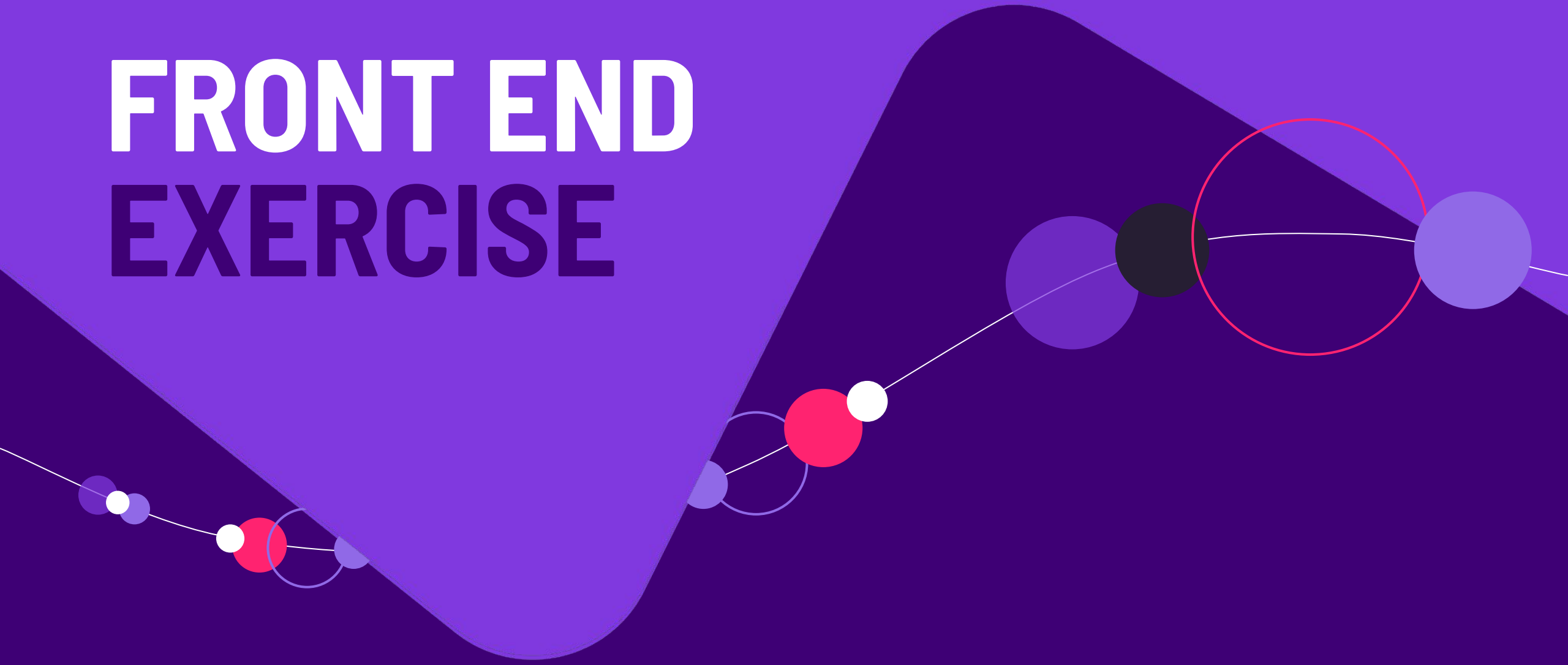
FRONT END EXERCISE



The exercise

- In this exercise we would like you to write a web application:
  - On visiting your application it opens a login page.
  - After successfully logging in, the application redirects to a user hierarchy page.
  - The hierarchy page fetches a tree of users from a database and presents it on the screen.
- For writing the application please create a new project using vite, the choice of framework is up to you.
- We've provided a firebase database and an encode function to help you get started.
- Please upload your completed exercise to a git repository and **send a link to it back to us** when you are done.
- Please note that when we review your work we assume that you are experienced with your chosen framework!
- In the next interview step we will review your work with you.
- The exercise should take between 3-4 hours to complete.

Good Luck!

