Full Stack Web Development Exam

Dear Candidate,

The following exam will provide you with the opportunity to demonstrate your professional skills, ability to work under time constraints, programming experience, and independent problem-solving. The exam is limited to 48 hours from the time of receipt.

Your task is to write a basic functional CRUD application (back-end and front-end) to manage a list of university courses and their attributes.

The specifications described below, along with the screenshots, will define the scope of the app.

Your finished app should cover the specifications as best as you can, and you may use whatever tools and references you need in order to do so, as long as the solutions are viable and explainable by you.

Finally, the finished app code should be pushed to GitHub as a public project. The app should be uploaded/made accessible remotely, and a working link along with the GitHub link should be sent to vadim@adcore.com.

Good luck!

Specification:

I. Download CSV file which represent Courses data:

https://api.mockaroo.com/api/501b2790?count=1000&key=8683a1c0

The file above will generate 1000 rows, which will help you have initial data and understand the schema of the Course object:

- University text
- City text
- Country text
- Course Name text
- Course Description text
- Start Date date
- End Date date
- Price number
- Currency text

II. Build your back-end using Python 3+ and any web framework like Flask or FastAPI

- 1. Download the delimited file from the provided link.
- 2. Normalize it in memory using Pandas.
- 3. Save the normalized data into MongoDB.
- 4. Ensure the data in MongoDB expires every 10 minutes.
- 5. If the data expires, start from step one.

- 6. Check the expiration at the start of each application session.
- III. Build 4 web services including the usage of MongoDB queries and write operations:
 - 1. get courses(...) should support search on each text field, pagination, and return JSON.
 - 2. update_course(...) should update one course, receive a JSON object as a parameter, and return success or error.
 - 3. delete course(...) should delete one course, receive the ID as a parameter, and return success or error.
 - 4. create_course(...) should create a new course, receive a JSON object as a parameter, and return the ID of the new record or an error.
- IV. Create a UI using Angular 15+:
 - 1. User should be able to:
 - a. Find relevant courses.
 - b. Update a course.
 - c. Delete a course.
 - d. Create a new course.
 - e. Users shouldn't be able to save incorrect data and should see validation errors when needed.
 - 2. Use Implement pagination with server-side support.
 - 3. Use third-party controls like Autocomplete, Calendar, Loading Bars, Tooltips, etc. Choose one library from the list below::

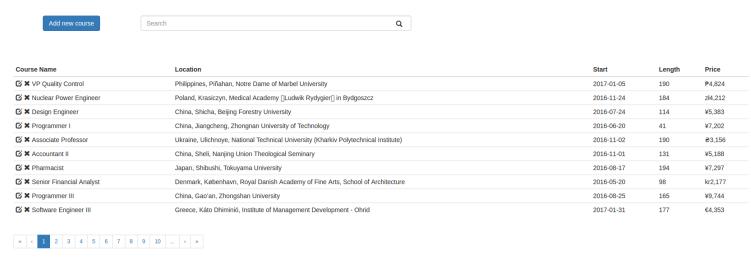
https://material.angular.io/

https://www.primefaces.org/primeng/

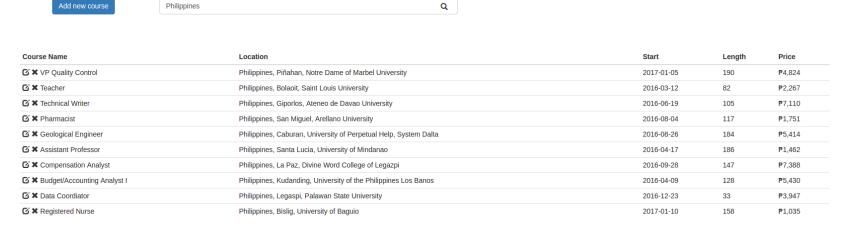
https://ng-bootstrap.github.io/

V. Please deploy your finished work to a cloud/hosting solution (e.g., Heroku, Azure, AWS) or use ngrok to share your work from your local machine. Save the code in a public GitHub repository and send the working application link and GitHub project link to vadim@adcore.com.

