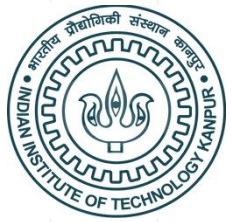
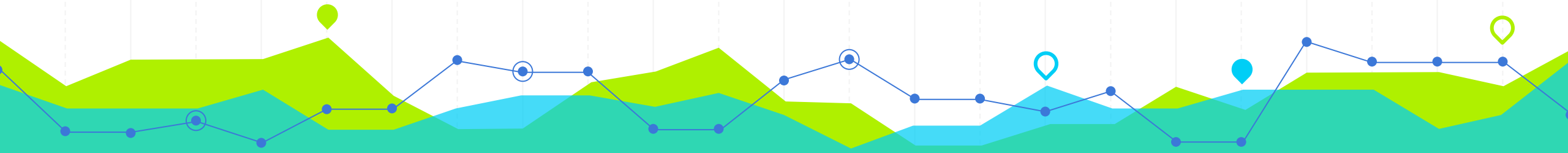


INDIAN INSTITUTE OF TECHNOLOGY KANPUR

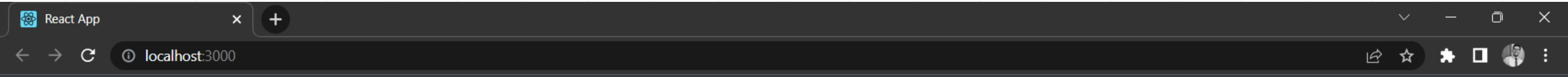
UGP MIDSEM

UGP PROJECT

SHASHVAT
SINGHAM
200922



UGP Project : CYCLOPS



Fun with LL(1) Home Problem solve Team view REGISTER LOGIN

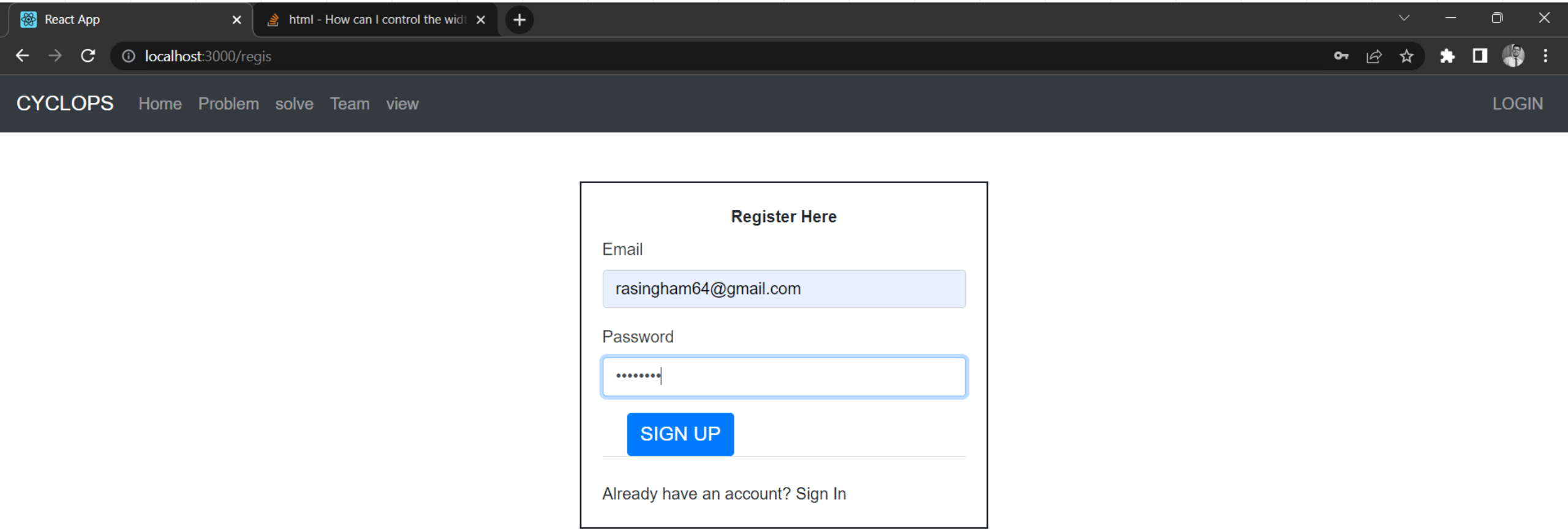
CYCLOPS

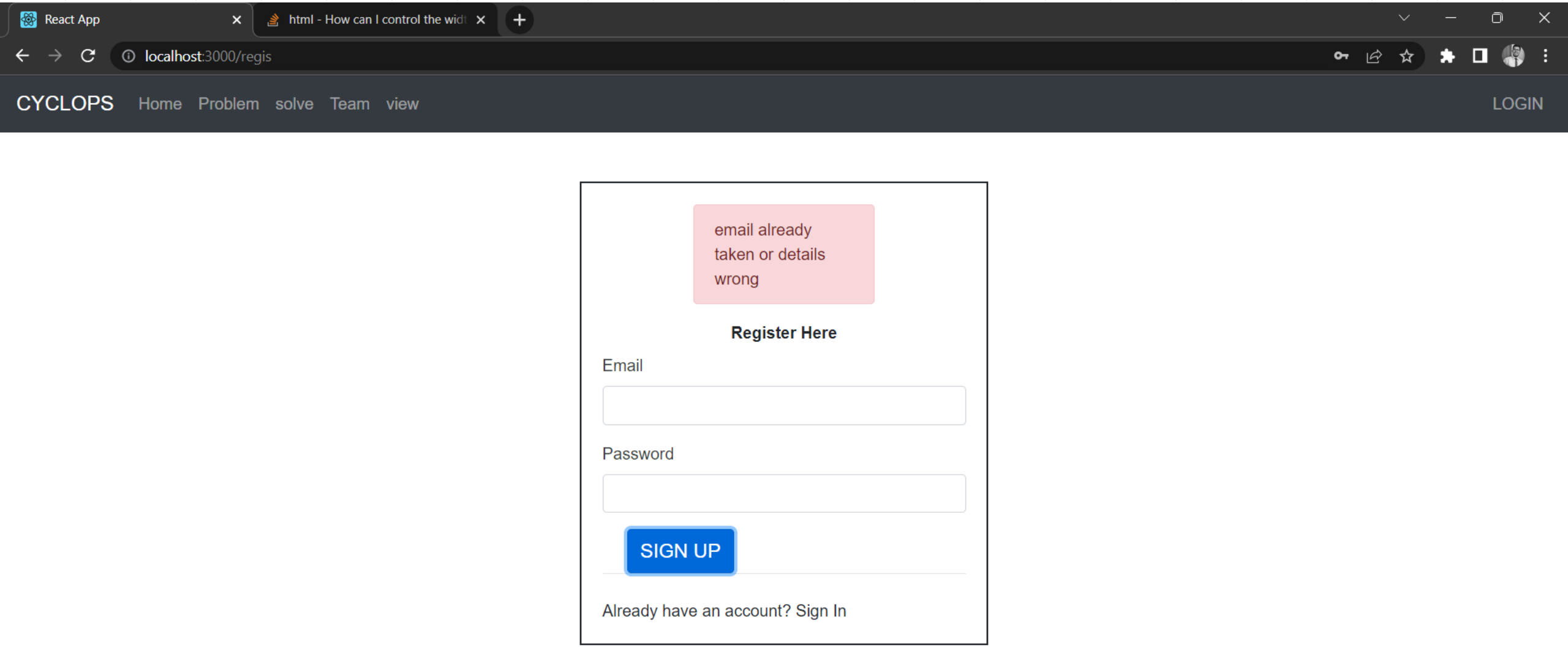
About

Cyclops is a software system for teaching LL(1) parsing. Cyclops provides an interactive environment to learn LL(1) parsing. It uses formal method techniques (i.e., SMT solvers) to give feedback to the user in case of wrong entries of the LL(1) parse table. Cyclops is built on the published work Parse Condition: Parsing Symbolic Encoding of LL(1)

Publications

Dhruv Singal, Palak Agarwal, Saket Jhunjhunwala and Subhajit Roy. Parse Condition: Symbolic Encoding of LL(1) Parsing. Parsing
In LPAR-22. 22nd International Conference on Logic for Programming, Artificial Intelligence and Reasoning, Awassa, Ethiopia, 16-21 November. 2018.


