8. QUESTION

[PAINLESS]

Proof of concept to demonstrate screen level field validations using regular expression. Expectation is to demonstrate, number, text, PAN, Passport currency, age, restricting special characters, restricting character range, restricting number range, restricting date range etc. solution shall be not limiting the mentioned sample validations.

Source Code GIT Repository:

Web Browser Link:

https://github.com/Ajay-Kumar-Aspiring-Minds-Round-2/userapp

GIT Clone Link:

https://github.com/Ajay-Kumar-Aspiring-Minds-Round-2/userapp.git

Technology Stack:

Key Features:

- **Angular UI** for entering user details.
- **Angular Reactive Forms** Validation.
- **Required Field Validation, Pattern Validation & Min-Max Range Validations.**
- **Istanbul Code Coverage Report** for Angular Components.
- Use of predefined **Angular Modules** (Ex: **BrowserModule, FormsModule, ReactiveFormsModule**, etc.,)
- Use of **PrimeNG – Angular UI Component Library**.
- Managing **Angular Routing**.

User Details Form:

- **FormBuilder, FormGroup** & **FormControl** controls are used for **Reactive Forms** design of User Details Form User Interface.

- **Required, Pattern, Min & Max Range Validators** are used for validations.

- **PrimeNG Angular UI Component Library** form elements are used for UI design.

- **Angular Routing** is managed in AppRoutingModule for the routes.

- **Karma configuration:**
  - **Karma** is a testing automation tool created by the Angular team at Google.
  - **Karma** is a task runner for our tests. It uses a configuration file in order to set the startup file, the reporters, the testing framework, the browser among other things.

- **Jasmine Test Framework:**
  - **Jasmine** is a test framework we are going to use to create or write our tests.
  - **Jasmine** has a bunch of functionalities to allow us, to write different kinds of tests.

- **Istanbul Code Coverage Report:**
  - **Istanbul** is a test coverage tool that works with many different frameworks.
  - It tracks which parts of your code are executed by your unit tests. Thus, you can use Istanbul to view and see coverage gaps.

Field Validation Conditions for FULL NAME:

The valid **FULL NAME** must satisfy the following conditions:

1. It should allow lower case & upper case alphabets.
2. Space is a allowed character.

Field Validation Conditions for GENDER:

The valid **GENDER** must satisfy the following conditions:

1. Options to select are Male or Female.

Field Validation Conditions for AGE:

The valid **AGE** must satisfy the following conditions:

2. It should be any number from 1 to 99.
3. Only numbers are allowed.

Field Validation Conditions for PAN NUMBER:

The valid **PAN NUMBER** must satisfy the following conditions:

1. It should be ten characters long.
2. The first five characters should be any upper case alphabets.
3. The next four-characters should be any number from 0 to 9.
4. The last(tenth) character should be any upper case alphabet.
5. It should not contain any white spaces.

Field Validation Conditions for PASSPORT NUMBER:

The valid **PASSPORT NUMBER** must satisfy the following conditions:

1. It should be eight characters long.
2. The first character should be an upper case alphabet.
3. The next two characters should be a number, but the first character should be any number from 1-9 and the second character should be any number from 0-9.
4. It should be zero or one white space character.
5. The next four characters should be any number from 0-9.
6. The last character should be any number from 1-9.

Field Validation Conditions for CURRENCY:

The valid **CURRENCY** must satisfy the following conditions:

1. Only one decimal point is allowed.
2. Only two digits after a decimal point is a valid format (Ex: 123.50)
3. Only one digit after a decimal point is invalid (Ex: 3.5 is invalid)

Field Validations:

- **Full Name field - textfield**
  - Required field validation.
  - Pattern Validation - **"^[a-zA-z]*$" – Alphabets (a-z & A-Z along with space are allowed)**

- **Gender Field – radio button**
  - Required field validation (**Male or Female options** to select from).

- **Age Field – textfield**
  - Required field validation.
  - Pattern Validation - **"^[0-9]*$" – Numbers only are allowed.**
  - Min & Max Range validation **– Allowed within range of 1 to 99.**

- **Pan Number – textfield**
  - Required field validation.
  - Pattern Validation - **"[A-Z]{5}[0-9]{4}[A-Z]{1}"**
    Only pattern matched values are allowed, where:
    - [A-Z]{5} represents the first five upper case alphabets which can be A to Z.
    - [0-9]{4} represents the four numbers which can be 0-9.
    - [A-Z]{1} represents the one upper case alphabet which can be A to Z.

