34566 | 12345678911234 | ✓ |
|  | Thommas | gho34566 | 123456789112345 | ✓ |
|  | Thommas | code22246 | 1234567 | ✓ |
|  | Thommas | code22246 | 12345678 | ✓ |
|  | Thommas | code22246 | 12345678910 | ✓ |
|  | Thommas | code22246 | 12345678911234 | ✓ |
|  | Thommas | code22246 | 123456789112345 | ✓ |
|  | Thommas | pinx123456 | 1234567 | ✓ |
|  | Thommas | pinx123456 | 12345678 | ✓ |
|  | Thommas | pinx123456 | 12345678910 | ✓ |
|  | Thommas | pinx123456 | 12345678911234 | ✓ |
|  | Thommas | pinx123456 | 123456789112345 | ✓ |
|  | Mark Zukerburg | 123abc | 1234567 | ✓ |
|  | Mark Zukerburg | 123abc | 12345678 | ✓ |
|  | Mark Zukerburg | 123abc | 12345678910 | ✓ |
|  | Mark Zukerburg | 123abc | 12345678911234 | ✓ |
|  | Mark Zukerburg | 123abc | 123456789112345 | ✓ |
|  | Mark Zukerburg | 567mnop | 1234567 | ✓ |
|  | Mark Zukerburg | 567mnop | 12345678 | ✓ |
|  | Mark Zukerburg | 567mnop | 12345678910 | ✓ |
|  | Mark Zukerburg | 567mnop | 12345678911234 | ✓ |
|  | Mark Zukerburg | 567mnop | 123456789112345 | ✓ |
|  | Mark Zukerburg | gho34566 | 1234567 | ✓ |
|  | Mark Zukerburg | gho34566 | 12345678 | ✓ |
|  | Mark Zukerburg | gho34566 | 12345678910 | ✓ |
|  | Mark Zukerburg | gho34566 | 12345678911234 | ✓ |
|  | Mark Zukerburg | gho34566 | 123456789112345 | ✓ |
|  | Mark Zukerburg | code22246 | 1234567 | ✓ |
|  | Mark Zukerburg | code22246 | 12345678 | ✓ |
|  | Mark Zukerburg | code22246 | 12345678910 | ✓ |
|  | Mark Zukerburg | code22246 | 12345678911234 | ✓ |
|  | Mark Zukerburg | code22246 | 123456789112345 | ✓ |
|  | Mark Zukerburg | pinx123456 | 1234567 | ✓ |
|  | Mark Zukerburg | pinx123456 | 12345678 | ✓ |
|  | Mark Zukerburg | pinx123456 | 12345678910 | ✓ |
|  | Mark Zukerburg | pinx123456 | 12345678911234 | ✓ |
|  | Mark Zukerburg | pinx123456 | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 1234567 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 12345678 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 12345678910 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 12345678911234 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 1234567 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 12345678 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 12345678910 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 12345678911234 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 1234567 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 12345678 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 12345678910 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 12345678911234 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | code22246 | 1234567 | ✓ |
|  | Mahenoor Haider Ali | code22246 | 12345678 | ✓ |
|  | Mahenoor Haider Ali | code22246 | 12345678910 | ✓ |
|  | Mahenoor Haider Ali | code22246 | 12345678911234 | ✓ |
|  | Mahenoor Haider Ali | code22246 | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 1234567 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 12345678 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 12345678910 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 12345678911234 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 123456789112345 | ✓ |
|  | Aleaxander Hamillton | 123abc | 1234567 | ✓ |
|  | Aleaxander Hamillton | 123abc | 12345678 | ✓ |
|  | Aleaxander Hamillton | 123abc | 12345678910 | ✓ |
|  | Aleaxander Hamillton | 123abc | 12345678911234 | ✓ |
|  | Aleaxander Hamillton | 123abc | 123456789112345 | ✓ |
|  | Aleaxander Hamillton | 567mnop | 1234567 | ✓ |
|  | Aleaxander Hamillton | 567mnop | 12345678 | ✓ |
|  | Aleaxander Hamillton | 567mnop | 12345678910 | ✓ |
|  | Aleaxander Hamillton | 567mnop | 12345678911234 | ✓ |
|  | Aleaxander Hamillton | 567mnop | 123456789112345 | ✓ |
|  | Aleaxander Hamillton | gho34566 | 1234567 | ✓ |
|  | Aleaxander Hamillton | gho34566 | 12345678 | ✓ |
|  | Aleaxander Hamillton | gho34566 | 12345678910 | ✓ |
|  | Aleaxander Hamillton | gho34566 | 12345678911234 | ✓ |
|  | Aleaxander Hamillton | gho34566 | 123456789112345 | ✓ |
|  | Aleaxander Hamillton | code22246 | 1234567 | ✓ |
|  | Aleaxander Hamillton | code22246 | 12345678 | ✓ |
|  | Aleaxander Hamillton | code22246 | 12345678910 | ✓ |
|  | Aleaxander Hamillton | code22246 | 12345678911234 | ✓ |
|  | Aleaxander Hamillton | code22246 | 123456789112345 | ✓ |
|  | Aleaxander Hamillton | pinx123456 | 1234567 | ✓ |
|  | Aleaxander Hamillton | pinx123456 | 12345678 | ✓ |
|  | Aleaxander Hamillton | pinx123456 | 12345678910 | ✓ |
|  | Aleaxander Hamillton | pinx123456 | 12345678911234 | ✓ |
|  | Aleaxander Hamillton | pinx123456 | 123456789112345 | ✓ |
|  | Aleaxander Hamillton | 123abc | 1234567 | ✓ |
|  | Aleaxander Hamillton | 123abc | 12345678 | ✓ |