React App
html - How can I control the widt
localhost:3000/regis
CYCLOPS
Home
Problem
solve
Team
view
LOGIN
Register Here
Email
rasingham64@gmail.com
Password
SIGN UP
Already have an account? Sign In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localhost:3000/regis
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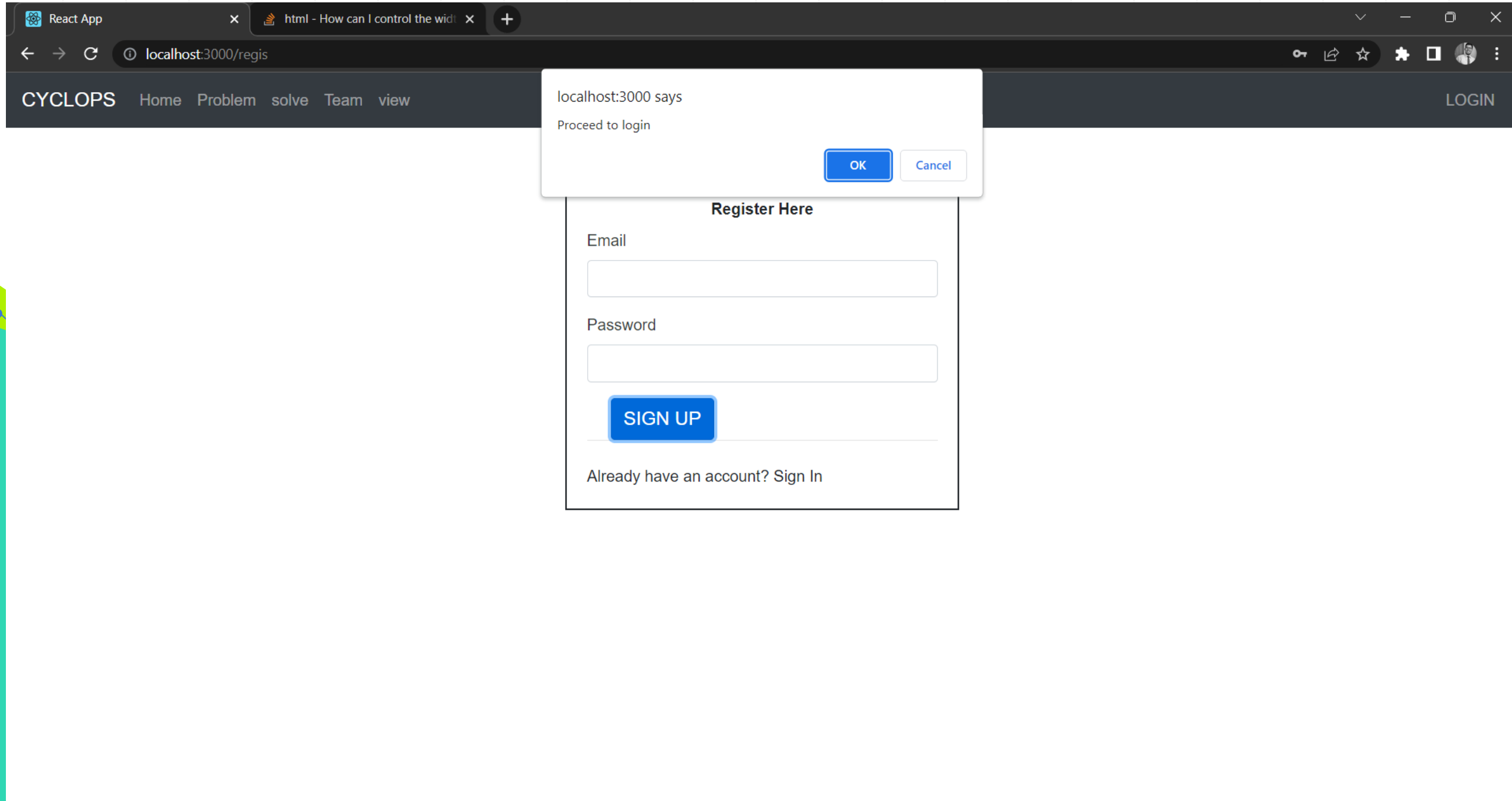
LOGIN
email already taken or details wrong
Register Here
Email
Password
SIGN UP
Already have an account? Sign In


React App
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CYCLOPS
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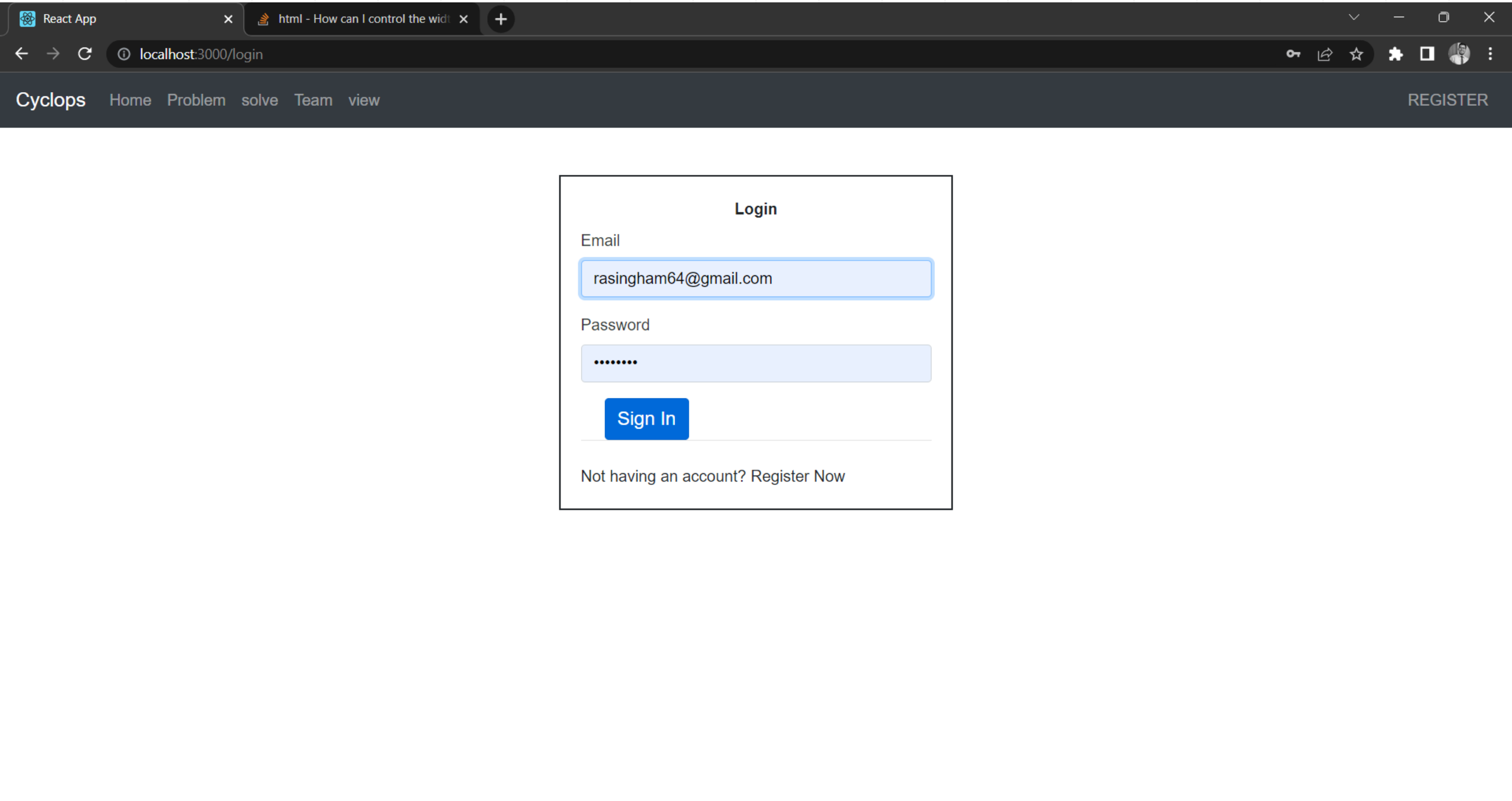
localhost:3000 says
Proceed to login
OK
Cancel
Register Here
Email
Password
SIGN UP
Already have an account? Sign In