- **Passport Number – textfield**
  - Required field validation.
  - Pattern Validation - **"^[A-PR-WYa-pr-wy][1-9]\\d\\s?\\d{4}[1-9]$"**
    Only pattern matched values are allowed, where:
    - ^ represents the starting of the string.
    - [A-PR-WYa-pr-wy] represents the string should start with A-Z excluding Q, X, and Z.
    - [1-9] represents the second character should be any number from 1-9.
    - \\d represents the third character should be any number from 0-9.
    - \\s? represents the string should be zero or one white space character.
    - \\d{4} represents the next four characters should be any number from 0-9.
    - [1-9] represents the last character should be any number from 1-9.
    - $ represents the ending of the string.

- **Currency – textfield**
  - Required field validation.
  - Pattern Validation – **"^[0-9]+(\.[0-9]{2})?$"**

    Only pattern matched values are allowed, where:
    - ^ represents the starting of the string.
    - [0-9]+ represents any number of numbers from 0-9.
    - \. represents a allowed decimal point value.
    - [0-9]{2} represents the two numbers which can be 0-9.
    - (\.[0-9]{2})? represents decimal point and two numbers as optional.

User Details Form:

Welcome to User Details App

User Details

Full Name * (Space is allowed)

[Required]

Gender *
○ Male ○ Female

Age *

[Required]

PAN Number *

[Required]

Passport Number *

[Required]

Currency *

[Required]

[Submit]

User Details Form with Successful field validations:

Welcome to User Details App

User Details

✓ **Success**

User Details is Successful ✕

Full Name * (Space is allowed)

Vijay Kumar

Gender *

◉ Male ○ Female

Age *

30

PAN Number *

ASWDR1215N

Passport Number *

A2143568

Currency *

2100.50

Submit

{"name":"Vijay Kumar","gender":"Male","age":30,"panNo":"ASWDR1215N","passportNo":"A2143568","currency":"2100.50"}

User Details Form with Error field validations:

Welcome to User Details App

User Details

Full Name * (Space is allowed)

Required

⊗ Full Name is required

Gender *
◉ Male ○ Female

Age *

Required

⊗ Age is required

PAN Number *

Required

⊗ PAN Number is required

Passport Number *

Required

⊗ Passport Number is required

Currency *

Required

⊗ Currency is required

Submit

KGISL-GSS

Welcome to User Details App

User Details

Full Name * (Space is allowed)

1212

⊗ Enter only Alphabets

Gender *
◉ Male ○ Female

Age *

121

⊗ Enter age within range 1 - 99

PAN Number *

BJBPR12345

⊗ Enter valid PAN Number

Passport Number *

12345678

⊗ Enter valid Passport Number

Currency *

12.501

⊗ Enter valid Currency

Submit

Istanbul Code Coverage Report for User Details Component:

- **Unit Test Cases executed : 30 Unit Test Cases.**

- **Passed Unit Tests   : 30 Unit Test Cases.**

- **Failed Unit Tests   : 0 Unit Test Cases.**

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL                                    2: node        ∨  +  ⊟  🗑  ∧  X

Microsoft Windows [Version 10.0.19041.329]
(c) 2020 Microsoft Corporation. All rights reserved.

D:\Ajay_Kumar_R\AspiringMinds\Round2_Angular_UI\userapp>ng test --code-coverage
Your global Angular CLI version (11.0.5) is greater than your local version (8.3.25). The local Angular CLI version is used.

To disable this warning use "ng config -g cli.warnings.versionMismatch false".
10% building 2/2 modules 0 active24 01 2021 20:08:58.109:WARN [karma]: No captured browser, open http://localhost:9876/
24 01 2021 20:09:00.918:INFO [karma-server]: Karma v4.1.0 server started at http://0.0.0.0:9876/
24 01 2021 20:09:00.919:INFO [launcher]: Launching browsers Chrome with concurrency unlimited
24 01 2021 20:09:00.925:INFO [launcher]: Starting browser Chrome
24 01 2021 20:09:06.102:WARN [karma]: No captured browser, open http://localhost:9876/
24 01 2021 20:09:06.790:INFO [Chrome 88.0.4324 (Windows 10.0.0)]: Connected on socket m50yMh3vPX8G0Zh9AAAA with id 2534530
LOG: 'JSON REQUEST: {"name":"","gender":"","age":"","panNo":"","passportNo":"","currency":""}'
Chrome 88.0.4324 (Windows 10.0.0): Executed 11 of 30 SUCCESS (0 secs / 0.752 secs)
Chrome 88.0.4324 (Windows 10.0.0): Executed 30 of 30 SUCCESS (1.795 secs / 1.76 secs)
TOTAL: 30 SUCCESS
TOTAL: 30 SUCCESS
TOTAL: 30 SUCCESS