The Application Database

- We provide a firebase database available at https://gongfetest.firebaseio.com/.json containing all the data you should need to complete the exercise
- Firebase represents its data as a JSON object and you read / write to it using REST requests.
- Element URLs must all end with the '.json' suffix. For instance a GET request to https://gongfetest.firebaseio.com/.json will retrieve the content of the whole database as one big JSON object. To access a specific element you should add to the root URL the names of all the objects from the root to the element you want to read separated by slash and add a '.json' suffix at the end.
- To access the first name of the second user, which in JS would be: *users[1].firstName*, you can use the following URL: https://gongfetest.firebaseio.com/users/1/firstName.json
- **Important**: If from any reason you need to reset the database, you can use https://9y9r481m5w.csb.app to re-populate it with data, just make sure to **select the correct database domain**.

The encode function:

- The below code snippet and **encode** function will return a secret which can then be used to lookup a users ID in the database when given an email and password.

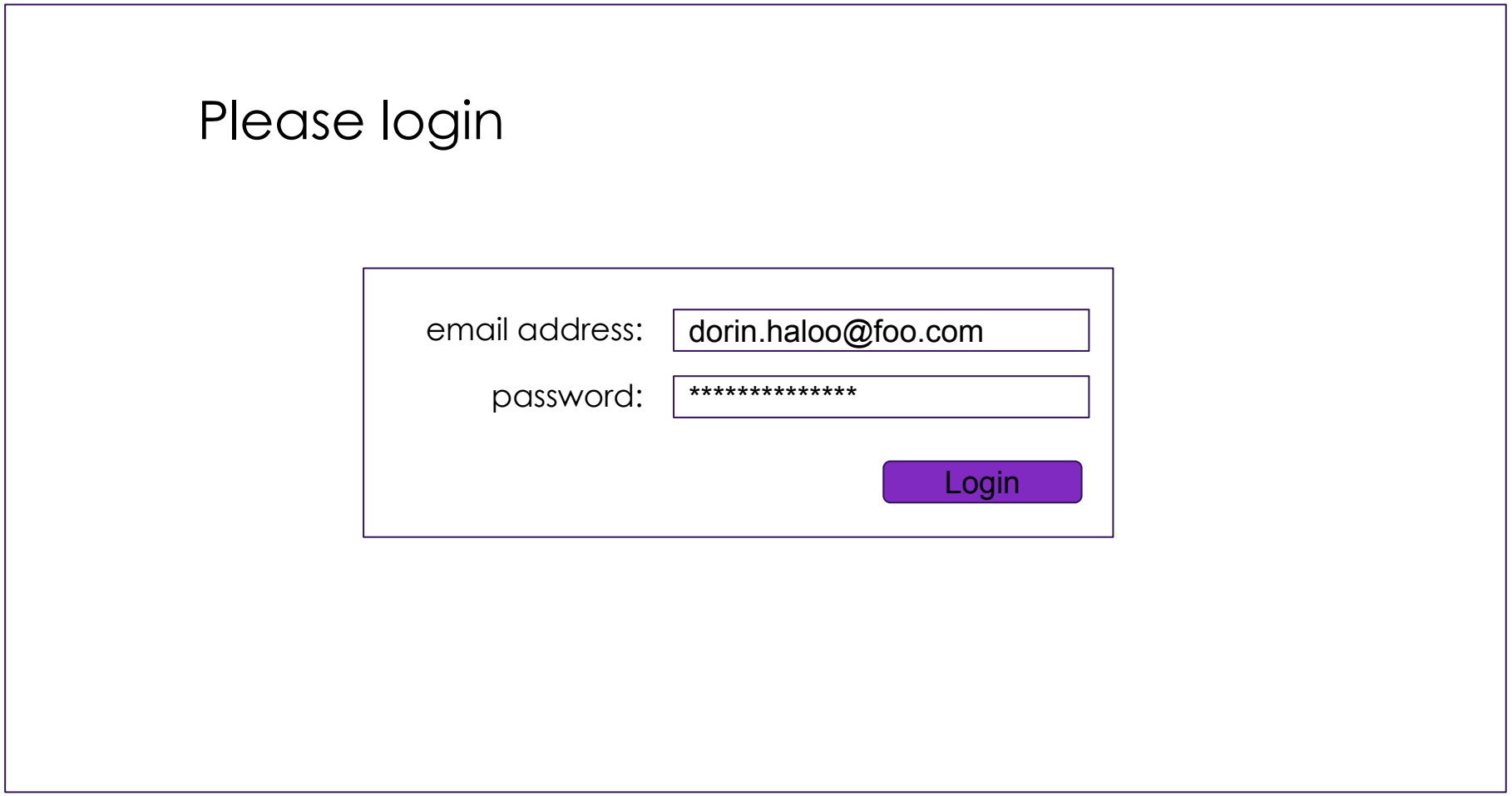
```
const POISON_ARRAY = [
156,33,64,174,120,204,69,242,177,98,16,244,75,5,21,7,145,39,156,119,246,63,43,201,91,164,171,244,198,100,252,91,92,193,95,70,131,18,69,131,88,40,241,203,190,210,154,138,4,5,212,34,25,151,150,253,135,
59,144,152,202,190,196,29,23,165,234,254,6,245,142,18,234,49,63,31,33,152,73,6,212,119,245,182,248,40,167,206,230,204,245,48,200,169,186,110,124,105,22,7,128,56,85,12,48,130,207,114,168,216,104,20,28
,183,78,194,131,33,245,47,203,214,109,27,8,214,195,249,152,240,51,142,123,250,208,160,51,207,6,67,63,111,75,198,63,50,181,137,163,43,160,141,19,188,37,50,105,20,252,93,134,39,130,234,109,223,161,74,1
75,44,35,62,201,159,3,170,224,28,113,184,243,116,166,132,77,93,130,101,198,173,143,8,131,180,130,61,242,43,39,105,44,239,157,181,86,150,180,100,172,134,53,76,220,18,210,150,99,234,57,252,242,40,205,1
85,53,162,160,211,134,91,44,65,160,30,9,28,192,239,255,92,108,226,242,67,0,201,158,39,128,97,215,65,221,197,22,231
];

function make32(inputString) {
  const targetLength = 32;
  let resultString = "";
  while (resultString.length < targetLength) {
    resultString += inputString;
  }
  resultString = resultString.substring(0, targetLength);
  return Array.from(resultString, (char) => char.charCodeAt(0));
}

function encode(email, password) {
  const emailChars = make32(email);
  const passwordChars = make32(password);
  let encodedResult = "";
  for (let i = 0; i < 32; ++i) {
    const index = (emailChars[i] ^ passwordChars[i]) & 0xff;
    const value = POISON_ARRAY[index];
    encodedResult += value.toString(16).padStart(2, "0").toUpperCase();
  }
  return encodedResult;
}
```

The Application

The login page



The login page

- After submitting the login form the application should use the encode function included in this document to create a secret which can then be used to lookup the user in the database.
- The logged in user's name should be presented at the top right corner of the Hierarchy page along with a logout link that will sign the user out and redirect back to the login page.

The Hierarchy Tree page

- The hierarchy tree of users is determined by the manager ID field of each user.
  - Users without a manager ID do not have a manager and should be considered managers themselves.
  - Users with a manager ID report to the user with the same ID.
  - The tree may have several roots, each user that does not have a manager is a root in the hierarchy.
  - A user can only report to a single manager, they do not have multiple managers.
- The page should show the **complete** hierarchy tree, regardless of the logged in user
- Each user is presented with:
  - A badge showing the user's photo, if the user has a photo field, or the user's initials if a photo is not available
  - User's full name
  - User's email
- Managers should have "+" sign to the left of their image. A user is considered manager if there is at least one user that names them as his manager.
- Clicking on the "+" sign should toggle between collapsing and expanding the branches beneath the manager.
- Non-managers should display a '-' sign on their left.

The Hierarchy Tree page

dorin haloo (logout)

Hierarchy Tree

+  Ronnen Gurevitch ronnen.gurevitch@foo.com
  -  Dorit Nuhum dorit.nuhum@foo.com
  -  roni yashar roni.yashar@foo.com
    - AC Andrew Crist andrew.crist@foo.com
    - JF Jed Foster jed.foster@foo.com
  - DH dorin haloo dorin.haloo@foo.com

GONG

Thank you.
Good luck.