## Robust Worst Case Testing

### Function 1:Manage\_Appointment (int noOfappointment)

* **Constarint:**

3<= noOfappointment >=10

* **Boundary**:

***noOfappointmen =>*** *3* and 10

* **Test** **cases**: 7^n => 7^1 => 7
* **Input value:**

Min-1= 2

Min = 3

Min+1= 4

Normal = 7

Max-1 = 9

Max = 10

Max+1= 11

|  |  |  |
| --- | --- | --- |
| **Case** | **noOfappointment** | **Expected output** |
| 1 | 2 | 🗶 |
| 2 | 3 | ✓ |
| 3 | 4 | ✓ |
| 4 | 7 | ✓ |
| 5 | 9 | ✓ |
| 6 | 10 | ✓ |
| 7 | 11 | 🗶 |

✓ => Valid input

🗶 => Invalid input

### Function 2:PayBill(Double amount)

* **Constraint:**

300<=amount>=3000

* **Boundary**:

**Amount** => 300 and 3000

* **Test** **cases**: 7^n => 7^1 => 7
* **Input values:**

Min-1= 299

Min = 300

Min+1= 301

Normal = 1800

Max-1 = 2999

Max = 3000

Max+1= 3001

|  |  |  |
| --- | --- | --- |
| **Case** | **amount** | **Expected output** |
| 1 | 299 | 🗶 |
| 2 | 300 | ✓ |
| 3 | 301 | ✓ |
| 4 | 1800 | ✓ |
| 5 | 2999 | ✓ |
| 6 | 3000 | ✓ |
| 7 | 3001 | 🗶 |