============================= Coverage summary =============================
Statements   : 100% ( 19/19 )
Branches     : 100% ( 0/0 )
Functions    : 100% ( 5/5 )
Lines        : 100% ( 16/16 )
============================================================================
```

Istanbul Code Coverage Report:
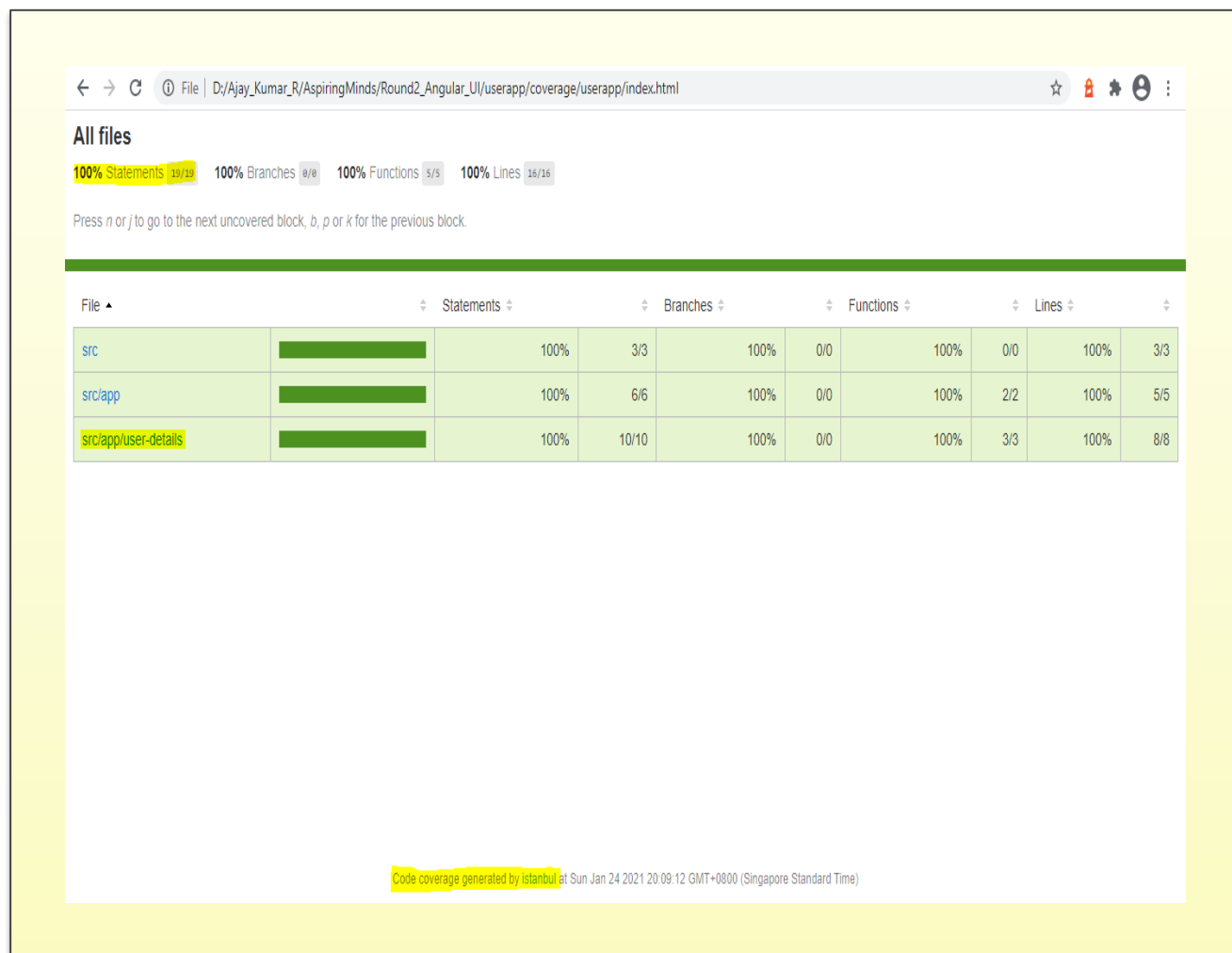
All files

100% Statements 19/19   **100%** Branches 0/0   **100%** Functions 5/5   **100%** Lines 16/16

Press *n* or *j* to go to the next uncovered block, *b*, *p* or *k* for the previous block.

File ▲		Statements ⇕		Branches ⇕		Functions ⇕		Lines ⇕	
src		100%	3/3	100%	0/0	100%	0/0	100%	3/3
src/app		100%	6/6	100%	0/0	100%	2/2	100%	5/5
src/app/user-details		100%	10/10	100%	0/0	100%	3/3	100%	8/8

Code coverage generated by istanbul at Sun Jan 24 2021 20:09:12 GMT+0800 (Singapore Standard Time)

100% Statements 10/10   **100%** Branches 0/0   **100%** Functions 3/3   **100%** Lines 8/8

Press *n* or *j* to go to the next uncovered block, *b, p* or *k* for the previous block.