React App
html - How can I control the widt
localhost:3000/login
Cyclops
Home
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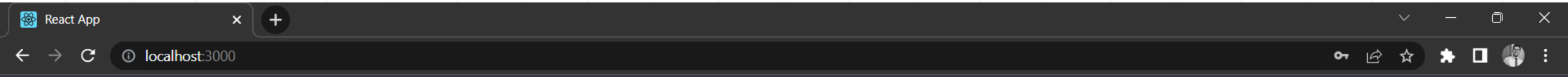
view
REGISTER
Login
Email
rasingham64@gmail.com
Password
••••••••
Sign In
Not having an account? Register Now



Fun with LL(1) Home Problem solve Team view LOGOUT

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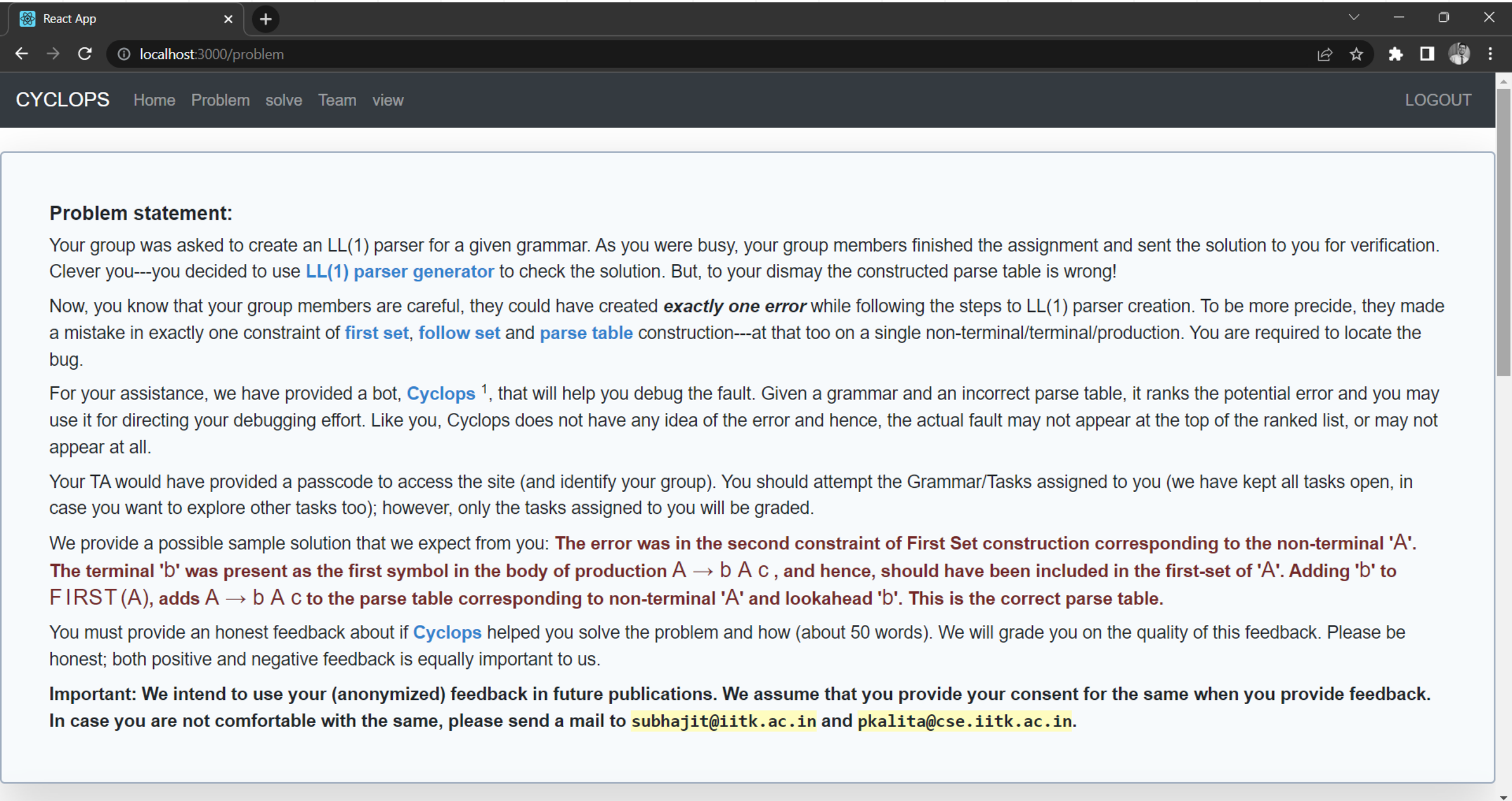