✓ => Valid input

🗶 => Invalid input

## Function 3:Sign-up (String name, String password, String contact\_no)

* **Test** **cases**: 7^n => 7^3 => 343
* **Constraint:**

6<=name>=20

6<=password>=10

7<=contact\_no>=15

**Boundaries**:

name = 6 and 20

password = 6 and 10

contact\_no = 7 and 15

* **Input values:**

**For name**

Min-1= Jonas

Min = Newton

Min+1= Thommas

Normal = Mark Zukerburg

Max-1 = Mahenoor Haider Ali

Max = Aleaxander Hamillton

Max+1= Hubert Blaine Grayson

**For Password**

min-1= 123ab

min = 123abc

min+1= 567mnop

normal = gho34566

max-1 = code22246

max = pinx123456

max+1= putx4445556

**For Contact\_no**

min-1= 123456

min = 1234567

min+1= 12345678

normal = 12345678910

max-1 = 12345678911234

max = 123456789112345

max+1=224466889977551

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **Name** | **Password** | **Contact\_no** | **Expected Output** |
|  | Jonas | 123ab | 123456 | 🗶 |
|  | Jonas | 123ab | 1234567 | 🗶 |
|  | Jonas | 123ab | 12345678 | 🗶 |
|  | Jonas | 123ab | 12345678910 | 🗶 |
|  | Jonas | 123ab | 12345678911234 | 🗶 |
|  | Jonas | 123ab | 123456789112345 | 🗶 |
|  | Jonas | 123ab | 224466889977551 | 🗶 |
|  | Jonas | 123abc | 123456 | 🗶 |
|  | Jonas | 123abc | 1234567 | 🗶 |
|  | Jonas | 123abc | 12345678 | 🗶 |
|  | Jonas | 123abc | 12345678910 | 🗶 |
|  | Jonas | 123abc | 12345678911234 | 🗶 |
|  | Jonas | 123abc | 123456789112345 | 🗶 |
|  | Jonas | 123abc | 224466889977551 | 🗶 |
|  | Jonas | 567mnop | 123456 | 🗶 |
|  | Jonas | 567mnop | 1234567 | 🗶 |
|  | Jonas | 567mnop | 12345678 | 🗶 |
|  | Jonas | 567mnop | 12345678910 | 🗶 |
|  | Jonas | 567mnop | 12345678911234 | 🗶 |
|  | Jonas | 567mnop | 123456789112345 | 🗶 |
|  | Jonas | 567mnop | 224466889977551 | 🗶 |
|  | Jonas | gho34566 | 123456 | 🗶 |
|  | Jonas | gho34566 | 1234567 | 🗶 |
|  | Jonas | gho34566 | 12345678 | 🗶 |
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|  | Jonas | gho34566 | 123456789112345 | 🗶 |
|  | Jonas | gho34566 | 224466889977551 | 🗶 |
|  | Jonas | code22246 | 123456 | 🗶 |
|  | Jonas | code22246 | 1234567 | 🗶 |
|  | Jonas | code22246 | 12345678 | 🗶 |
|  | Jonas | code22246 | 12345678910 | 🗶 |
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|  | Jonas | code22246 | 123456789112345 | 🗶 |
|  | Jonas | code22246 | 224466889977551 | 🗶 |
|  | Jonas | pinx123456 | 123456 | 🗶 |
|  | Jonas | pinx123456 | 1234567 | 🗶 |
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|  | Jonas | pinx123456 | 12345678910 | 🗶 |
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|  | Jonas | pinx123456 | 123456789112345 | 🗶 |
|  | Jonas | pinx123456 | 224466889977551 | 🗶 |
|  | Jonas | putx4445556 | 123456 | 🗶 |
|  | Jonas | putx4445556 | 1234567 | 🗶 |
|  | Jonas | putx4445556 | 12345678 | 🗶 |
|  | Jonas | putx4445556 | 12345678910 | 🗶 |
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|  | Jonas | putx4445556 | 123456789112345 | 🗶 |
|  | Jonas | putx4445556 | 224466889977551 | 🗶 |
|  | Newton | 123ab | 123456 | 🗶 |
|  | Newton | 123ab | 1234567 | 🗶 |
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|  | Newton | 567mnop | 123456 | 🗶 |
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|  | Newton | pinx123456 | 12345678910 | ✓ |
|  | Newton | pinx123456 | 12345678911234 | ✓ |
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|  | Newton | putx4445556 | 123456789112345 | 🗶 |
