Frontend College Intern Hiring

Instructions

- This test has 3H time alloted and 150 marks in total.
- The recommended timeline for each section is written.
- You can attempt sections in any order.
- You can take help online only for the UI Exercise, but for other sections it is not recommended.
- If you decide to go online for the rest of sections, you can succeed in this round, but will face difficulty in upcoming rounds.
- Take this test as a highlight of the kind of work you are going to do with AdmitKard.
- To work with AdmitKard as a frontend engineer, you will need to have clear knowledge of JS fundamentals and an eye for good design.
- There is no top 5 or top 10 for this test, everyone who passes the threshold of a good software engineer, will be qualified for next rounds.
- On Completion of test, mail this filled file & your project zip/github/dropbox/google drive link to piyush.kumar@admitkard.com

How to submit your answers?

1. Start writing your answers there
2. Write your answers in this file and mail completed file to piyush.kumar@admitkard.com
3. For the UI Exercise, you can create your code locally and upload it to github, dropbox, googledrive, onedrive etc, and write the link in the docx file and mail the link as well.

1. Rapid Fire

25min - 15 marks

Each question is of 1 mark, unless written otherwise. You should be able to finish this in 25 min of time.

1. What is the title and description of this URL https://www.admitkard.com/new/aboutus ?
Answer:

Title : Study Abroad - Colleges, Courses, Exams, Fees | AdmitKard

Description: content="Want to study abroad ? Get expert advice and information on colleges, courses, exams, admission, student visa, and application process to study overseas."

2. What meta tag is required for making a website mobile responsive?
Answer:

Meta tag required: <meta name="viewport" content= "width=device-width, initial-scale=1.0">

3. What are different data types in JS?
Answer:

Different Data Types are : String , Null , Undefined , BigInt , Boolean , Number , Symbol , Object.

4. How is == different from === in JS?
Answer:

= = refers to the equality comparison operator Whereas = = = refers to 'Strict' comparison operator. The difference can be illustrated using an example:

if(55 == '55') // would return true and the if statement would get executed as type conversion is done and then checked for equality. Whereas,

if(55 === '55') // Would return false and the if statement would not be executed . As the comparison is STRICT and javascript would consider '55' as a string not as a number 55.

5. What is epoch? How to get current epoch in seconds in JS?
Answer:

Epoch is reference point from which time is measured. In Unix epoch the reference is 01.01.1970

Code Snippet to Get current epoch:

Const s = Math.floor(new Date( ).getTime( ) / 1000);

// s is in seconds . and here new Date( ).getTime( ) can be replaced with Date.now( ) for obtaining seconds with respect to the present time zone . whereas the former returns with respect to UTC time.

6. What are different types of CSS selectors?
Answer:

The types of css selectors include simple , combinational ,pseudo selectors and Attribute selectors.

Simple and combinational are the most used once where in simple the elements are styled with their name ,id and class. In combinational selectors the more than one element is selected using operators like '.','space', '.'

7. What is SVG? What is the difference between JPEG, PNG and SVG image?
Answer:

SVG is a vector graphics file image format for which we can specify a separate svg tag in html and give all the required style which can be used to draw form simple images to complex shpes in webpage. One advantage with svg is the the elements in it are available in DOM so that it is easy to add events and make them dynamic using javascript.

The difference between svg, jpg and png is that svg is a graphic file format with special features that are mentioned above, png is used when the image has text content in it and it is well compressed also, whereas jpg is preferred when large high quality images are required.

8. In Linux, how do you print the output of the current command to a file, providing an example with any command?
Answer:

We can use either > or >> for outputting the current command to a file, the difference is > operator replaces the existing content of file whereas >> operator appends the new content to the existing content.
Eg:

$ echo "I am Sree Charan M" > myname.txt
(this command will write the text in quotes to the file myname.txt after removing what ever the text that was already present)

$ echo "I am Sree Charan M" >> myname.txt
(this command will append the text in quotes to the already existing content in myname.txt)

9. In Linux, how do you find which process is running on port 3000, please write the command?
Answer:

10. In Linux, how will you find whether a file contains the text admitkard, provide an example with a command?
Answer:

$ grep -w admitkard myfile.txt // w option to grep is added so that the substring of the word are not taken into account.

11. (2.5 marks) How will you explain to a class 8th student about "How the internet works"?
Answer:

I will tell her that,
"Internet is like a big city where all the websites that you visits or like houses in it, each house in that city has a address only in numbers which is called ip address which definitely you can forgot so in that city they give all the houses a name also called domain name that is exactly the www thing that you type, similarly like you would associate your friend house by his/her name itself. Also like we would communicate with letters delivered by post man in that city also all the houses communicate with each other but through wired or wireless media hence time taken is very less. That's how you generally go to one house in internet by entering the name of house and getting any information you want"

12. (2.5 marks) How will you explain to a local shop owner about "How to create a website?"
Answer:

I will tell The Shop owner that,
"Creating a website is like constructing a whole new shop, wherein customers would see only the items that's been displayed and they take whatever they need from that. The goods storage that would be behind the shop is like the backend for actual website, where when people need more than or something different from what's been displayed it has to be served to them from that."

2. JS Fundamentals

20min - 20 marks

- This will test some of your basic JS fundamentals.
- You might have to write a few lines of JS code as well.
- The way this section is designed is to have a problem statement given to you and you have to propose a solution for the same using JS code.

1. Write a function to de-duplicate (remove duplicate) items in an array?

```
function dedupe(arr) {

return  array.filter((value, index ) => array.indexOf(value ) == index)
}
const arrOfNumbers = [1, 2, 3, 1, 5, 7, 3];
```

const dedupedArray = dedupe(arrOfNumbers);
console.log(dedupedArray); // prints [1, 2, 3, 5, 7];

2. Explain the following JS code snippets

a. What is the difference between following two declarations of function foo

```
var foo = function(){
    // Some code
};

function foo(){
    // Some code
};
```

Answer:

The major difference is, in declaration by function expression like in the 1st declaration the function is anonymous, it doesn't have a name so it is difficult to call itself inside the function. Also When declaring through function expression it gets executed as soon as the code is ran as it is just like a variable declaration, but in the 2nd type of declaration function runs and executed only when the function is called and value is passed if required.

b. Which one is more performant between using for and forEach to iterate over an array?

```
const arr = [1, 2, 3, 4];
for (var index = 0; i < arr.length; i++) {
      var arrItem = arr[index];
      // Use arrItem;
}

arr.forEach(function(arrItem) {
      // use arrItem
});
```

Answer

For loop is more efficient because in case of foreach every time the callback for the next element to process, with a new execution context and it has to do this for each and every element in a array which is very time consuming than just increment and condition check in for, also foreach is only limited to array data types whereas for is universal.

3. Algo Questions

40 min - 40 marks

Attempt any one of the two questions

- TIC-TAC-TOE
- SUDOKU

1. TIC-TAC-TOE: Given a 3x3 2-D matrix, how will you find who won a game of tic-tac-toe?

```
0 1 0
1 0 1
0 1 1
0 won
Input Format: [[0,1,0],[1,0,1],[0,1,1]]
Output Format: 0 won (OR 1 won OR draw)
```

Bonus Points
If you can handle array with blank values (-1 is blank value)
e.g.

```
 0  1 -1
 1  0  1
-1  0  0
Input: [[0, 1, -1], [1, 0, 1], [-1, 0, 0]]
0 won
```

Note: A match with at least 1 blank value cannot draw, it can be in progress.
e.g.

```
 0  1 -1
 1  0  1
-1  0 -1
```

No one won, but with current data, the match appears to be `in progress`**.**

Answer:

```
#include <bits/stdc++.h>

using namespace std;

void winner(int a[3][3])
{

 int w;

 for (int i=0; i<=2; i++)
 {
  if(a[i][0]==a[i][1] && a[i][1]==a[i][2] && a[i][0]!=0)
  {
    w = a[i][0];
  }
 }

 for(int i=0; i<=2; i++)
 {
```

```
 if (a[0][i]==a[1][i] && a[1][i]==a[2][i] && a[0][i]!=0)
 {
   w = a[0][i];
 }
}

if(a[0][0]==a[1][1] && a[1][1]==a[2][2] && a[0][0]!=0)
{
 w = a[0][0];
}

if(a[0][2]==a[1][1] && a[1][1]==a[2][0] && a [0][2]!=0)
{
 w = a[0][2];
}

 if( w == 0 || w == 1)
 {
    cout<<w<<"won";
 }
 else
 {
    cout<<"match drwan";
 }

}
 int main()
 {

  int n[3][3],i,j;

  for(i=0;i<3;i++)
  {
     for(j=0;j<3;j++)
     {
        cin>>n[i][j];
     }
  }

  winner(n);

  return 0;
 }
```

2. You have to verify if a 9x9 Sudoku board is valid.
Rules

- Each row must contain the digits 1-9 without repetition.
- Each column must contain the digits 1-9 without repetition.
- Each of the 9 3x3 sub-boxes of the grid must contain the digits 1-9 without repetition.

Input:

```
[
  ["5","3",".",".","7",".",".",".","."],
  ["6",".",".","1","9","5",".",".","."],
  [".","9","8",".",".",".",".","6","."],
  ["8",".",".",".","6",".",".",".","3"],
  ["4",".",".","8",".","3",".",".","1"],
  ["7",".",".",".","2",".",".",".","6"],
  [".","6",".",".",".",".","2","8","."],
  [".",".",".","4","1","9",".",".","5"],
  [".",".",".",".","8",".",".","7","9"]
]
```

Output: true
Answer
<-- -->

UI Exercise

90 min - 75 marks

OTP Verification Flow
You have to design 2 screens in which user can enter mobile number and we can verify OTP.

- Mobile Number Screen
- OTP Verification Screen

Here is the workflow of whole process

1. Enter Mobile Number (and change country if required)
2. Click on “Send OTP”
3. Send backend request to verify OTP (show alert in this case, no need to add backend)
4. Open Popup asking for OTP (default 1234)
5. Enter OTP number by number
6. Click on “Verify OTP”
7. Send backend request to verify OTP (show alert in this case, no need to add backend)
8. Success / Failure

Create this project on local, upload it online and add a link to Dropbox, Google Drive, Github URL so that we can see and download.
Please confirm the link is working by opening it in Incognito mode.

Link: https://github.com/sreecharan-m/AdmitKard-Task

Submitted By,

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My others Projects in web development links with a small description:

INVITATION MAKER

Jun 2020 - Jun 2020

https://github.com/sreecharan-m/delta-task-3

An application where after authentication users can create their invitation with their choices of fonts, color, the addition of images, etc. A link will be created and shared for people to view the invitation. integrated mail and google calendar API.

Color Twister

May 2020 - May 2020

https://github.com/sreecharan-m/deltawebdev-task2

Developed a game using html,css and vanilla js where users can visit the page and play.The games goes like the player has to take the ball without hitting any obstacle of different color. Support for multiplayer mode has also been added.

Mad speed - neversettle

Apr 2020 - Apr 2020

https://github.com/sreecharan-m/webtask1-neversettle

Webpage where a user chooses the level and start, based on the level users would get a grid-like box to click, based on the given conditions the time taken to complete the particular task is stored in local storage and the best score is be shown.