Main Screen (Course Length, should be calculated in UI, and Price should properly formatted using the Currency Code):

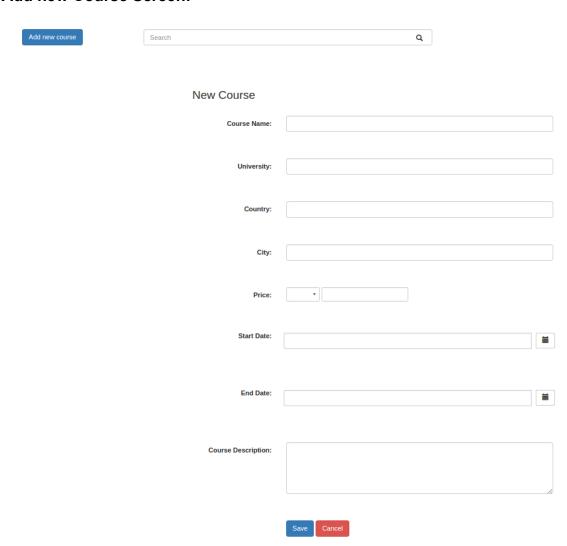


Search Result Screen (search on all text fields):





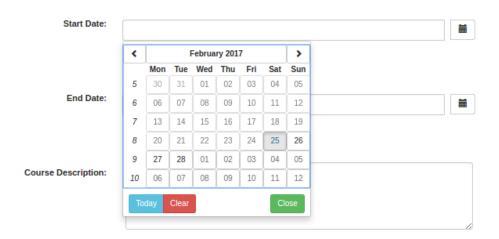
Add new Course Screen:



University, Country and City should be Autocomplete controls:



Start and End Dates should be Datepicker controls:



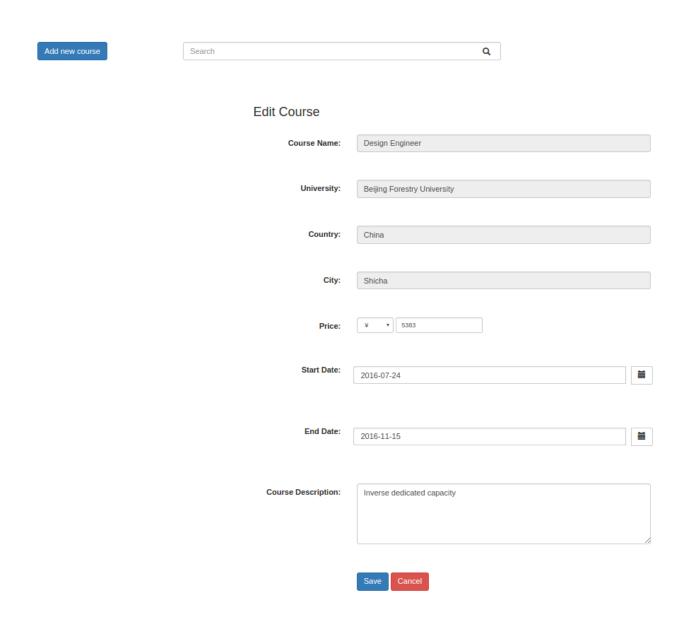
Course Description should be shown as Tooltip when hover on each row:



Each Course can be edited or removed:

Course Name							
☑ ★ VP Quality Control							
☑ ★ Nuclear Power Engineer							
☑ ★ Design Engineer							
☑ × Programmer I							
☑ ★ Associate Professor							
☑ X Accountant II							
☑ ★ Pharmacist							
☑ X Senior Financial Analyst							
☑ X Programmer III							
☑ X Software Engineer III							

Edit Course Screen (Course Name, University, Country and City not editable):



Pagination control:

Course Name	Location	Start	Length	Price
☑ ★ Chemical Engineer	Nigeria, Wuyo, Kebbi State University of Science and Technology	2017-02-07	101	₩4,321
☑ X Account Executive	Madagascar, Ankazobe, Université d'Antananarivo	2016-10-13	19	\$3,188
☑ X Senior Financial Analyst	Martinique, Fort-de-France, Université des Antilles et de la Guyane	2017-02-07	84	€4,341
☑ ★ Marketing Assistant	Portugal, Escola, Universidade Internacional Lisboa	2016-07-21	113	€1,319
☑ X Technical Writer	China, Shaheying, Southwest Petroleum University	2016-12-07	92	¥1,056
☑ X Systems Administrator IV	Cuba, Jesús Menéndez, Universidad Pedagógica "José Martí", Camagüey	2017-02-20	37	₱9,691
☑ X Budget/Accounting Analyst I	Philippines, Kudanding, University of the Philippines Los Banos	2016-04-09	128	₱5,430
☑ X Senior Cost Accountant	Brazil, Encruzilhada do Sul, Universidade Veiga de Almeida	2016-06-12	67	R\$7,518
☑ ¥ Health Coach III	Indonesia, Congkar, Universitas Mulawarman	2016-03-21	106	Rp5,547
☑ ★ Business Systems Development Analyst	Albania, Skënderbegas, University of Elbasan "Aleksander Xhuvani"	2017-01-26	198	L1,682

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Good luck!