|  | Newton | putx4445556 | 224466889977551 | 🗶 |
|  | Thommas | 123ab | 123456 | 🗶 |
|  | Thommas | 123ab | 1234567 | 🗶 |
|  | Thommas | 123ab | 12345678 | 🗶 |
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|  | Thommas | 123abc | 1234567 | ✓ |
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|  | Thommas | 123abc | 12345678911234 | ✓ |
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|  | Thommas | 123abc | 224466889977551 | ✓ |
|  | Thommas | 567mnop | 123456 | 🗶 |
|  | Thommas | 567mnop | 1234567 | ✓ |
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|  | Thommas | gho34566 | 123456 | 🗶 |
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|  | Thommas | code22246 | 1234567 | ✓ |
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|  | Thommas | code22246 | 12345678910 | ✓ |
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|  | Thommas | code22246 | 123456789112345 | ✓ |
|  | Thommas | code22246 | 224466889977551 | ✓ |
|  | Thommas | pinx123456 | 123456 | 🗶 |
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|  | Thommas | pinx123456 | 12345678911234 | ✓ |
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|  | Thommas | pinx123456 | 224466889977551 | ✓ |
|  | Thommas | putx4445556 | 123456 | 🗶 |
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|  | Thommas | putx4445556 | 12345678911234 | 🗶 |
|  | Thommas | putx4445556 | 123456789112345 | 🗶 |
|  | Thommas | putx4445556 | 224466889977551 | 🗶 |
|  | Mark Zukerburg | 123ab | 123456 | 🗶 |
|  | Mark Zukerburg | 123ab | 1234567 | 🗶 |
|  | Mark Zukerburg | 123ab | 12345678 | 🗶 |
|  | Mark Zukerburg | 123ab | 12345678910 | 🗶 |
|  | Mark Zukerburg | 123ab | 12345678911234 | 🗶 |
|  | Mark Zukerburg | 123ab | 123456789112345 | 🗶 |
|  | Mark Zukerburg | 123ab | 224466889977551 | 🗶 |
|  | Mark Zukerburg | 123abc | 123456 | 🗶 |
|  | Mark Zukerburg | 123abc | 1234567 | ✓ |
|  | Mark Zukerburg | 123abc | 12345678 | ✓ |
|  | Mark Zukerburg | 123abc | 12345678910 | ✓ |
|  | Mark Zukerburg | 123abc | 12345678911234 | ✓ |
|  | Mark Zukerburg | 123abc | 123456789112345 | ✓ |
|  | Mark Zukerburg | 123abc | 224466889977551 | ✓ |
|  | Mark Zukerburg | 567mnop | 123456 | 🗶 |
|  | Mark Zukerburg | 567mnop | 1234567 | ✓ |
|  | Mark Zukerburg | 567mnop | 12345678 | ✓ |
|  | Mark Zukerburg | 567mnop | 12345678910 | ✓ |
|  | Mark Zukerburg | 567mnop | 12345678911234 | ✓ |
|  | Mark Zukerburg | 567mnop | 123456789112345 | ✓ |
|  | Mark Zukerburg | 567mnop | 224466889977551 | ✓ |
|  | Mark Zukerburg | gho34566 | 123456 | 🗶 |
|  | Mark Zukerburg | gho34566 | 1234567 | ✓ |
|  | Mark Zukerburg | gho34566 | 12345678 | ✓ |
|  | Mark Zukerburg | gho34566 | 12345678910 | ✓ |
|  | Mark Zukerburg | gho34566 | 12345678911234 | ✓ |
|  | Mark Zukerburg | gho34566 | 123456789112345 | ✓ |
|  | Mark Zukerburg | gho34566 | 224466889977551 | ✓ |
|  | Mark Zukerburg | code22246 | 123456 | 🗶 |
|  | Mark Zukerburg | code22246 | 1234567 | ✓ |
|  | Mark Zukerburg | code22246 | 12345678 | ✓ |
|  | Mark Zukerburg | code22246 | 12345678910 | ✓ |
|  | Mark Zukerburg | code22246 | 12345678911234 | ✓ |
|  | Mark Zukerburg | code22246 | 123456789112345 | ✓ |
|  | Mark Zukerburg | code22246 | 224466889977551 | ✓ |
|  | Mark Zukerburg | pinx123456 | 123456 | 🗶 |
|  | Mark Zukerburg | pinx123456 | 1234567 | ✓ |
|  | Mark Zukerburg | pinx123456 | 12345678 | ✓ |
