Header component:

<nav class="navbar navbar-dark bg-warning">

  <div class="container-fluid">

    <a class="navbar-brand text-bold"href="#">

      <img

        src="https://img.icons8.com/color/96/000000/angularjs.png"

        alt="logo"

        width="50"

        height=""

      />

      <span class="text-uppercase text-body">ngular Quiz</span>

    </a>

  </div>

</nav>

import{ ComponentFixture, TestBed } from'@angular/core/testing';

import{ HeaderComponent } from'./header.component';

describe('HeaderComponent', () => {

  letcomponent:HeaderComponent;

  letfixture:ComponentFixture<HeaderComponent>;

  beforeEach(async () => {

    awaitTestBed.configureTestingModule({

      declarations: [ HeaderComponent ]

    })

    .compileComponents();

    fixture=TestBed.createComponent(HeaderComponent);

    component=fixture.componentInstance;

    fixture.detectChanges();

  });

  it('should create', () => {

    expect(component).toBeTruthy();

  });

});

import{ Component, OnInit } from'@angular/core';

@Component({

  selector: 'app-header',

  templateUrl: './header.component.html',

  styleUrls: ['./header.component.scss']

})

exportclassHeaderComponentimplementsOnInit {

  constructor() { }

  ngOnInit():void {

  }

}

Question Component:

<div class="container mt-5">

  <div class="card">

    <div class="d-flex justify-content-between p-3">

      <div class="image">

        <img

          src="https://img.icons8.com/color/96/000000/angularjs.png"

          alt="logo"

          width="90"

          height=""

        />

      </div>

      <div class="quiz-header">

        <h4 style="font-family: cursive">

          <span style="color: rgb(183, 7, 92)">Simplilearn</span> Online Quiz

        </h4>

        <span style="font-family: cursive"

          ><h4 class="nameColor">welcome {{ name }}</h4></span

        >

      </div>

    </div>

    <ng-container \*ngIf="!isQuizCompleted">

      <div class="d-flex justify-content-around py-3">

        <div class="score">

          <h5>{{ points }} Points</h5>

        </div>

        <div class="question-remain">

          <span style="font-style: italic"

            >Question {{ currentQuestion + 1 }} of {{ questionList.length }}

          </span>

        </div>

        <div class="timer">

          <h5>{{ counter }} sec &#8986;</h5>

        </div>

      </div>

      <div class="progress mb-3">

        <div

          class="progress-bar progress-bar-striped bg-success"

          role="progressbar"

          [ngStyle]="{ width: progress + '%' }"

          aria-valuenow="25"

          aria-valuemin="0"

          aria-valuemax="100"

        ></div>

      </div>

      <div class="question">

        <div class="card">

          <h3>{{ questionList[currentQuestion]?.questionText }}</h3>

        </div>

      </div>

      <div class="options">

        <ol \*ngFor="let option of questionList[currentQuestion]?.options">

          <li (click)="answer(currentQuestion + 1, option)">

            <divappChangeBg [isCorrect]="option.correct" class="card">

              {{ option.text }}

            </div>

          </li>

        </ol>

      </div>

      <div class="d-flex justify-content-between">

        <button

          [disabled]="currentQuestion === 0"

          class="btn"

          (click)="previousQuestion()"

        >

          <i

            class="fa-solid fa-chevron-left fa-3x fa text-primary"

            aria-hidden="true"

          ></i>

        </button>

        <button class="btn" (click)="resetQuiz()">

          <i

            class="fa-solid fa fa-refresh fa text-primary fa-3x"

            area-hidden="true"

          ></i>

        </button>

        <button

          [disabled]="currentQuestion === 8"

          class="btn"

          (click)="nextQuestion()"

        >

          <i

            class="fa-solid fa-chevron-right fa-3x fa text-primary"

            aria-hidden="true"

          ></i>

        </button>

      </div>

    </ng-container>

    <ng-container \*ngIf="isQuizCompleted">

      <div class="row d-flex justify-content-between">

        <img

          style="width: 50%"

          class="img-fluid col-sm-12 auto"

          src="https://c.tenor.com/MmYFrzenjVgAAAAC/boy-good-job.gif"

          alt=""

        />

        <div class="result text-center col-md-6 col-sm-12">

          <h3>

            Congratulations!!!!!<br/>You have completed the quiz.....

