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):

Add new course   Search 🔍

Course Name	Location	Start	Length	Price
☑ ✖ VP Quality Control	Philippines, Piñahan, Notre Dame of Marbel University	2017-01-05	190	₱4,824
☑ ✖ Nuclear Power Engineer	Poland, Krasiczyn, Medical Academy 口Ludwik Rydygier口 in Bydgoszcz	2016-11-24	184	zł4,212
☑ ✖ Design Engineer	China, Shicha, Beijing Forestry University	2016-07-24	114	¥5,383
☑ ✖ Programmer I	China, Jiangcheng, Zhongnan University of Technology	2016-06-20	41	¥7,202
☑ ✖ Associate Professor	Ukraine, Ulichnoye, National Technical University (Kharkiv Polytechnical Institute)	2016-11-02	190	₴3,156
☑ ✖ Accountant II	China, Sheli, Nanjing Union Theological Seminary	2016-11-01	131	¥5,188
☑ ✖ Pharmacist	Japan, Shibushi, Tokuyama University	2016-08-17	194	¥7,297
☑ ✖ Senior Financial Analyst	Denmark, København, Royal Danish Academy of Fine Arts, School of Architecture	2016-05-20	98	kr2,177
☑ ✖ Programmer III	China, Gao'an, Zhongshan University	2016-08-25	165	¥9,744
☑ ✖ Software Engineer III	Greece, Káto Dhiminió, Institute of Management Development - Ohrid	2017-01-31	177	€4,353

« ‹ 1 2 3 4 5 6 7 8 9 10 ... › »

Search Result Screen (search on all text fields) :

Add new course   Philippines 🔍

Course Name	Location	Start	Length	Price
☑ ✖ VP Quality Control	Philippines, Piñahan, Notre Dame of Marbel University	2017-01-05	190	₱4,824
☑ ✖ Teacher	Philippines, Bolaoit, Saint Louis University	2016-03-12	82	₱2,267
☑ ✖ Technical Writer	Philippines, Giporlos, Ateneo de Davao University	2016-06-19	105	₱7,110
☑ ✖ Pharmacist	Philippines, San Miguel, Arellano University	2016-08-04	117	₱1,751
☑ ✖ Geological Engineer	Philippines, Caburan, University of Perpetual Help, System Dalta	2016-08-26	184	₱5,414
☑ ✖ Assistant Professor	Philippines, Santa Lucia, University of Mindanao	2016-04-17	186	₱1,462
☑ ✖ Compensation Analyst	Philippines, La Paz, Divine Word College of Legazpi	2016-09-28	147	₱7,388
☑ ✖ Budget/Accounting Analyst I	Philippines, Kudanding, University of the Philippines Los Banos	2016-04-09	128	₱5,430
☑ ✖ Data Coordiator	Philippines, Legaspi, Palawan State University	2016-12-23	33	₱3,947
☑ ✖ Registered Nurse	Philippines, Bislig, University of Baguio	2017-01-10	158	₱1,035

« ‹ 1 2 3 4 5 6 › »

Add new Course Screen:

Add new course

Search 🔍

New Course

Course Name:

University:

Country:

City:

Price: ▾

Start Date: 📅

End Date: 📅

Course Description:

Save Cancel

University, Country and City should be Autocomplete controls:

University: `Und`

Universidade de Passo Fundo
Universitas Bunda Mulia Jakarta
Foundation University
FAAP - Fundação Armando Alvares Penteado
Fundación Universitaria San Martín

Country:

City:

Start and End Dates should be Datepicker controls:

Start Date:

End Date:

Course Description:

	February 2017						
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
5	30	31	01	02	03	04	05
6	06	07	08	09	10	11	12
7	13	14	15	16	17	18	19
8	20	21	22	23	24	25	26
9	27	28	01	02	03	04	05
10	06	07	08	09	10	11	12

Today   Clear   Close

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

Location	Start
Philippines, Piñahan, Notre Dame of Marbel University	2017-01-05
Poland, Krasiczyn, Medical Academy []Ludwik Rydygier[] in Bydgoszcz	2016-11-24
China, Shacha, Beijing Forestry University	2016-07-24
China, Jiangcheng, Zhongnan University of Technology	2016-08-20
Ukraine, Ulichnoye, National Technical University (Kharkiv Polytechnical Institute)	2016-11-02
China, Shell, Nanjing Union Theological Seminary	2016-11-01
Japan, Shibushi, Tokuyama University	2016-08-17
Denmark, København, Royal Danish Academy of Fine Arts, School of Architecture	2016-05-20
China, Gao'an, Zhongshan University	2016-08-25
Greece, Káto Dhimitió, Institute of Management Development - Ohrid	2017-01-31

(tooltip shown: Distributed bi-directional conglomeration)

Each Course can be edited or removed:

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

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

Add new course

Search 🔍

Edit Course

Course Name: Design Engineer

University: Beijing Forestry University

Country: China

City: Shicha

Price: ¥ ▼ 5383

Start Date: 2016-07-24 📅

End Date: 2016-11-15 📅

Course Description: Inverse dedicated capacity

Save Cancel

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
☑ ✖ Account Executive	Madagascar, Ankazobe, Université d'Antananarivo	2016-10-13	19	$3,188
☑ ✖ 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
☑ ✖ Technical Writer	China, Shaheying, Southwest Petroleum University	2016-12-07	92	¥1,056
☑ ✖ Systems Administrator IV	Cuba, Jesús Menéndez, Universidad Pedagógica "José Martí", Camagüey	2017-02-20	37	₱9,691
☑ ✖ Budget/Accounting Analyst I	Philippines, Kudanding, University of the Philippines Los Banos	2016-04-09	128	₱5,430
☑ ✖ 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

Good luck!