Software Quality Engineering

Assignment # 1

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Section # 1

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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 in small letter but not less than 6, password which should be 6 digit number 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.

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.

1. FUNCTIONS:

1. Manage_Appointment (int appointment)

2. PayBill(Double amount)

3. Sign-up(String name, String password, String contact_no)

BLACK BOX TESTING

1. 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	✓

2. **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

Function 3:

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	gho34566	224466889977551	✘

	Zukerburg			
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	✘

3. 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

Function 3:

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
1.	Newton	123abc	1234567	✓
2.	Newton	123abc	12345678	✓
3.	Newton	123abc	12345678910	✓
4.	Newton	123abc	12345678911234	✓
5.	Newton	123abc	123456789112345	✓
6.	Newton	567mnop	1234567	✓
7.	Newton	567mnop	12345678	✓
8.	Newton	567mnop	12345678910	✓
9.	Newton	567mnop	12345678911234	✓
10.	Newton	567mnop	123456789112345	✓
11.	Newton	gho34566	1234567	✓
12.	Newton	gho34566	12345678	✓
13.	Newton	gho34566	12345678910	✓
14.	Newton	gho34566	12345678911234	✓
15.	Newton	gho34566	123456789112345	✓
16.	Newton	code22246	1234567	✓
17.	Newton	code22246	12345678	✓

18.	Newton	code22246	12345678910	✓
19.	Newton	code22246	12345678911234	✓
20.	Newton	code22246	123456789112345	✓
21.	Newton	pinx123456	1234567	✓
22.	Newton	pinx123456	12345678	✓
23.	Newton	pinx123456	12345678910	✓
24.	Newton	pinx123456	12345678911234	✓
25.	Newton	pinx123456	123456789112345	✓
26.	Thommas	123abc	1234567	✓
27.	Thommas	123abc	12345678	✓
28.	Thommas	123abc	12345678910	✓
29.	Thommas	123abc	12345678911234	✓
30.	Thommas	123abc	123456789112345	✓
31.	Thommas	567mnop	1234567	✓
32.	Thommas	567mnop	12345678	✓
33.	Thommas	567mnop	12345678910	✓
34.	Thommas	567mnop	12345678911234	✓
35.	Thommas	567mnop	123456789112345	✓
36.	Thommas	gho34566	1234567	✓
37.	Thommas	gho34566	12345678	✓
38.	Thommas	gho34566	12345678910	✓
39.	Thommas	gho34566	12345678911234	✓
40.	Thommas	gho34566	123456789112345	✓
41.	Thommas	code22246	1234567	✓
42.	Thommas	code22246	12345678	✓
43.	Thommas	code22246	12345678910	✓
44.	Thommas	code22246	12345678911234	✓
45.	Thommas	code22246	123456789112345	✓
46.	Thommas	pinx123456	1234567	✓
47.	Thommas	pinx123456	12345678	✓
48.	Thommas	pinx123456	12345678910	✓
49.	Thommas	pinx123456	12345678911234	✓
50.	Thommas	pinx123456	123456789112345	✓
51.	Mark Zukerburg	123abc	1234567	✓
52.	Mark Zukerburg	123abc	12345678	✓
53.	Mark Zukerburg	123abc	12345678910	✓
54.	Mark Zukerburg	123abc	12345678911234	✓
55.	Mark Zukerburg	123abc	123456789112345	✓
56.	Mark	567mnop	1234567	✓

	Zukerburg			
57.	Mark Zukerburg	567mnop	12345678	✓
58.	Mark Zukerburg	567mnop	12345678910	✓
59.	Mark Zukerburg	567mnop	12345678911234	✓
60.	Mark Zukerburg	567mnop	123456789112345	✓
61.	Mark Zukerburg	gho34566	1234567	✓
62.	Mark Zukerburg	gho34566	12345678	✓
63.	Mark Zukerburg	gho34566	12345678910	✓
64.	Mark Zukerburg	gho34566	12345678911234	✓
65.	Mark Zukerburg	gho34566	123456789112345	✓
66.	Mark Zukerburg	code22246	1234567	✓
67.	Mark Zukerburg	code22246	12345678	✓
68.	Mark Zukerburg	code22246	12345678910	✓
69.	Mark Zukerburg	code22246	12345678911234	✓
70.	Mark Zukerburg	code22246	123456789112345	✓
71.	Mark Zukerburg	pinx123456	1234567	✓
72.	Mark Zukerburg	pinx123456	12345678	✓
73.	Mark Zukerburg	pinx123456	12345678910	✓
74.	Mark Zukerburg	pinx123456	12345678911234	✓
75.	Mark Zukerburg	pinx123456	123456789112345	✓
76.	Mahenoor Haider Ali	123abc	1234567	✓
77.	Mahenoor Haider Ali	123abc	12345678	✓
78.	Mahenoor Haider Ali	123abc	12345678910	✓
79.	Mahenoor	123abc	12345678911234	✓