            <br/>Below is your result:

          </h3>

          <p>Total question Attempted : {{ questionList.length }}</p>

          <p>Total Correct Answered :{{ correctAnswer }}</p>

          <p>Total Wrong Answered : {{ inCorrectAnswer }}</p>

          <p>Your Score : {{ points }} points</p>

        </div>

      </div>

    </ng-container>

  </div>

</div>

.card{

    max-width:800px;

    margin:0auto;

    padding:10px;

}

li{

    list-style-type:none;

    cursor:pointer;

    margin:10px0;

}

li.card:hover{

 border:1pxsolidrgb(99, 136, 51);

 background-color: lightcyan;

}

ol{

    padding:0;

}

.nameColor{

    padding:10px;

    color:rgb(65, 40, 3);

    background-color: rgb(118, 230, 118);

    border-radius:20px;

}

.nameColor:hover{

    color:black;

    background-color: bisque;

}

import{ ComponentFixture, TestBed } from'@angular/core/testing';

import{ QuestionComponent } from'./question.component';

describe('QuestionComponent', () => {

  letcomponent:QuestionComponent;

  letfixture:ComponentFixture<QuestionComponent>;

  beforeEach(async () => {

    awaitTestBed.configureTestingModule({

      declarations: [ QuestionComponent ]

    })

    .compileComponents();

    fixture=TestBed.createComponent(QuestionComponent);

    component=fixture.componentInstance;

    fixture.detectChanges();

  });

  it('should create', () => {

    expect(component).toBeTruthy();

  });

});

import{ Component, OnInit } from'@angular/core';

import{ interval } from'rxjs';

import{ QuestionService } from'../service/question.service';

@Component({

  selector: 'app-question',

  templateUrl: './question.component.html',

  styleUrls: ['./question.component.scss'],

})

exportclassQuestionComponentimplementsOnInit {

  publicname:String='';

  publicquestionList:any= [];

  publiccurrentQuestion:number=0;

  publicpoints:number=0;

  counter=60;

  correctAnswer:number=0;

  inCorrectAnswer:number=0;

  interval$:any;

  progress:string='0';

  isQuizCompleted:Boolean=false;

  constructor(privatequestionService:QuestionService) {}

  ngOnInit():void {

    this.name=localStorage.getItem('name')!;

    this.getAllQuestions();

    this.startCounter();

  }

  getAllQuestions() {

    this.questionService.getQuestionJson().subscribe((res) => {

      this.questionList=res.questions;

    });

  }

  nextQuestion() {

    this.currentQuestion++;

  }

  previousQuestion() {

    this.currentQuestion--;

  }

  answer(currentQno:number, option:any) {

    if (currentQno===this.questionList.length) {

      this.isQuizCompleted=true;

      this.stopCounter();

    }

    if (option.correct) {

      this.points+=10;

      this.correctAnswer++;

      setTimeout(() => {

        this.currentQuestion++;

        this.resetCounter();

        this.getProgressPercent();

      }, 1000);

      // this.points = this.points + 10;

    } else{

    setTimeout(() => {

        this.currentQuestion++;

        this.inCorrectAnswer++;

        this.resetCounter();

        this.getProgressPercent();

    }, 1000);

      this.points-=10;

    }

  }

  startCounter() {

    this.interval$=interval(1000).subscribe((val) => {

      this.counter--;

      if (this.counter===0) {

        this.currentQuestion++;

        this.counter=60;

        this.points-=10;

      }

    });

    setTimeout(() => {

      this.interval$.unsubscribe();

    }, 6000000);

  }

  stopCounter() {

    this.interval$.unsubscribe();

    this.counter=0;

  }

  resetCounter() {

    this.stopCounter();

    this.counter=60;

    this.startCounter();

  }

  resetQuiz() {

    this.resetCounter();

    this.getAllQuestions();

    this.points=0;

    this.counter=60;

    this.currentQuestion=0;

    this.progress='0';

  }

  getProgressPercent() {

    this.progress= (

      (this.currentQuestion/this.questionList.length) \*

      100

    ).toString();

    returnthis.progress;

  }

}

Service Component:

import{ TestBed } from'@angular/core/testing';

import{ QuestionService } from'./question.service';

describe('QuestionService', () => {

  letservice:QuestionService;

  beforeEach(() => {

    TestBed.configureTestingModule({});

    service=TestBed.inject(QuestionService);

  });

  it('should be created', () => {

    expect(service).toBeTruthy();

  });

});

import{ Injectable } from'@angular/core';

import{ HttpClient } from'@angular/common/http';

@Injectable({

  providedIn: 'root'

})

exportclassQuestionService {

  constructor(privatehttp:HttpClient) { }

  getQuestionJson(){

  returnthis.http.get<any>("assets/questions.json");

  }

}

Welcome Component:

<div class="container bg-light py-5">

  <h1 class="dislay-5 fw-bold">Welcome to Online Test Application</h1>

  <p class="col-md-8 fs-4">

    This quiz will contains total 9 questions.Each question holds 10 points

  </p>

  <h4>Rules:</h4>

  <ol>

    <li>Correct Question gives you 10 points.</li>

    <li>Incorrect question gives you -10 points.</li>

    <li>You will have 60 sec to answer each question.</li>

    <li>Refreshing the page will reset the Quit.</li>

    <h1 style="font-family: cursive; text-align: center">All the best.....</h1>

    <div class="name col-md-4 my-3">

      <label for="">Enter your name:</label>

      <input #name type="text" class="form-control"/>

    </div>

    <button class="btnbtn-primary btn-lg hover"routerLink="/question" (click)="startQuiz()">

      Start the Quiz

    </button>

  </ol>

</div>

.hover:hover{

background-color: blanchedalmond;

color: black;

}

import{ ComponentFixture, TestBed } from'@angular/core/testing';

import{ WelcomeComponent } from'./welcome.component';

describe('WelcomeComponent', () => {

  letcomponent:WelcomeComponent;

  letfixture:ComponentFixture<WelcomeComponent>;

  beforeEach(async () => {

    awaitTestBed.configureTestingModule({

      declarations: [ WelcomeComponent ]

    })

    .compileComponents();

    fixture=TestBed.createComponent(WelcomeComponent);

    component=fixture.componentInstance;

    fixture.detectChanges();

  });

  it('should create', () => {

    expect(component).toBeTruthy();

  });

});

import{ Component, OnInit, ViewChild, ElementRef } from'@angular/core';

@Component({

  selector: 'app-welcome',

  templateUrl: './welcome.component.html',

  styleUrls: ['./welcome.component.scss'],

})

exportclassWelcomeComponentimplementsOnInit {

  @ViewChild('name') nameKey!:ElementRef;

  constructor() {}

  ngOnInit():void {

  }

  startQuiz() {

    localStorage.setItem("name", this.nameKey.nativeElement.value);

   }

}

App (root) Componenet:

import{ NgModule } from'@angular/core';

import{ RouterModule, Routes } from'@angular/router';

import{ QuestionComponent } from'./question/question.component';

import{ WelcomeComponent } from'./welcome/welcome.component';

constroutes:Routes= [

  {path:'',redirectTo:'welcome',pathMatch:"full"},

  { path: "welcome", component: WelcomeComponent },

  {path:"question",component:QuestionComponent}

];

@NgModule({

  imports: [RouterModule.forRoot(routes)],

  exports: [RouterModule]

})

exportclassAppRoutingModule{ }

<app-header></app-header>

<router-outlet></router-outlet>

import{ TestBed } from'@angular/core/testing';

import{ RouterTestingModule } from'@angular/router/testing';

import{ AppComponent } from'./app.component';

describe('AppComponent', () => {

  beforeEach(async () => {

    awaitTestBed.configureTestingModule({

      imports: [

        RouterTestingModule

      ],

      declarations: [

        AppComponent

      ],

    }).compileComponents();

  });

  it('should create the app', () => {

    constfixture=TestBed.createComponent(AppComponent);

    constapp=fixture.componentInstance;

    expect(app).toBeTruthy();

  });

  it(`should have as title 'OnlineTestApplication'`, () => {

    constfixture=TestBed.createComponent(AppComponent);

    constapp=fixture.componentInstance;

    expect(app.title).toEqual('OnlineTestApplication');

  });

  it('should render title', () => {

    constfixture=TestBed.createComponent(AppComponent);

    fixture.detectChanges();

    constcompiled=fixture.nativeElementasHTMLElement;

    expect(compiled.querySelector('.content span')?.textContent).toContain('OnlineTestApplication app is running!');

  });

});

import{ Component } from'@angular/core';

@Component({

  selector: 'app-root',

  templateUrl: './app.component.html',

  styleUrls: ['./app.component.scss']

})

exportclassAppComponent {

  title='OnlineTestApplication';

}

import{ NgModule } from'@angular/core';

import{ BrowserModule } from'@angular/platform-browser';

import{ AppRoutingModule } from'./app-routing.module';

import{ AppComponent } from'./app.component';

import{ WelcomeComponent } from'./welcome/welcome.component';

import{ QuestionComponent } from'./question/question.component';

import{ HeaderComponent } from'./header/header.component';

import{ HttpClientModule } from'@angular/common/http';

import{ ChangeBgDirective } from'./change-bg.directive';

@NgModule({

  declarations: [

    AppComponent,

    WelcomeComponent,

    QuestionComponent,

    HeaderComponent,

    ChangeBgDirective

  ],

  imports: [

    BrowserModule,

    AppRoutingModule,

    HttpClientModule

  ],

  providers: [],

  bootstrap: [AppComponent]