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|  | Mark Zukerburg | pinx123456 | 12345678911234 | ✓ |
|  | Mark Zukerburg | pinx123456 | 123456789112345 | ✓ |
|  | Mark Zukerburg | pinx123456 | 224466889977551 | ✓ |
|  | Mark Zukerburg | putx4445556 | 123456 | 🗶 |
|  | Mark Zukerburg | putx4445556 | 1234567 | 🗶 |
|  | Mark Zukerburg | putx4445556 | 12345678 | 🗶 |
|  | Mark Zukerburg | putx4445556 | 12345678910 | 🗶 |
|  | Mark Zukerburg | putx4445556 | 12345678911234 | 🗶 |
|  | Mark Zukerburg | putx4445556 | 123456789112345 | 🗶 |
|  | Mark Zukerburg | putx4445556 | 224466889977551 | 🗶 |
|  | Mahenoor Haider Ali | 123ab | 123456 | 🗶 |
|  | Mahenoor Haider Ali | 123ab | 1234567 | 🗶 |
|  | Mahenoor Haider Ali | 123ab | 12345678 | 🗶 |
|  | Mahenoor Haider Ali | 123ab | 12345678910 | 🗶 |
|  | Mahenoor Haider Ali | 123ab | 12345678911234 | 🗶 |
|  | Mahenoor Haider Ali | 123ab | 123456789112345 | 🗶 |
|  | Mahenoor Haider Ali | 123ab | 224466889977551 | 🗶 |
|  | Mahenoor Haider Ali | 123abc | 123456 | 🗶 |
|  | Mahenoor Haider Ali | 123abc | 1234567 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 12345678 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 12345678910 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 12345678911234 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | 123abc | 224466889977551 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 123456 | 🗶 |
|  | Mahenoor Haider Ali | 567mnop | 1234567 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 12345678 | ✓ |
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|  | Mahenoor Haider Ali | 567mnop | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | 567mnop | 224466889977551 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 123456 | 🗶 |
|  | Mahenoor Haider Ali | gho34566 | 1234567 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 12345678 | ✓ |
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|  | Mahenoor Haider Ali | gho34566 | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | gho34566 | 224466889977551 | ✓ |
|  | Mahenoor Haider Ali | code22246 | 123456 | 🗶 |
|  | Mahenoor Haider Ali | code22246 | 1234567 | ✓ |
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|  | Mahenoor Haider Ali | code22246 | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | code22246 | 224466889977551 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 123456 | 🗶 |
|  | Mahenoor Haider Ali | pinx123456 | 1234567 | ✓ |
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|  | Mahenoor Haider Ali | pinx123456 | 12345678910 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 12345678911234 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 123456789112345 | ✓ |
|  | Mahenoor Haider Ali | pinx123456 | 224466889977551 | ✓ |
|  | Mahenoor Haider Ali | putx4445556 | 123456 | 🗶 |
|  | Mahenoor Haider Ali | putx4445556 | 1234567 | 🗶 |
|  | Mahenoor Haider Ali | putx4445556 | 12345678 | 🗶 |
|  | Mahenoor Haider Ali | putx4445556 | 12345678910 | 🗶 |
|  | Mahenoor Haider Ali | putx4445556 | 12345678911234 | 🗶 |
|  | Mahenoor Haider Ali | putx4445556 | 123456789112345 | 🗶 |
|  | Mahenoor Haider Ali | putx4445556 | 224466889977551 | 🗶 |
|  | Aleaxander Hamillton | 123ab | 123456 | 🗶 |
|  | Aleaxander Hamillton | 123ab | 1234567 | 🗶 |
|  | Aleaxander Hamillton | 123ab | 12345678 | 🗶 |
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|  | Aleaxander Hamillton | 123ab | 12345678911234 | 🗶 |