	Haider Ali			
80.	Mahenoor Haider Ali	123abc	123456789112345	✓
81.	Mahenoor Haider Ali	567mnop	1234567	✓
82.	Mahenoor Haider Ali	567mnop	12345678	✓
83.	Mahenoor Haider Ali	567mnop	12345678910	✓
84.	Mahenoor Haider Ali	567mnop	12345678911234	✓
85.	Mahenoor Haider Ali	567mnop	123456789112345	✓
86.	Mahenoor Haider Ali	gho34566	1234567	✓
87.	Mahenoor Haider Ali	gho34566	12345678	✓
88.	Mahenoor Haider Ali	gho34566	12345678910	✓
89.	Mahenoor Haider Ali	gho34566	12345678911234	✓
90.	Mahenoor Haider Ali	gho34566	123456789112345	✓
91.	Mahenoor Haider Ali	code22246	1234567	✓
92.	Mahenoor Haider Ali	code22246	12345678	✓
93.	Mahenoor Haider Ali	code22246	12345678910	✓
94.	Mahenoor Haider Ali	code22246	12345678911234	✓
95.	Mahenoor Haider Ali	code22246	123456789112345	✓
96.	Mahenoor Haider Ali	pinx123456	1234567	✓
97.	Mahenoor Haider Ali	pinx123456	12345678	✓
98.	Mahenoor Haider Ali	pinx123456	12345678910	✓
99.	Mahenoor Haider Ali	pinx123456	12345678911234	✓
100.	Mahenoor Haider Ali	pinx123456	123456789112345	✓
101.	Aleaxander Hamillton	123abc	1234567	✓
102.	Aleaxander	123abc	12345678	✓

	Hamillton			
103.	Aleaxander Hamillton	123abc	12345678910	✓
104.	Aleaxander Hamillton	123abc	12345678911234	✓
105.	Aleaxander Hamillton	123abc	123456789112345	✓
106.	Aleaxander Hamillton	567mnop	1234567	✓
107.	Aleaxander Hamillton	567mnop	12345678	✓
108.	Aleaxander Hamillton	567mnop	12345678910	✓
109.	Aleaxander Hamillton	567mnop	12345678911234	✓
110.	Aleaxander Hamillton	567mnop	123456789112345	✓
111.	Aleaxander Hamillton	gho34566	1234567	✓
112.	Aleaxander Hamillton	gho34566	12345678	✓
113.	Aleaxander Hamillton	gho34566	12345678910	✓
114.	Aleaxander Hamillton	gho34566	12345678911234	✓
115.	Aleaxander Hamillton	gho34566	123456789112345	✓
116.	Aleaxander Hamillton	code22246	1234567	✓
117.	Aleaxander Hamillton	code22246	12345678	✓
118.	Aleaxander Hamillton	code22246	12345678910	✓
119.	Aleaxander Hamillton	code22246	12345678911234	✓
120.	Aleaxander Hamillton	code22246	123456789112345	✓
121.	Aleaxander Hamillton	pinx123456	1234567	✓
122.	Aleaxander Hamillton	pinx123456	12345678	✓
123.	Aleaxander Hamillton	pinx123456	12345678910	✓
124.	Aleaxander Hamillton	pinx123456	12345678911234	✓
125.	Aleaxander	pinx123456	123456789112345	✓

	Hamillton			

4. **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
1.	Jonas	123ab	123456	✗
2.	Jonas	123ab	1234567	✗
3.	Jonas	123ab	12345678	✗
4.	Jonas	123ab	12345678910	✗
5.	Jonas	123ab	12345678911234	✗
6.	Jonas	123ab	123456789112345	✗
7.	Jonas	123ab	224466889977551	✗
8.	Jonas	123abc	123456	✗
9.	Jonas	123abc	1234567	✗
10.	Jonas	123abc	12345678	✗
11.	Jonas	123abc	12345678910	✗
12.	Jonas	123abc	12345678911234	✗
13.	Jonas	123abc	123456789112345	✗
14.	Jonas	123abc	224466889977551	✗
15.	Jonas	567mnop	123456	✗
16.	Jonas	567mnop	1234567	✗
17.	Jonas	567mnop	12345678	✗
18.	Jonas	567mnop	12345678910	✗
19.	Jonas	567mnop	12345678911234	✗

20.	Jonas	567mnop	123456789112345	✖
21.	Jonas	567mnop	224466889977551	✖
22.	Jonas	gho34566	123456	✖
23.	Jonas	gho34566	1234567	✖
24.	Jonas	gho34566	12345678	✖
25.	Jonas	gho34566	12345678910	✖
26.	Jonas	gho34566	12345678911234	✖
27.	Jonas	gho34566	123456789112345	✖
28.	Jonas	gho34566	224466889977551	✖
29.	Jonas	code22246	123456	✖
30.	Jonas	code22246	1234567	✖
31.	Jonas	code22246	12345678	✖
32.	Jonas	code22246	12345678910	✖
33.	Jonas	code22246	12345678911234	✖
34.	Jonas	code22246	123456789112345	✖
35.	Jonas	code22246	224466889977551	✖
36.	Jonas	pinx123456	123456	✖
37.	Jonas	pinx123456	1234567	✖
38.	Jonas	pinx123456	12345678	✖
39.	Jonas	pinx123456	12345678910	✖
40.	Jonas	pinx123456	12345678911234	✖
41.	Jonas	pinx123456	123456789112345	✖
42.	Jonas	pinx123456	224466889977551	✖
43.	Jonas	putx4445556	123456	✖
44.	Jonas	putx4445556	1234567	✖
45.	Jonas	putx4445556	12345678	✖
46.	Jonas	putx4445556	12345678910	✖
47.	Jonas	putx4445556	12345678911234	✖
48.	Jonas	putx4445556	123456789112345	✖
49.	Jonas	putx4445556	224466889977551	✖
50.	Newton	123ab	123456	✖
51.	Newton	123ab	1234567	✖
52.	Newton	123ab	12345678	✖
53.	Newton	123ab	12345678910	✖
54.	Newton	123ab	12345678911234	✖
55.	Newton	123ab	123456789112345	✖
56.	Newton	123ab	224466889977551	✖
57.	Newton	123abc	123456	✖

58.	Newton	123abc	1234567	✓
59.	Newton	123abc	12345678	✓
60.	Newton	123abc	12345678910	✓
61.	Newton	123abc	12345678911234	✓
62.	Newton	123abc	1234567891112345	✓
63.	Newton	123abc	224466889977551	✓
64.	Newton	567mnop	123456	✗
65.	Newton	567mnop	1234567	✓
66.	Newton	567mnop	12345678	✓
67.	Newton	567mnop	12345678910	✓
68.	Newton	567mnop	12345678911234	✓
69.	Newton	567mnop	1234567891112345	✓
70.	Newton	567mnop	224466889977551	✓
71.	Newton	gho34566	123456	✗
72.	Newton	gho34566	1234567	✓
73.	Newton	gho34566	12345678	✓
74.	Newton	gho34566	12345678910	✓
75.	Newton	gho34566	12345678911234	✓
76.	Newton	gho34566	1234567891112345	✓
77.	Newton	gho34566	224466889977551	✓
78.	Newton	code22246	123456	✗
79.	Newton	code22246	1234567	✓
80.	Newton	code22246	12345678	✓
81.	Newton	code22246	12345678910	✓
82.	Newton	code22246	12345678911234	✓
83.	Newton	code22246	1234567891112345	✓
84.	Newton	code22246	224466889977551	✓
85.	Newton	pinx123456	123456	✗
86.	Newton	pinx123456	1234567	✓
87.	Newton	pinx123456	12345678	✓
88.	Newton	pinx123456	12345678910	✓
89.	Newton	pinx123456	12345678911234	✓
90.	Newton	pinx123456	1234567891112345	✓
91.	Newton	pinx123456	224466889977551	✓
92.	Newton	putx4445556	123456	✗
93.	Newton	putx4445556	1234567	✗

94.	Newton	putx4445556	12345678	✖
95.	Newton	putx4445556	12345678910	✖
96.	Newton	putx4445556	12345678911234	✖
97.	Newton	putx4445556	123456789112345	✖
98.	Newton	putx4445556	224466889977551	✖
99.	Thommas	123ab	123456	✖
100.	Thommas	123ab	1234567	✖
101.	Thommas	123ab	12345678	✖
102.	Thommas	123ab	12345678910	✖
103.	Thommas	123ab	12345678911234	✖
104.	Thommas	123ab	123456789112345	✖
105.	Thommas	123ab	224466889977551	✖
106.	Thommas	123abc	123456	✖
107.	Thommas	123abc	1234567	✓
108.	Thommas	123abc	12345678	✓
109.	Thommas	123abc	12345678910	✓
110.	Thommas	123abc	12345678911234	✓
111.	Thommas	123abc	123456789112345	✓
112.	Thommas	123abc	224466889977551	✓
113.	Thommas	567mnop	123456	✖
114.	Thommas	567mnop	1234567	✓
115.	Thommas	567mnop	12345678	✓
116.	Thommas	567mnop	12345678910	✓
117.	Thommas	567mnop	12345678911234	✓
118.	Thommas	567mnop	123456789112345	✓
119.	Thommas	567mnop	224466889977551	✓
120.	Thommas	gho34566	123456	✖
121.	Thommas	gho34566	1234567	✓
122.	Thommas	gho34566	12345678	✓
123.	Thommas	gho34566	12345678910	✓
124.	Thommas	gho34566	12345678911234	✓
125.	Thommas	gho34566	123456789112345	✓
126.	Thommas	gho34566	224466889977551	✓
127.	Thommas	code22246	123456	✖
128.	Thommas	code22246	1234567	✓
129.	Thommas	code22246	12345678	✓
130.	Thommas	code22246	12345678910	✓
131.	Thommas	code22246	12345678911234	✓

132.	Thommas	code22246	123456789112345	✓
133.	Thommas	code22246	224466889977551	✓
134.	Thommas	pinx123456	123456	✗
135.	Thommas	pinx123456	1234567	✓
136.	Thommas	pinx123456	12345678	✓
137.	Thommas	pinx123456	12345678910	✓
138.	Thommas	pinx123456	12345678911234	✓
139.	Thommas	pinx123456	123456789112345	✓
140.	Thommas	pinx123456	224466889977551	✓
141.	Thommas	putx4445556	123456	✗
142.	Thommas	putx4445556	1234567	✗
143.	Thommas	putx4445556	12345678	✗
144.	Thommas	putx4445556	12345678910	✗
145.	Thommas	putx4445556	12345678911234	✗
146.	Thommas	putx4445556	123456789112345	✗
147.	Thommas	putx4445556	224466889977551	✗
148.	Mark Zukerburg	123ab	123456	✗
149.	Mark Zukerburg	123ab	1234567	✗
150.	Mark Zukerburg	123ab	12345678	✗
151.	Mark Zukerburg	123ab	12345678910	✗
152.	Mark Zukerburg	123ab	12345678911234	✗
153.	Mark Zukerburg	123ab	123456789112345	✗
154.	Mark Zukerburg	123ab	224466889977551	✗
155.	Mark Zukerburg	123abc	123456	✗
156.	Mark Zukerburg	123abc	1234567	✓
157.	Mark Zukerburg	123abc	12345678	✓
158.	Mark Zukerburg	123abc	12345678910	✓
159.	Mark	123abc	12345678911234	✓

	Zukerburg			
160.	Mark Zukerburg	123abc	123456789112345	✓
161.	Mark Zukerburg	123abc	224466889977551	✓
162.	Mark Zukerburg	567mnop	123456	✗
163.	Mark Zukerburg	567mnop	1234567	✓
164.	Mark Zukerburg	567mnop	12345678	✓
165.	Mark Zukerburg	567mnop	12345678910	✓
166.	Mark Zukerburg	567mnop	12345678911234	✓
167.	Mark Zukerburg	567mnop	123456789112345	✓
168.	Mark Zukerburg	567mnop	224466889977551	✓
169.	Mark Zukerburg	gho34566	123456	✗
170.	Mark Zukerburg	gho34566	1234567	✓
171.	Mark Zukerburg	gho34566	12345678	✓
172.	Mark Zukerburg	gho34566	12345678910	✓
173.	Mark Zukerburg	gho34566	12345678911234	✓
174.	Mark Zukerburg	gho34566	123456789112345	✓
175.	Mark Zukerburg	gho34566	224466889977551	✓
176.	Mark Zukerburg	code22246	123456	✗
177.	Mark Zukerburg	code22246	1234567	✓
178.	Mark Zukerburg	code22246	12345678	✓

179.	Mark Zukerburg	code22246	12345678910	✔
180.	Mark Zukerburg	code22246	12345678911234	✔
181.	Mark Zukerburg	code22246	123456789112345	✔
182.	Mark Zukerburg	code22246	224466889977551	✔
183.	Mark Zukerburg	pinx123456	123456	✘
184.	Mark Zukerburg	pinx123456	1234567	✔
185.	Mark Zukerburg	pinx123456	12345678	✔
186.	Mark Zukerburg	pinx123456	12345678910	✔
187.	Mark Zukerburg	pinx123456	12345678911234	✔
188.	Mark Zukerburg	pinx123456	123456789112345	✔
189.	Mark Zukerburg	pinx123456	224466889977551	✔
190.	Mark Zukerburg	putx4445556	123456	✘
191.	Mark Zukerburg	putx4445556	1234567	✘
192.	Mark Zukerburg	putx4445556	12345678	✘
193.	Mark Zukerburg	putx4445556	12345678910	✘
194.	Mark Zukerburg	putx4445556	12345678911234	✘
195.	Mark Zukerburg	putx4445556	123456789112345	✘
196.	Mark Zukerburg	putx4445556	224466889977551	✘
197.	Mahenoor Haider Ali	123ab	123456	✘
198.	Mahenoor	123ab	1234567	✘

	Haider Ali			
199.	Mahenoor Haider Ali	123ab	12345678	✘
200.	Mahenoor Haider Ali	123ab	12345678910	✘
201.	Mahenoor Haider Ali	123ab	12345678911234	✘
202.	Mahenoor Haider Ali	123ab	123456789112345	✘
203.	Mahenoor Haider Ali	123ab	224466889977551	✘
204.	Mahenoor Haider Ali	123abc	123456	✘
205.	Mahenoor Haider Ali	123abc	1234567	✓
206.	Mahenoor Haider Ali	123abc	12345678	✓
207.	Mahenoor Haider Ali	123abc	12345678910	✓
208.	Mahenoor Haider Ali	123abc	12345678911234	✓
209.	Mahenoor Haider Ali	123abc	123456789112345	✓
210.	Mahenoor Haider Ali	123abc	224466889977551	✓
211.	Mahenoor Haider Ali	567mnop	123456	✘
212.	Mahenoor Haider Ali	567mnop	1234567	✓
213.	Mahenoor Haider Ali	567mnop	12345678	✓
214.	Mahenoor Haider Ali	567mnop	12345678910	✓
215.	Mahenoor Haider Ali	567mnop	12345678911234	✓
216.	Mahenoor Haider Ali	567mnop	123456789112345	✓
217.	Mahenoor Haider Ali	567mnop	224466889977551	✓

218.	Mahenoor Haider Ali	gho34566	123456	✘
219.	Mahenoor Haider Ali	gho34566	1234567	✓
220.	Mahenoor Haider Ali	gho34566	12345678	✓
221.	Mahenoor Haider Ali	gho34566	12345678910	✓
222.	Mahenoor Haider Ali	gho34566	12345678911234	✓
223.	Mahenoor Haider Ali	gho34566	123456789112345	✓
224.	Mahenoor Haider Ali	gho34566	224466889977551	✓
225.	Mahenoor Haider Ali	code22246	123456	✘
226.	Mahenoor Haider Ali	code22246	1234567	✓
227.	Mahenoor Haider Ali	code22246	12345678	✓
228.	Mahenoor Haider Ali	code22246	12345678910	✓
229.	Mahenoor Haider Ali	code22246	12345678911234	✓
230.	Mahenoor Haider Ali	code22246	123456789112345	✓
231.	Mahenoor Haider Ali	code22246	224466889977551	✓
232.	Mahenoor Haider Ali	pinx123456	123456	✘
233.	Mahenoor Haider Ali	pinx123456	1234567	✓
234.	Mahenoor Haider Ali	pinx123456	12345678	✓
235.	Mahenoor Haider Ali	pinx123456	12345678910	✓
236.	Mahenoor Haider Ali	pinx123456	12345678911234	✓
237.	Mahenoor	pinx123456	123456789112345	✓

	Haider Ali			
238.	Mahenoor Haider Ali	pinx123456	224466889977551	✓
239.	Mahenoor Haider Ali	putx4445556	123456	✗
240.	Mahenoor Haider Ali	putx4445556	1234567	✗
241.	Mahenoor Haider Ali	putx4445556	12345678	✗
242.	Mahenoor Haider Ali	putx4445556	12345678910	✗
243.	Mahenoor Haider Ali	putx4445556	12345678911234	✗
244.	Mahenoor Haider Ali	putx4445556	123456789112345	✗
245.	Mahenoor Haider Ali	putx4445556	224466889977551	✗
246.	Aleaxander Hamillton	123ab	123456	✗
247.	Aleaxander Hamillton	123ab	1234567	✗
248.	Aleaxander Hamillton	123ab	12345678	✗
249.	Aleaxander Hamillton	123ab	12345678910	✗
250.	Aleaxander Hamillton	123ab	12345678911234	✗
251.	Aleaxander Hamillton	123ab	123456789112345	✗
252.	Aleaxander Hamillton	123ab	224466889977551	✗
253.	Aleaxander Hamillton	123abc	123456	✗
254.	Aleaxander Hamillton	123abc	1234567	✓
255.	Aleaxander Hamillton	123abc	12345678	✓
256.	Aleaxander Hamillton	123abc	12345678910	✓

257.	Aleaxander Hamillton	123abc	12345678911234	✓
258.	Aleaxander Hamillton	123abc	123456789112345	✓
259.	Aleaxander Hamillton	123abc	224466889977551	✓
260.	Aleaxander Hamillton	567mnop	123456	✗
261.	Aleaxander Hamillton	567mnop	1234567	✓
262.	Aleaxander Hamillton	567mnop	12345678	✓
263.	Aleaxander Hamillton	567mnop	12345678910	✓
264.	Aleaxander Hamillton	567mnop	12345678911234	✓
265.	Aleaxander Hamillton	567mnop	123456789112345	✓
266.	Aleaxander Hamillton	567mnop	224466889977551	✓
267.	Aleaxander Hamillton	gho34566	123456	✗
268.	Aleaxander Hamillton	gho34566	1234567	✓
269.	Aleaxander Hamillton	gho34566	12345678	✓
270.	Aleaxander Hamillton	gho34566	12345678910	✓
271.	Aleaxander Hamillton	gho34566	12345678911234	✓
272.	Aleaxander Hamillton	gho34566	123456789112345	✓
273.	Aleaxander Hamillton	gho34566	224466889977551	✓
274.	Aleaxander Hamillton	code22246	123456	✗
275.	Aleaxander Hamillton	code22246	1234567	✓
276.	Aleaxander	code22246	12345678	✓

	Hamillton			
277.	Aleaxander Hamillton	code22246	12345678910	✓
278.	Aleaxander Hamillton	code22246	12345678911234	✓
279.	Aleaxander Hamillton	code22246	123456789112345	✓
280.	Aleaxander Hamillton	code22246	224466889977551	✓
281.	Aleaxander Hamillton	pinx123456	123456	✘
282.	Aleaxander Hamillton	pinx123456	1234567	✓
283.	Aleaxander Hamillton	pinx123456	12345678	✓
284.	Aleaxander Hamillton	pinx123456	12345678910	✓
285.	Aleaxander Hamillton	pinx123456	12345678911234	✓
286.	Aleaxander Hamillton	pinx123456	123456789112345	✓
287.	Aleaxander Hamillton	pinx123456	224466889977551	✓
288.	Aleaxander Hamillton	putx4445556	123456	✘
289.	Aleaxander Hamillton	putx4445556	1234567	✘
290.	Aleaxander Hamillton	putx4445556	12345678	✘
291.	Aleaxander Hamillton	putx4445556	12345678910	✘
292.	Aleaxander Hamillton	putx4445556	12345678911234	✘
293.	Aleaxander Hamillton	putx4445556	123456789112345	✘
294.	Aleaxander Hamillton	putx4445556	224466889977551	✘
295.	Hubert Blaine	123ab	123456	✘

	Grayson			
296.	Hubert Blaine Grayson	123ab	1234567	✖
297.	Hubert Blaine Grayson	123ab	12345678	✖
298.	Hubert Blaine Grayson	123ab	12345678910	✖
299.	Hubert Blaine Grayson	123ab	12345678911234	✖
300.	Hubert Blaine Grayson	123ab	123456789112345	✖
301.	Hubert Blaine Grayson	123ab	224466889977551	✖
302.	Hubert Blaine Grayson	123abc	123456	✖
303.	Hubert Blaine Grayson	123abc	1234567	✓
304.	Hubert Blaine Grayson	123abc	12345678	✓
305.	Hubert Blaine Grayson	123abc	12345678910	✓
306.	Hubert Blaine Grayson	123abc	12345678911234	✓
307.	Hubert Blaine Grayson	123abc	123456789112345	✓
308.	Hubert Blaine	123abc	224466889977551	✓

	Grayson			
309.	Hubert Blaine Grayson	567mnop	123456	✘
310.	Hubert Blaine Grayson	567mnop	1234567	✔
311.	Hubert Blaine Grayson	567mnop	12345678	✔
312.	Hubert Blaine Grayson	567mnop	12345678910	✔
313.	Hubert Blaine Grayson	567mnop	12345678911234	✔
314.	Hubert Blaine Grayson	567mnop	123456789112345	✔
315.	Hubert Blaine Grayson	567mnop	224466889977551	✔
316.	Hubert Blaine Grayson	gho34566	123456	✘
317.	Hubert Blaine Grayson	gho34566	1234567	✔
318.	Hubert Blaine Grayson	gho34566	12345678	✔
319.	Hubert Blaine Grayson	gho34566	12345678910	✔
320.	Hubert Blaine Grayson	gho34566	12345678911234	✔
321.	Hubert Blaine	gho34566	123456789112345	✔

	Grayson			
322.	Hubert Blaine Grayson	gho34566	224466889977551	✓
323.	Hubert Blaine Grayson	code22246	123456	✗
324.	Hubert Blaine Grayson	code22246	1234567	✓
325.	Hubert Blaine Grayson	code22246	12345678	✓
326.	Hubert Blaine Grayson	code22246	12345678910	✓
327.	Hubert Blaine Grayson	code22246	12345678911234	✓
328.	Hubert Blaine Grayson	code22246	123456789112345	✓
329.	Hubert Blaine Grayson	code22246	224466889977551	✓
330.	Hubert Blaine Grayson	pinx123456	123456	✗
331.	Hubert Blaine Grayson	pinx123456	1234567	✓
332.	Hubert Blaine Grayson	pinx123456	12345678	✓
333.	Hubert Blaine Grayson	pinx123456	12345678910	✓
334.	Hubert Blaine	pinx123456	12345678911234	✓

	Grayson				
335.	Hubert Blaine Grayson	pinx123456	123456789112345	✓	
336.	Hubert Blaine Grayson	pinx123456	224466889977551	✓	
337.	Hubert Blaine Grayson	putx4445556	123456	✗	
338.	Hubert Blaine Grayson	putx4445556	1234567	✗	
339.	Hubert Blaine Grayson	putx4445556	12345678	✗	
340.	Hubert Blaine Grayson	putx4445556	12345678910	✗	
341.	Hubert Blaine Grayson	putx4445556	12345678911234	✗	
342.	Hubert Blaine Grayson	putx4445556	123456789112345	✗	
343.	Hubert Blaine Grayson	putx4445556	224466889977551	✗	

✓ => Valid input
✗ => Invalid input