React App
localhost:3000/problem
CYCLOPS
Home
Problem
solve
Team
view
LOGOUT
Problem statement:
Your group was asked to create an LL(1) parser for a given grammar. As you were busy, your group members finished the assignment and sent the solution to you for verification. Clever you---you decided to use LL(1) parser generator to check the solution. But, to your dismay the constructed parse table is wrong!
Now, you know that your group members are careful, they could have created exactly one error while following the steps to LL(1) parser creation. To be more precide, they made a mistake in exactly one constraint of first set, follow set and parse table construction---at that too on a single non-terminal/terminal/production. You are required to locate the bug.
For your assistance, we have provided a bot, Cyclops [1], that will help you debug the fault. Given a grammar and an incorrect parse table, it ranks the potential error and you may use it for directing your debugging effort. Like you, Cyclops does not have any idea of the error and hence, the actual fault may not appear at the top of the ranked list, or may not appear at all.
Your TA would have provided a passcode to access the site (and identify your group). You should attempt the Grammar/Tasks assigned to you (we have kept all tasks open, in case you want to explore other tasks too); however, only the tasks assigned to you will be graded.
We provide a possible sample solution that we expect from you: The error was in the second constraint of First Set construction corresponding to the non-terminal 'A'. The terminal 'b' was present as the first symbol in the body of production A → b A c , and hence, should have been included in the first-set of 'A'. Adding 'b' to FIRST(A), adds A → b A c to the parse table corresponding to non-terminal 'A' and lookahead 'b'. This is the correct parse table.
You must provide an honest feedback about if Cyclops helped you solve the problem and how (about 50 words). We will grade you on the quality of this feedback. Please be honest; both positive and negative feedback is equally important to us.
Important: We intend to use your (anonymized) feedback in future publications. We assume that you provide your consent for the same when you provide feedback. In case you are not comfortable with the same, please send a mail to subhajit@iitk.ac.in and pkalita@cse.iitk.ac.in.

Constraints for parse table creation:

First set constraints:

1. If X is a terminal symbol then $FIRST(X) = X$.
2. If X is a non terminal symbol and $X \rightarrow Y_1, Y_2, \ldots Y_k$ is a production, then
   If for some i, a is in $FIRST(Y_i)$ and ϵ is in all of $FIRST(Y_j)$ (such that $j < i$) then
   a is in $FIRST(X)$.
   If ϵ is in $FIRST(Y_1) \ldots FIRST(Y_k)$ then ϵ is in $FIRST(X)$.
3. If $X \rightarrow \epsilon$ is a production then ϵ is in $FIRST(X)$.

Follow set constraints:

1. Place \$ in $FOLLOW(S)$, where S is the start symbol and \$ is the input right endmarker.
2. If there is a production $A \rightarrow \alpha B \beta$, then everything in $FIRST(\beta)$ except ϵ is in $FOLLOW(B)$.
3. If there is a production $A \rightarrow \alpha B$, or a production $A \rightarrow \alpha B \beta$, where $FIRST(\beta)$ contains ϵ, then everything in $FOLLOW(A)$ is in $FOLLOW(B)$.

3. If $X \rightarrow \epsilon$ is a production then ϵ is in $FIRST(X)$.

Follow set constraints:

1. Place \$ in $FOLLOW(S)$, where S is the start symbol and \$ is the input right endmarker.
2. If there is a production $A \rightarrow \alpha B \beta$, then everything in $FIRST(\beta)$ except ϵ is in $FOLLOW(B)$.
3. If there is a production $A \rightarrow \alpha B$, or a production $A \rightarrow \alpha B \beta$, where $FIRST(\beta)$ contains ϵ, then everything in $FOLLOW(A)$ is in $FOLLOW(B)$.

Parse Table set constraints:

1. For each terminal a in $FIRST(\alpha)$, add $A \rightarrow \alpha$ to $M[A, a]$.
2. If ϵ is in $FIRST(\alpha)$, then for each terminal b in $FOLLOW(A)$, add $A \rightarrow \alpha$ to $M[A, b]$. If ϵ is in $FIRST(\alpha)$ and \$ is in $FOLLOW(A)$ add $A \rightarrow \alpha$ to $M[A, \$]$ as well.

1. Dhruv Singal, Palak Agarwal, Saket Jhunjhunwala and Subhajit Roy. **Parse Condition: Symbolic Encoding of LL(1) Parsing**. In LPAR-22. 22nd International Conference on Logic for Programming, Artificial Intelligence and Reasoning, Awassa, Ethiopia, 16-21 November. 2018. ↩

CYCLOPS Home Problem solve Team view LOGOUT

Team

Pankaj Kumar Kalita

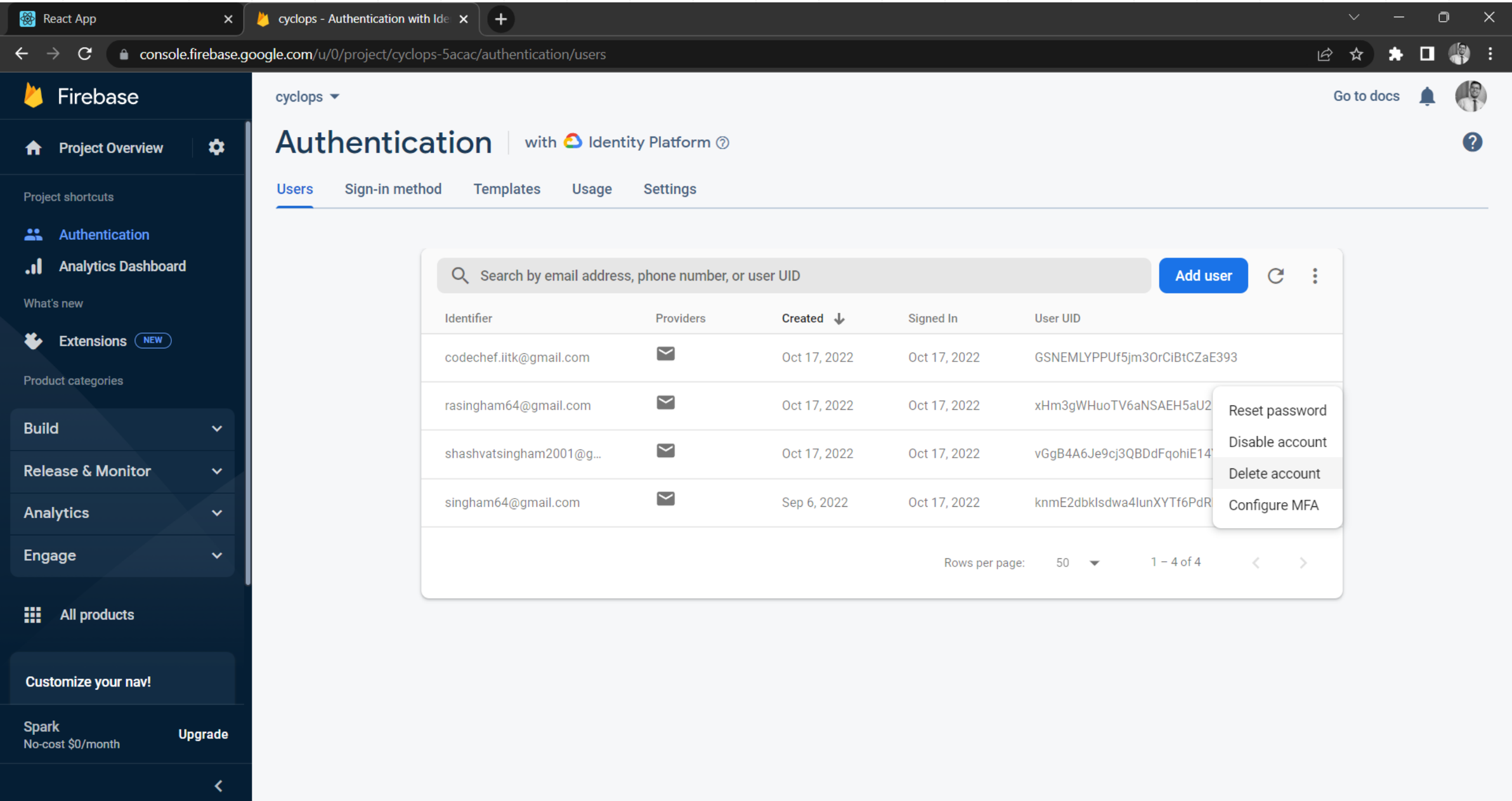
PhD student

Sumit Lahiri

PhD student

Dr. Subhajit Roy

Associate Professor


React App
cyclops - Authentication with Ide
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Firebase
cyclops
Go to docs
Project Overview
Project shortcuts
Authentication
Analytics Dashboard
What's new
Extensions NEW
Product categories
Build
Release & Monitor
Analytics
Engage
All products
Customize your nav!
Spark
No-cost $0/month
Upgrade
Authentication
with Identity Platform
Users
Sign-in method
Templates
Usage
Settings
Search by email address, phone number, or user UID
Add user
Identifier
Providers
Created
Signed In
User UID
codechef.iitk@gmail.com
Oct 17, 2022
Oct 17, 2022
GSNEMLYPPUf5jm3OrCiBtCZaE393
rasingham64@gmail.com
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singham64@gmail.com
Sep 6, 2022
Oct 17, 2022
knmE2dbkIsdwa4lunXYTf6PdR
Reset password
Disable account
Delete account
Configure MFA
Rows per page:
50
1 – 4 of 4

Fun with LL(1)

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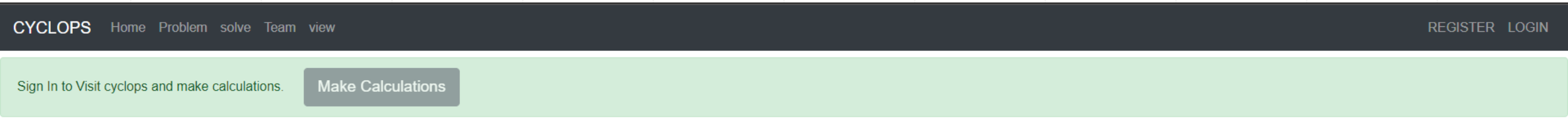
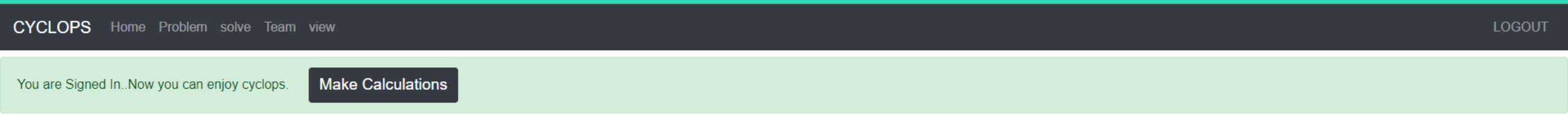

CYCLOPS
Home
Problem
solve
Team
view
REGISTER
LOGIN
Sign In to Visit cyclops and make calculations.
Make Calculations


CYCLOPS
Home
Problem
solve
Team
view
LOGOUT
You are Signed In..Now you can enjoy cyclops.
Make Calculations

Cyclops

Instructions | Reset | Home

Grammar

Please input LL(1) grammar

Generate Parse Table

First Set

If X is a Terminal ▼

Then $FIRST(X) = \{X\}$

If X is a Nonterminal ▼

If $X \rightarrow \epsilon$ is a Production ▼

Follow Set

Place $ in $FOLLOW(S)$ ▼

If there is a production $A \rightarrow \alpha B \beta$ ▼

If there is a production $A \rightarrow \alpha B$ or $A \rightarrow \alpha B \beta$ ▼

Parse Table Constraints

For each terminal a in $FIRST(\alpha)$ ▼

If ϵ is in $FIRST(\alpha)$ ▼

Cyclops

Instructions | Reset | Home

Grammar

```
E -> T X
T -> ( E )
T -> int Y
X -> + E
X -> eps
Y -> * T
Y -> eps
```

Generate Parse Table

Number	Rules
1	E -> T X
2	T -> (E)
3	T -> int Y
4	X -> + E
5	X ->

	)	int	+
	0	0	0
	0	0	0
	2	0	0
	7	0	0

Submit

First Set

If X is a Terminal ▼

If X is a Nonterminal ▼

If $X \rightarrow \epsilon$ is a Production ▼

Follow Set

Place $ in $FOLLOW(S)$ ▼

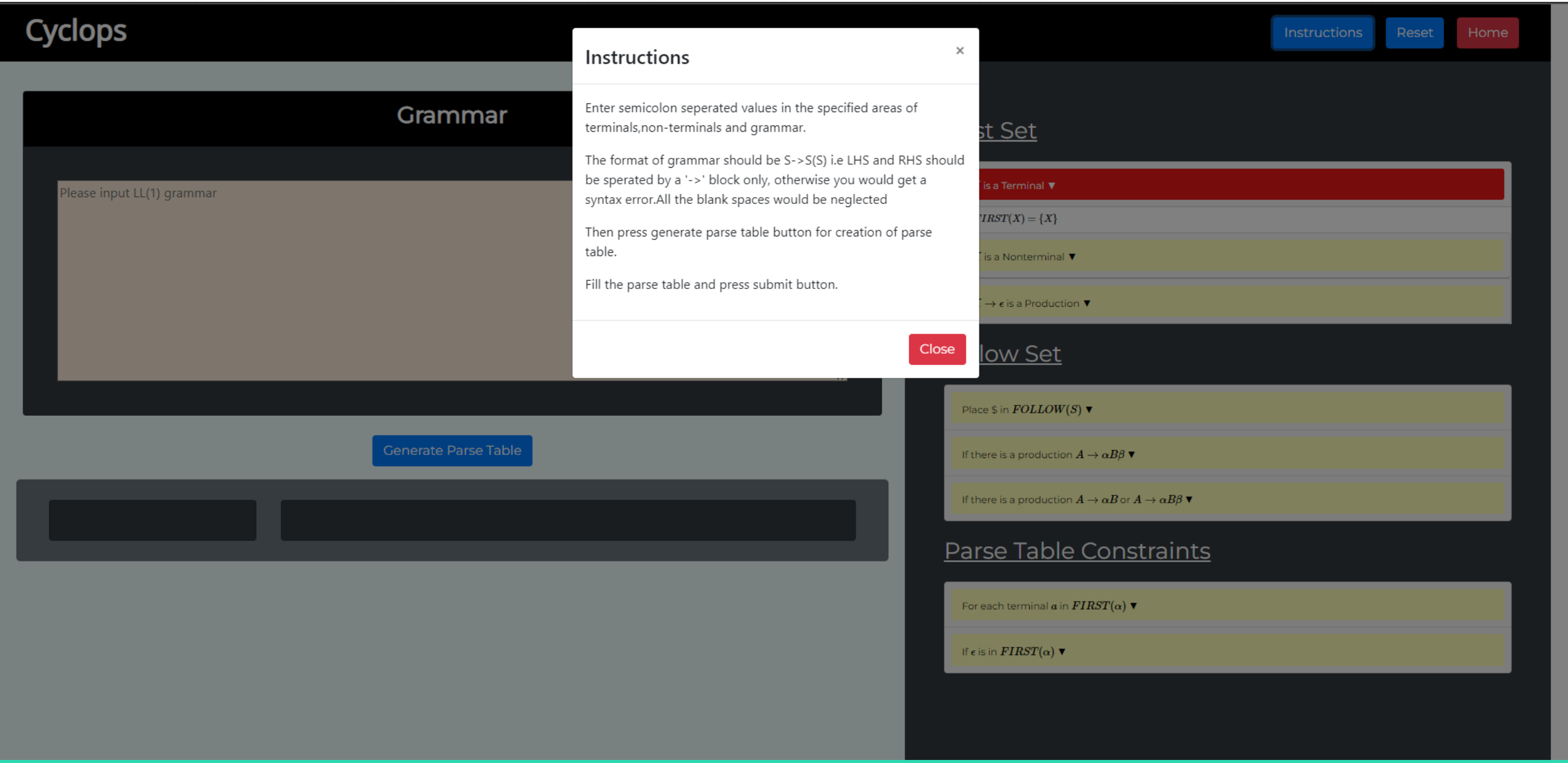
If there is a production $A \rightarrow \alpha B \beta$ ▼

If there is a production $A \rightarrow \alpha B$ or $A \rightarrow \alpha B \beta$ ▼

Parse Table Constraints

For each terminal α in $FIRST(\alpha)$ ▼

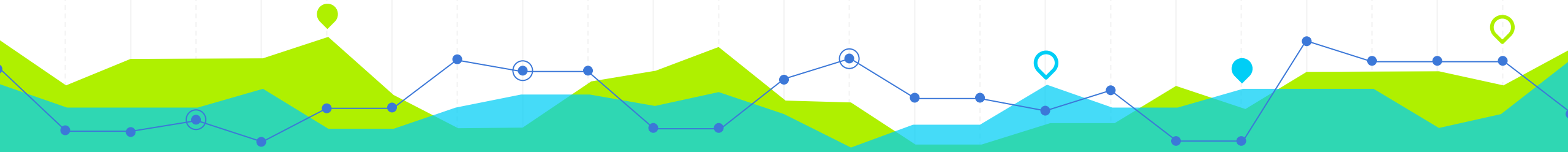
If ϵ is in $FIRST(\alpha)$ ▼


Cyclops
Instructions
Reset
Home
Grammar
Please input LL(1) grammar
Generate Parse Table
Instructions
Enter semicolon seperated values in the specified areas of terminals,non-terminals and grammar.
The format of grammar should be S->S(S) i.e LHS and RHS should be sperated by a '->' block only, otherwise you would get a syntax error.All the blank spaces would be neglected
Then press generate parse table button for creation of parse table.
Fill the parse table and press submit button.
Close
st Set
is a Terminal ▼
IRST(X) = {X}
is a Nonterminal ▼
→ ϵ is a Production ▼
low Set
Place $ in FOLLOW(S) ▼
If there is a production A → αBβ ▼
If there is a production A → αB or A → αBβ ▼
Parse Table Constraints
For each terminal a in FIRST(α) ▼
If ϵ is in FIRST(α) ▼

ACKNOWLEDGEMENT

We want to express our earnest gratitude toward Dr. Subhajit Roy for providing us a great development project cyclops with a great learning environment that helped me in this project.

I would also like to thank Pankaj Kalita for mentoring me throughout the project and giving his valuable input to benefit the project and for always being there to clear my doubts throughout the project. I wish to thank everyone involved in the UGP course for giving us the opportunity to add my contributions to this project.



MY CONTRIBUTIONS

- Created a new website from the previous one with firebase authentication system.(Having NoSQL Database).
- Admin can delete/ disable anyone's account.
- Provide access for reset password.
- Using firebase-auth API.
- Made a cyclops solve page that gives access token to view the page once the user is signed in.
- In the solve page user inputs the grammar and corresponding to that a parse table is generated, from which ultimately it is feeded to the provided python files (as a json file) and the output is displayed.
- User Instructions and Reset button is also provided

REFERENCES

- https://blog.bitsrc.io/build-a-login-auth-app-with-mern-stack-part-1-c405048e3669
- https://itnext.io/authentication-in-mern-stack-using-jwt-25c966027f77
- https://www.bezkoder.com/react-node-mongodb-auth/
- https://github.com/WebDevSimplified/React-Firebase-Auth

THANK YOU!

For Be Patient