|  | Aleaxander Hamillton | 123ab | 123456789112345 | 🗶 |
|  | Aleaxander Hamillton | 123ab | 224466889977551 | 🗶 |
|  | Aleaxander Hamillton | 123abc | 123456 | 🗶 |
|  | Aleaxander Hamillton | 123abc | 1234567 | ✓ |
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|  | Aleaxander Hamillton | 567mnop | 123456 | 🗶 |
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|  | Aleaxander Hamillton | 567mnop | 224466889977551 | ✓ |
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|  | Aleaxander Hamillton | gho34566 | 224466889977551 | ✓ |
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|  | Aleaxander Hamillton | pinx123456 | 123456789112345 | ✓ |
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|  | Aleaxander Hamillton | putx4445556 | 123456789112345 | 🗶 |
|  | Aleaxander Hamillton | putx4445556 | 224466889977551 | 🗶 |
|  | Hubert Blaine Grayson | 123ab | 123456 | 🗶 |
|  | Hubert Blaine Grayson | 123ab | 1234567 | 🗶 |
|  | Hubert Blaine Grayson | 123ab | 12345678 | 🗶 |
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|  | Hubert Blaine Grayson | 123ab | 12345678911234 | 🗶 |
|  | Hubert Blaine Grayson | 123ab | 123456789112345 | 🗶 |
|  | Hubert Blaine Grayson | 123ab | 224466889977551 | 🗶 |
|  | Hubert Blaine Grayson | 123abc | 123456 | 🗶 |
|  | Hubert Blaine Grayson | 123abc | 1234567 | ✓ |
|  | Hubert Blaine Grayson | 123abc | 12345678 | ✓ |
|  | Hubert Blaine Grayson | 123abc | 12345678910 | ✓ |
|  | Hubert Blaine Grayson | 123abc | 12345678911234 | ✓ |
|  | Hubert Blaine Grayson | 123abc | 123456789112345 | ✓ |
|  | Hubert Blaine Grayson | 123abc | 224466889977551 | ✓ |
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|  | Hubert Blaine Grayson | 567mnop | 12345678910 | ✓ |
|  | Hubert Blaine Grayson | 567mnop | 12345678911234 | ✓ |
|  | Hubert Blaine Grayson | 567mnop | 123456789112345 | ✓ |
|  | Hubert Blaine Grayson | 567mnop | 224466889977551 | ✓ |
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|  | Hubert Blaine Grayson | gho34566 | 12345678910 | ✓ |
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|  | Hubert Blaine Grayson | gho34566 | 224466889977551 | ✓ |
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|  | Hubert Blaine Grayson | code22246 | 12345678 | ✓ |
|  | Hubert Blaine Grayson | code22246 | 12345678910 | ✓ |
|  | Hubert Blaine Grayson | code22246 | 12345678911234 | ✓ |
|  | Hubert Blaine Grayson | code22246 | 123456789112345 | ✓ |
|  | Hubert Blaine Grayson | code22246 | 224466889977551 | ✓ |
|  | Hubert Blaine Grayson | pinx123456 | 123456 | 🗶 |
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|  | Hubert Blaine Grayson | pinx123456 | 12345678 | ✓ |
|  | Hubert Blaine Grayson | pinx123456 | 12345678910 | ✓ |
|  | Hubert Blaine Grayson | pinx123456 | 12345678911234 | ✓ |
|  | Hubert Blaine Grayson | pinx123456 | 123456789112345 | ✓ |
|  | Hubert Blaine Grayson | pinx123456 | 224466889977551 | ✓ |
|  | Hubert Blaine Grayson | putx4445556 | 123456 | 🗶 |
|  | Hubert Blaine Grayson | putx4445556 | 1234567 | 🗶 |
|  | Hubert Blaine Grayson | putx4445556 | 12345678 | 🗶 |
|  | Hubert Blaine Grayson | putx4445556 | 12345678910 | 🗶 |
|  | Hubert Blaine Grayson | putx4445556 | 12345678911234 | 🗶 |
|  | Hubert Blaine Grayson | putx4445556 | 123456789112345 | 🗶 |
|  | Hubert Blaine Grayson | putx4445556 | 224466889977551 | 🗶 |

✓ => Valid input

🗶 => Invalid input

## Strong Robust Equivalence Class Partitioning:

### Function 1:Manage\_Appointment (int noOfappointment)

* **Constraint:**

3<= noOfappointment >=10

* **Test cases:**

Normal value: 6

Upper robust value: 11

Lower robust value: 2

|  |  |  |
| --- | --- | --- |
| **Case** | **noOfappointment** | **Expected output** |
| 1 | 6 | ✓ |
| 2 | 11 | 🗶 |
| 3 | 2 | 🗶 |

✓ => Valid input

🗶 => Invalid input

### Function 2: *PayBill(Double amount)*

* **Constraint:**

300<=amount>=3000

* **Test cases:**

Normal value: 2000

Upper robust value: 3001

Lower robust value: 299

|  |  |  |
| --- | --- | --- |
| **Case** | **amount** | **Expected output** |
| 1 | 2000 | ✓ |
| 2 | 3001 | 🗶 |
| 3 | 299 | 🗶 |

✓ => Valid input

🗶 => Invalid input

### Function 3: Sign-up (String name, String password, String contact\_no)

* **Constraint:**

6<=name>=20

6<=password>=10

7<=contact\_no>=15

* **Test cases:**

**For Name:**

Normal value: Thommas

Upper robust value: Hubert Blaine Grayson (spaces are also

considered)

Lower robust value: Jonas

**For Password:**

Normal value: gho34566

Upper robust value: putx4445556

Lower robust value: 123ab

**For Contact\_no:**

Normal value: 12345678911

Upper robust value: 2244668899775512

Lower robust value: 123456

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **Name** | **Password** | **Contact\_no** | **Expected**  **output** |
| 1 | Hubert Blaine Grayson | putx4445556 | 2244668899775512 |  |
| 2 | Hubert Blaine Grayson | putx4445556 | 12345678911 |  |
| 3 | Hubert Blaine Grayson | gho34566 | 2244668899775512 |  |
| 4 | Thommas | putx4445556 | 2244668899775512 |  |
| 5 | Hubert Blaine Grayson | gho34566 | 12345678911 |  |
| 6 | Thommas | putx4445556 | 12345678911 |  |
| 7 | Thommas | gho34566 | 2244668899775512 |  |
| 8 | Jonas | 123ab | 123456 |  |
| 9 | Jonas | 123ab | 12345678911 |  |
| 10 | Jonas | gho34566 | 123456 |  |
| 11 | Thommas | 123ab | 123456 |  |
| 12 | Thommas | gho34566 | 123456 |  |
| 13 | Jonas | gho34566 | 12345678911 |  |
| 14 | Thommas | 123ab | 12345678911 |  |
| 15 | Thommas | gho34566 | 12345678911 |  |

**Cause Effect Graphing**

C1: Doctors will upload all the patient medical history on website

E1: Patient medical history will be visible to the patient

E2: patient medical history will be visible to the doctor

C2: User enters name in string, which should not be greater than 20 alphabet characters and not less than 6 characters.

C3: User enters password in string, which should be at least 6 characters and not more than 10 characters.

C4: User enters contact no in digits, which should be at least 7 characters and not more than 15 digits.

E3: User logins in system

C5: Patient gets transferred from one clinic to another

E4: Visited clinic doctor can see medical history and personal information of that patient on the portal

C6: Patient pays bill in range of PR. 300 to PR. 3000 according to patient’s treatment

E5: Provide a medical receipt to patient