})

exportclassAppModule{ }

Directive:

import {

  Directive,

  ElementRef,

  HostListener,

  Input,

  Renderer2,

} from'@angular/core';

@Directive({

  selector: '[appChangeBg]',

})

exportclassChangeBgDirective {

  @Input() isCorrect:Boolean=false;

  constructor(privateel:ElementRef, privaterender:Renderer2) {}

  @HostListener('click') answer() {

    if (this.isCorrect) {

      this.render.setStyle(this.el.nativeElement, 'background', 'green');

      this.render.setStyle(this.el.nativeElement, 'color', '#fff');

      this.render.setStyle(this.el.nativeElement, 'border', '2px solid grey');

    } else {

      this.render.setStyle(this.el.nativeElement, 'background', 'red');

      this.render.setStyle(this.el.nativeElement, 'color', '#fff');

      this.render.setStyle(this.el.nativeElement, 'border', '2px solid grey');

    }

  }

}

Json:

{

  "questions": [

    {

      "questionText": "Which of the following does TypeScript use to specify types?",

      "options": [

        {

          "text": ":",

          "correct": true

        },

        {

          "text": ";"

        },

        {

          "text": "!"

        },

        {

          "text": "&"

        }

      ],

      "explanation": "TS uses a colon (:) to separate the property name from the property type"

    },

    {

      "questionText": "Which of the following is NOT a type used in TypeScript?",

      "options": [

        {

          "text": "number"

        },

        {

          "text": "string"

        },

        {

          "text": "boolean"

        },

        {

          "text": "enum",

          "correct": true

        }

      ],

      "explanation": "enum is not used as a type in TypeScript"

    },

    {

      "questionText": "How can we specify properties and methods for an object in TypeScript?",

      "options": [

        {

          "text": "Use classes."

        },

        {

          "text": "Use interfaces.",

          "correct": true

        },

        {

          "text": "Use enums."

        },

        {

          "text": "Use async/await."

        }

      ],

      "explanation": "interfaces are typically used to list the properties and methods for an object"

    },

    {

      "questionText": "How else can Array<number> be written in TypeScript?",

      "options": [

        {

          "text": "@number"

        },

        {

          "text": "number[]",

          "correct": true

        },

        {

          "text": "number!"

        },

        {

          "text": "number?"

        }

      ],

      "explanation": "number[] is another way of writing Array<number> in TypeScript"

    },

    {

      "questionText": "In which of these does a class take parameters?",

      "options": [

        {

          "text": "constructor",

          "correct": true

        },

        {

          "text": "destructor"

        },

        {

          "text": "import"

        },

        {

          "text": "subscribe"

        }

      ],

      "explanation": "a constructor is used by a class to take in parameters"

    },

    {

      "questionText": "Which is NOT an access modifier?",

      "options": [

        {

          "text": "private"

        },

        {

          "text": "protected"

        },

        {

          "text": "public"

        },

        {

          "text": "async",

          "correct": true

        }

      ],

      "explanation": "async is not used as an access modifier type in TypeScript"

    },

    {

      "questionText": "Which keyword allows us to share information between files in TypeScript?",

      "options": [

        {

          "text": "import"

        },

        {

          "text": "export",

          "correct": true

        },

        {

          "text": "async"

        },

        {

          "text": "constructor"

        }

      ],

      "explanation": "the export keyword allows for the information to be transmitted between files"

    },

    {

      "questionText": "Which is an array method to generate a new array based on a condition?",

      "options": [

        {

          "text": "filter",

          "correct": true

        },

        {

          "text": "map"

        },

        {

          "text": "async"

        },

        {

          "text": "enum"

        }

      ],

      "explanation": "filter is a method used to conditionally create a new array"

    },

    {

      "questionText": "How is a property accessible within a class?",

      "options": [

        {

          "text": "Using this.propertyName",

          "correct": true

        },

        {

          "text": "Accessors"

        },

        {

          "text": "Destructuring"

        },

        {

          "text": "Arrow function"

        }

      ],

      "explanation": "this.propertyName is the way to access a specific property within a class"

    }

  ]

}

Global html;

<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="utf-8"/>

    <title>OnlineTestApplication</title>

    <basehref="/"/>

    <meta name="viewport" content="width=device-width, initial-scale=1"/>

    <linkrel="icon" type="image/x-icon"href="favicon.ico"/>

    <link

      href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"

      rel="stylesheet"

      integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOmLASjC"

      crossorigin="anonymous"

    />

    <link

      rel="stylesheet"

      href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css"

    />

  </head>

  <body>

    <app-root></app-root>

    <script

      src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"

      integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtIaxVXM"

      crossorigin="anonymous"

    ></script>

  </body>

</html>

Name:Abhishek Zende