```
1       import { Component, OnInit } from '@angular/core';
2       import { FormBuilder, FormGroup, Validators } from '@angular/forms';
3       import { MessageService } from 'primeng/api';
4
5       @Component({
6         selector: 'app-user-details',
7         templateUrl: './user-details.component.html',
8         styleUrls: ['./user-details.component.scss']
9       })
10  1x  export class UserDetailsComponent implements OnInit {
11
12        userDetailsForm: FormGroup;
13        submitted: boolean;
14        jsonRequest: string;
15
16  27x   constructor(private fb: FormBuilder, private messageService: MessageService) { }
17
18        ngOnInit() {
19  54x     this.userDetailsForm = this.fb.group({
20            name: ['', [Validators.required, Validators.pattern("^[a-zA-z ]*$")]],
21            gender: ['', [Validators.required]],
22            age: ['', [Validators.required, Validators.min(1), Validators.max(99), Validators.pattern("^[0-9]*$")]],
23            panNo: ['', [Validators.required, Validators.pattern("[A-Z]{5}[0-9]{4}[A-Z]{1}")]],
24            passportNo: ['', [Validators.required, Validators.pattern("^[A-PR-WYa-pr-wy][1-9]\\d\\s?\\d{4}[1-9]$")]],
25            currency: ['', [Validators.required, Validators.pattern("^[0-9]+(\.[0-9]{2})?$")]]
26          });
27        }
28
29        onSubmit(value: string) {
30  1x      this.submitted = true;
31  1x      this.messageService.add({
32            severity: 'success',
33            summary: 'Success',
34            detail: 'User Details is Successful',
35          });
36
37  1x      let jsonReq = this.userDetailsForm.value;
38
39  1x      console.log("JSON REQUEST: " + JSON.stringify(jsonReq));
40  1x      this.jsonRequest = JSON.stringify(jsonReq);
41        }
42
43      }
44
```

Code coverage generated by istanbul at Sun Jan 24 2021 20:09:12 GMT+0800 (Singapore Standard Time)

Karma Unit Test Cases Report:

Karma v4.1.0 - connected DEBUG

Chrome 88.0.4324 (Windows 10.0.0) is idle

⊛ Jasmine 3.4.0 Options

• •

30 specs, 0 failures, randomized with seed 92726 finished in NaNs

AppComponent
- should render title in a h1 tag
- should create the AppComponent
- should have as title 'app'

UserDetailsComponent
- Age required field validity with valid value within range 1 - 99
- Curreny required field validity with valid value as "123.12"
- Age max field validity with invalid value as "100"
- should create UserDetailsComponent
- Age min field validity with invalid value as "0"
- Curreny required field validity with valid value as "56754"
- Curreny required field validity with valid value as "92929292929292.12"
- Curreny required field validity with valid value as "3.50"
- should set submitted to true
- Passport Number pattern field validity with invalid value as "12096457"
- Gender required field validity with blank string value
- Gender required field validity with valid value as "Male"
- PAN Number required field validity with blank string value
- Full Name pattern field validity with invalid value as "Ajay 1234"
- Full Name required field validity with valid value as "Ajay Kumar"
- PAN Number pattern field validity with invalid value as "23ZAABN18J"
- PAN Number required field validity with valid value as "BNZAA2318J"
- Passport Number required field validity with blank string value
- Passport Number required field validity with valid value as "A2096457"
- Curreny required field validity with blank string value
- Age pattern field validity with invalid value as "qw"
- Age required field validity with blank string value
- Curreny pattern field validity with invalid value as "11.501"
- form invalid when empty
- Curreny pattern field validity with invalid value as "2.23332"
- Full Name required field validity with blank string value
- Curreny pattern field validity with invalid value as "3.5"

User Details

Router Tree Structure of Components: