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Enrollment number - 21162101012

Branch - CBA Batch - 71

CS Assignment 2

Exercise 1: You are tasked with developing a web application that allows students to log in and manage their profiles securely. To achieve this, you decide to integrate Okta as the authentication provider. This integration will enable secure access management, providing a seamless login experience and leveraging Okta's capabilities for user management.

Implementation Steps :

1. Set Up Okta Account and Application :

- Create an Okta developer account to access the developer dashboard.
- Set up a new Okta application configured for web authentication using OpenID Connect.

2. Configure Application Environment:

- Install necessary Node.js dependencies (express, express-session, @okta/okta-sdk-nodejs, @okta/okta-express-middleware).
- Create a .env file for environment variables, including client credentials and session secrets.

3. Develop the Node.js Application:

- Create an Express application to handle routing and middleware.
- Integrate Okta middleware for authentication, ensuring secure access to routes.
- Set up protected routes, such as a profile page, that only authenticated users can access.

4. Implement Login and Logout Functionality:

- Create routes for login and logout processes, redirecting users to the Okta login page and handling session management upon successful login.

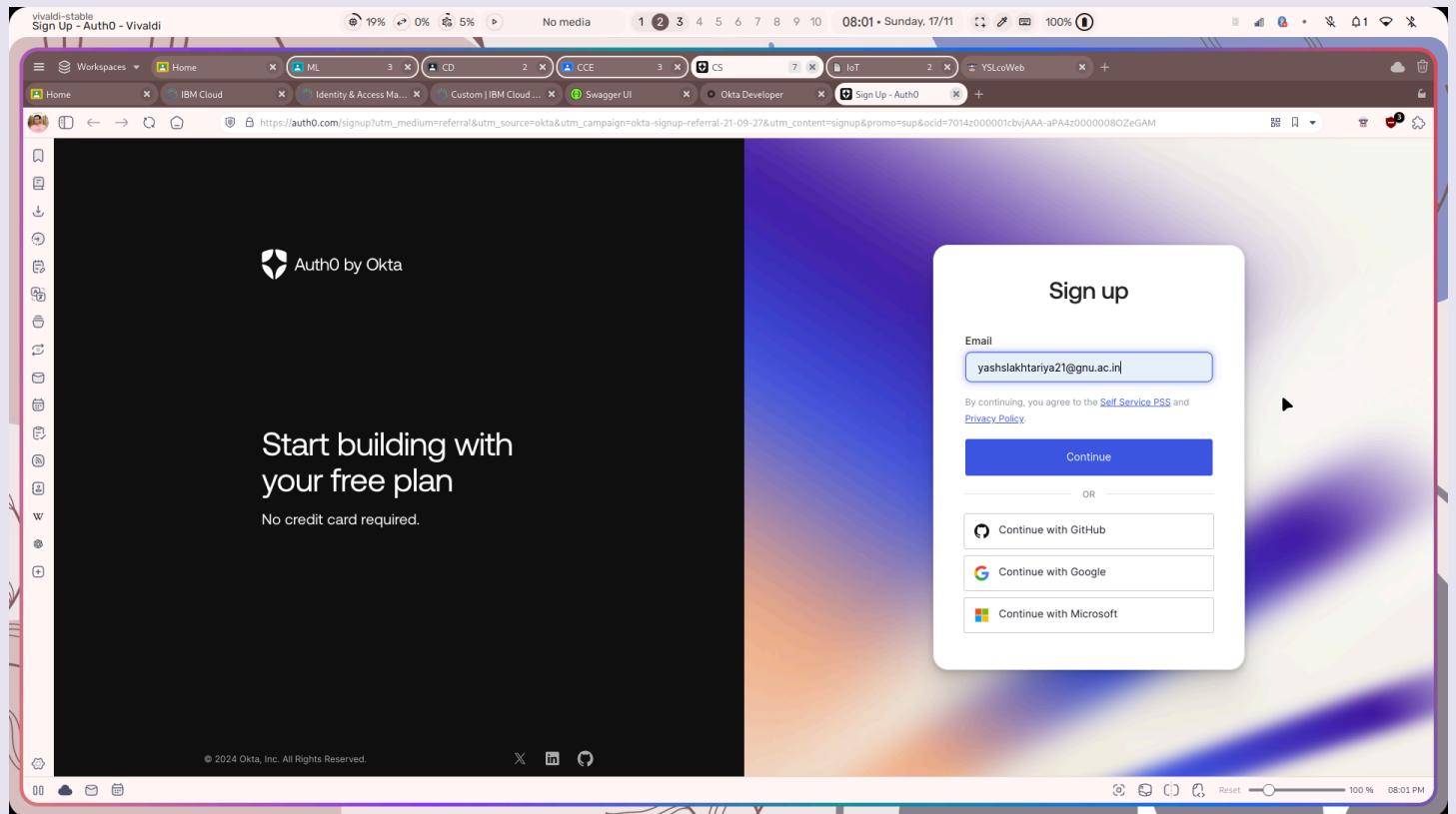
5. Test and Validate Integration:

- Test the authentication flow by logging in and out of the application, ensuring that protected routes are accessible only to authenticated users.
- Validate user data management through Okta's dashboard, confirming successful user registration and profile updates.

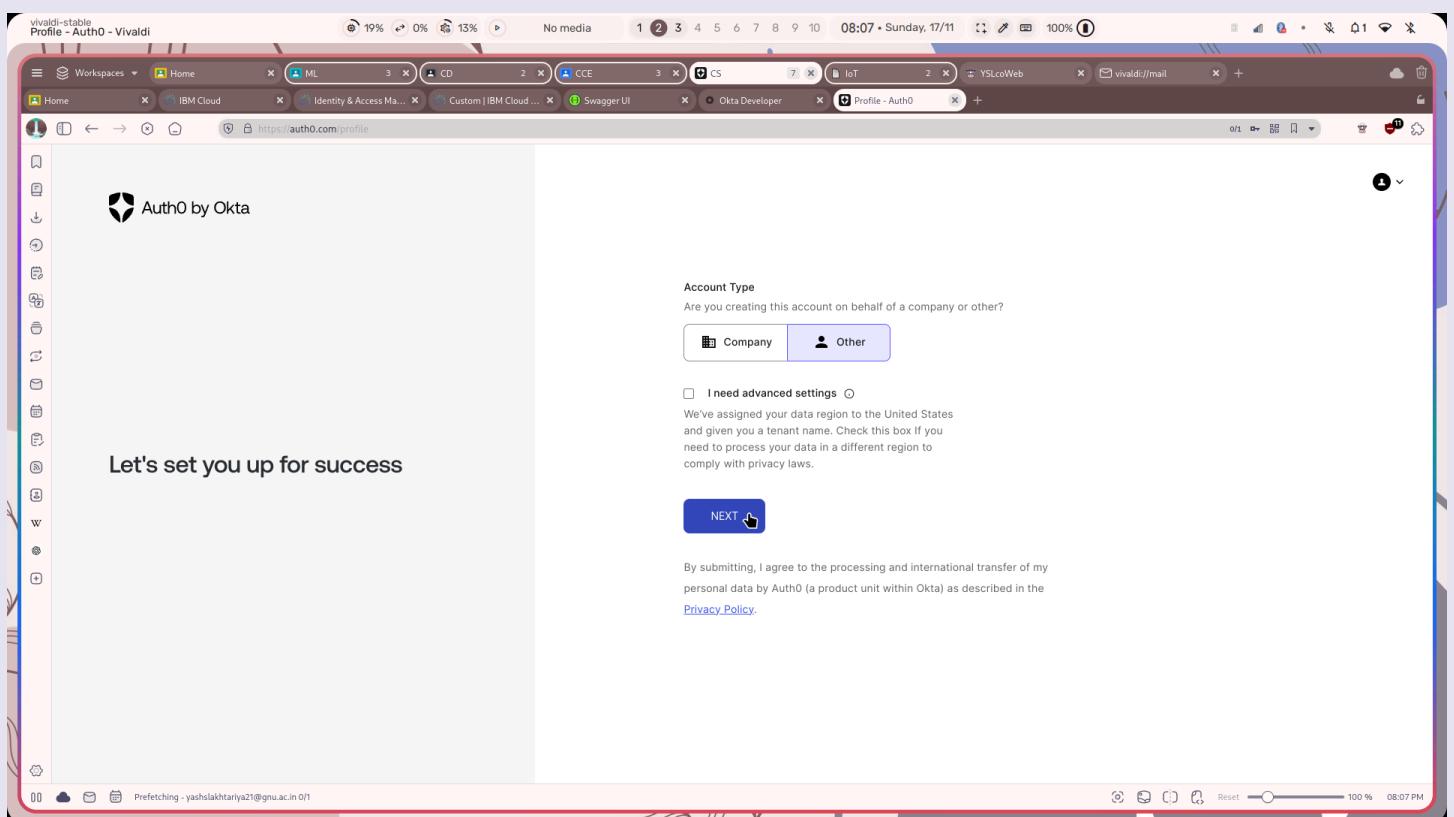
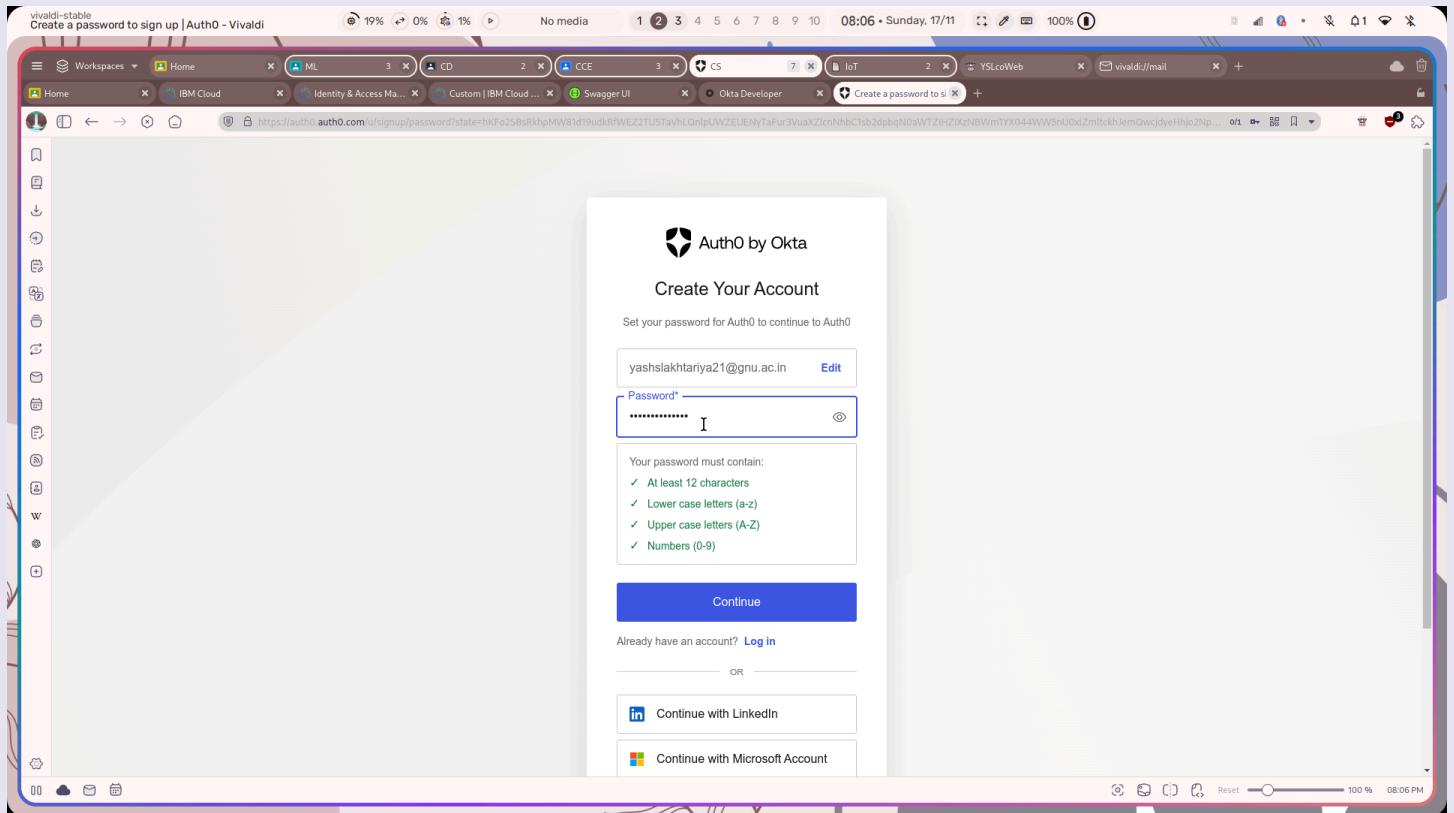
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Steps and Screenshots:

1. Signup for Okta developer account



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2. Get Started using it and explore docs

The screenshot shows the Auth0 Onboarding Guide interface in a Vivaldi browser window. The URL is <https://manage.auth0.com/dashboard/us/dev-mybr4khp2umihwj7/onboarding>. The page title is "Onboarding Guide - Vivaldi". The main content area features a heading "A few small steps for you. One massive leap for your login box." Below this, there's a sub-heading "Tell us about you and we can recommend the next steps." Two large callout boxes are displayed: one for "I am a new Auth0 user" (with a stack of books icon) and one for "I have used Auth0 before" (with a genie lamp icon). A "Get Started →" button is located at the bottom right. The left sidebar contains a navigation menu with items like "Getting Started", "Activity", "Applications", "Authentication", "Organizations", "User Management", "Branding", "Security", "Actions", "Monitoring", "Marketplace", "Extensions", and "Settings". A "Get support" link is also present.

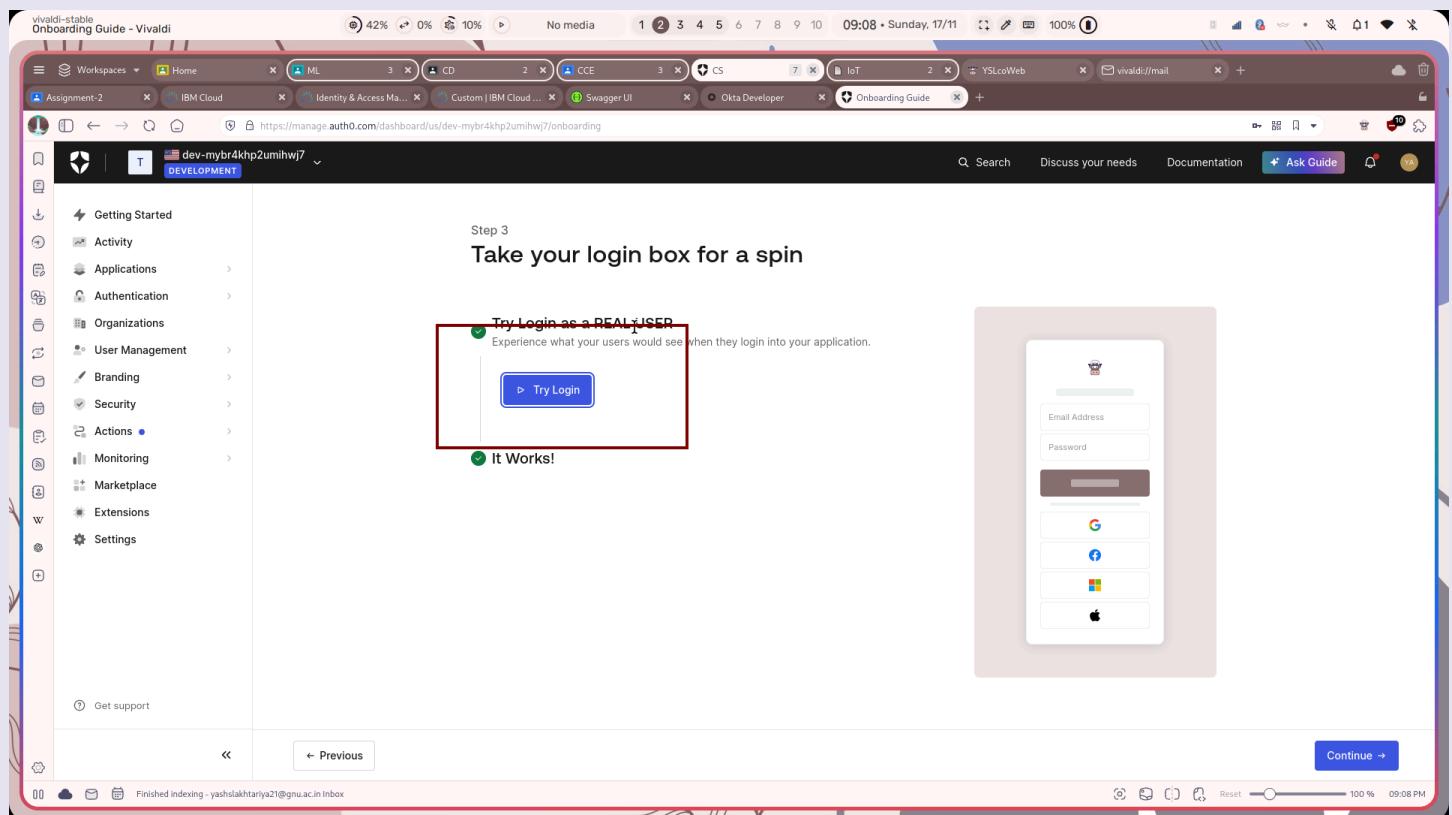
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The screenshot shows the Vivaldi browser window with the URL <https://manage.auth0.com/dashboard/us/dev-mybr4khp2umihw7/onboarding>. The page is titled "Create a Sample App" and is part of the "Step 1" onboarding process. The left sidebar lists various application categories: Getting Started, Activity, Applications, Authentication, Organizations, User Management, Branding, Security, Actions, Monitoring, Marketplace, Extensions, and Settings. The "Security" item is currently selected. The main content area displays four platform options: Single-Page App (selected), Regular Web App, Native/Mobile App, and Other. Below this, there are four technology options: Angular (selected), Flutter (Web), JavaScript, and React. At the bottom, there are "Previous" and "Continue" buttons.

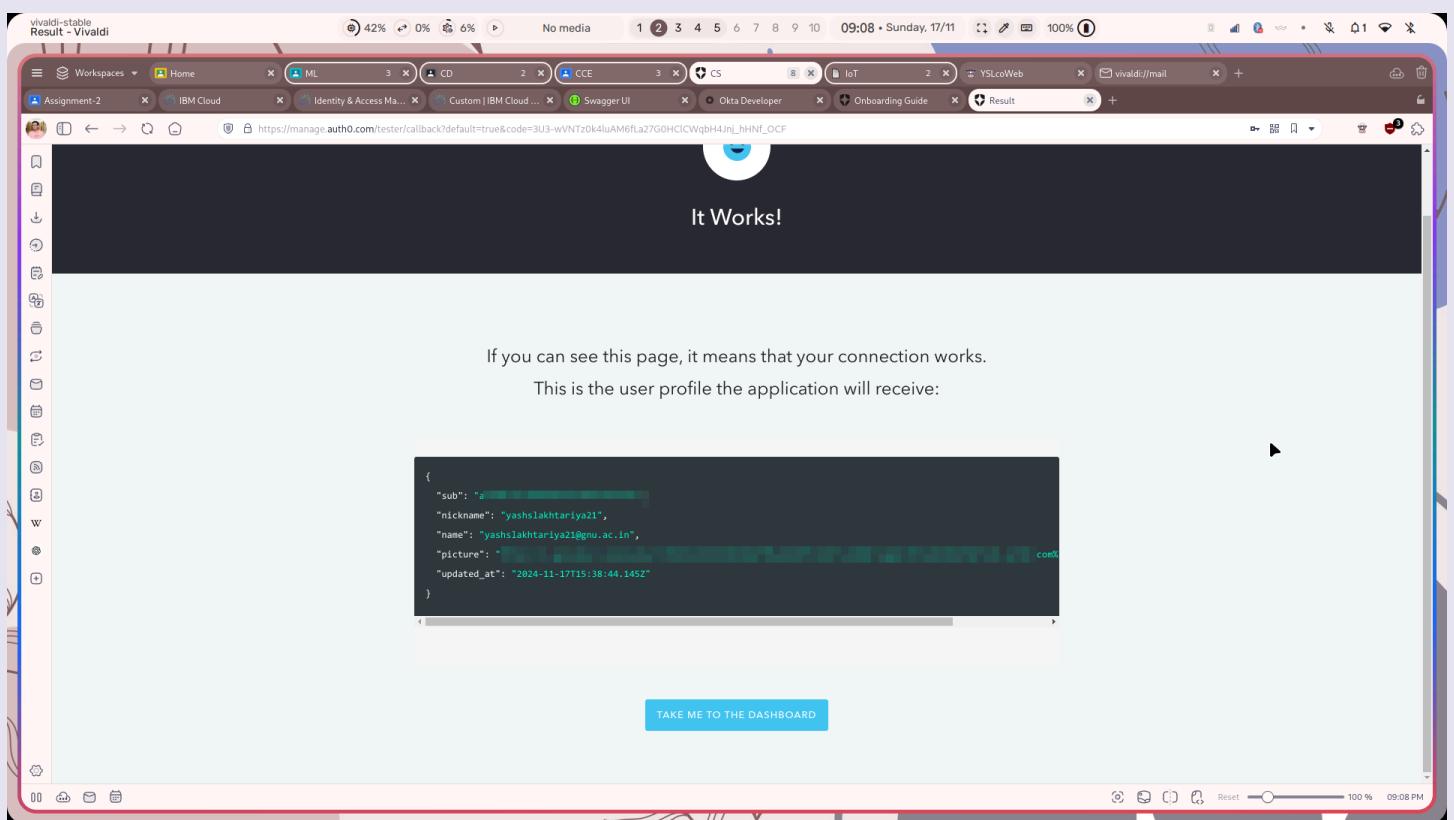
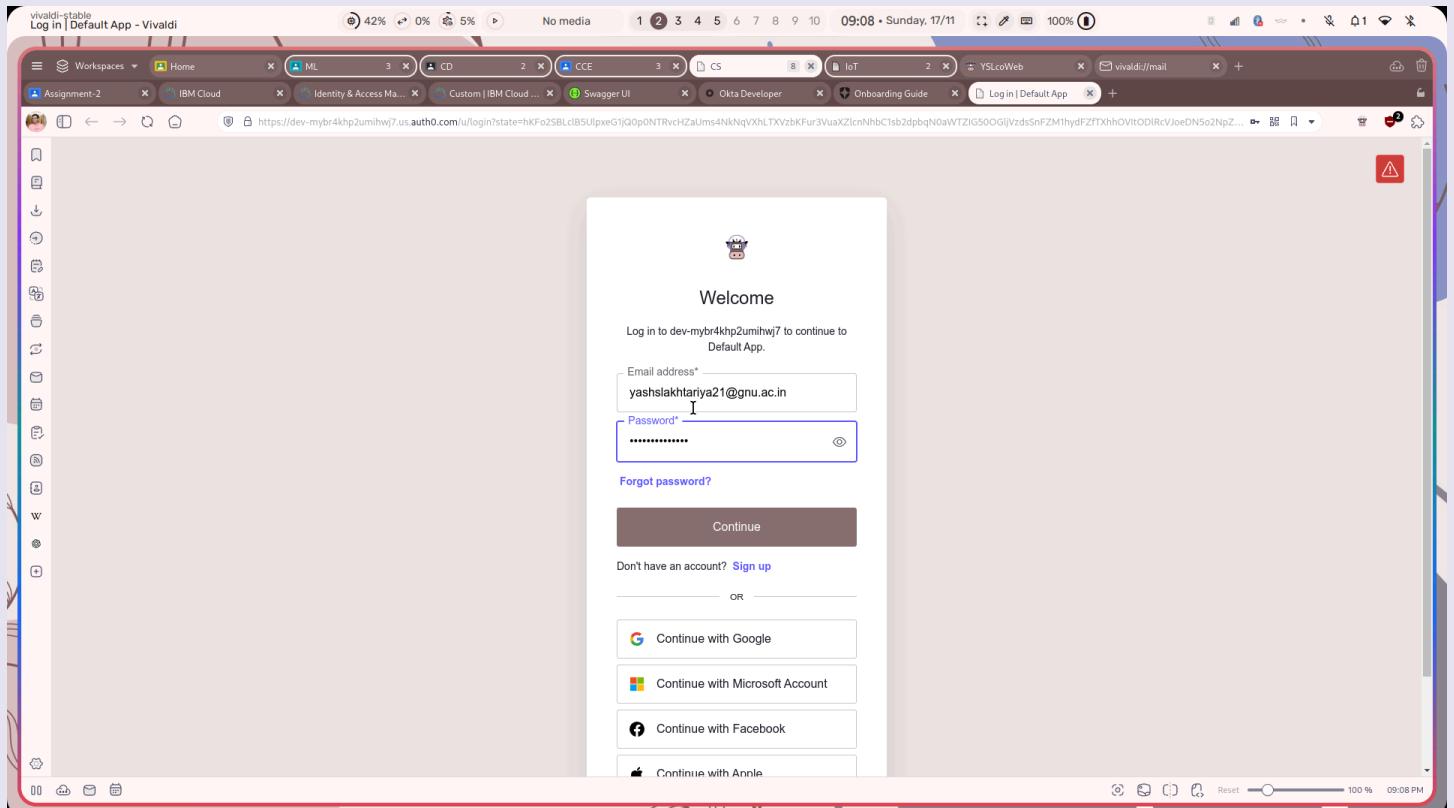
A screenshot of the Vivaldi browser window. The title bar shows 'vivaldi-stable' and 'Onboarding Guide - Vivaldi'. The address bar displays the URL 'https://manage.auth0.com/dashboard/us/dev-mybr4khp2umihwj7/onboarding'. The main content area is titled 'Step 2 Configure your Login Box'. It includes sections for 'Logo' (with a 'Custom' radio button selected and a URL input field containing 'https://i.ibb.co/nDQsXyj/coweb-full.png'), 'Social Connections' (listing Google/Gmail, Facebook, Apple, Microsoft, GitHub, and Twitter), and a preview window showing a sample login form with these options. The bottom right of the preview window says 'Example screen for preview.' A 'Continue' button is at the bottom right of the main form. On the left, there's a sidebar with navigation links like 'Getting Started', 'Activity', 'Applications', 'Authentication', 'Organizations', 'User Management', 'Branding', 'Security', 'Actions', 'Monitoring', 'Marketplace', 'Extensions', and 'Settings'. A 'Get support' link is also present. The browser interface includes standard Vivaldi features like tabs, a search bar, and a toolbar with icons for search, refresh, and other functions.

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3. Check if login works



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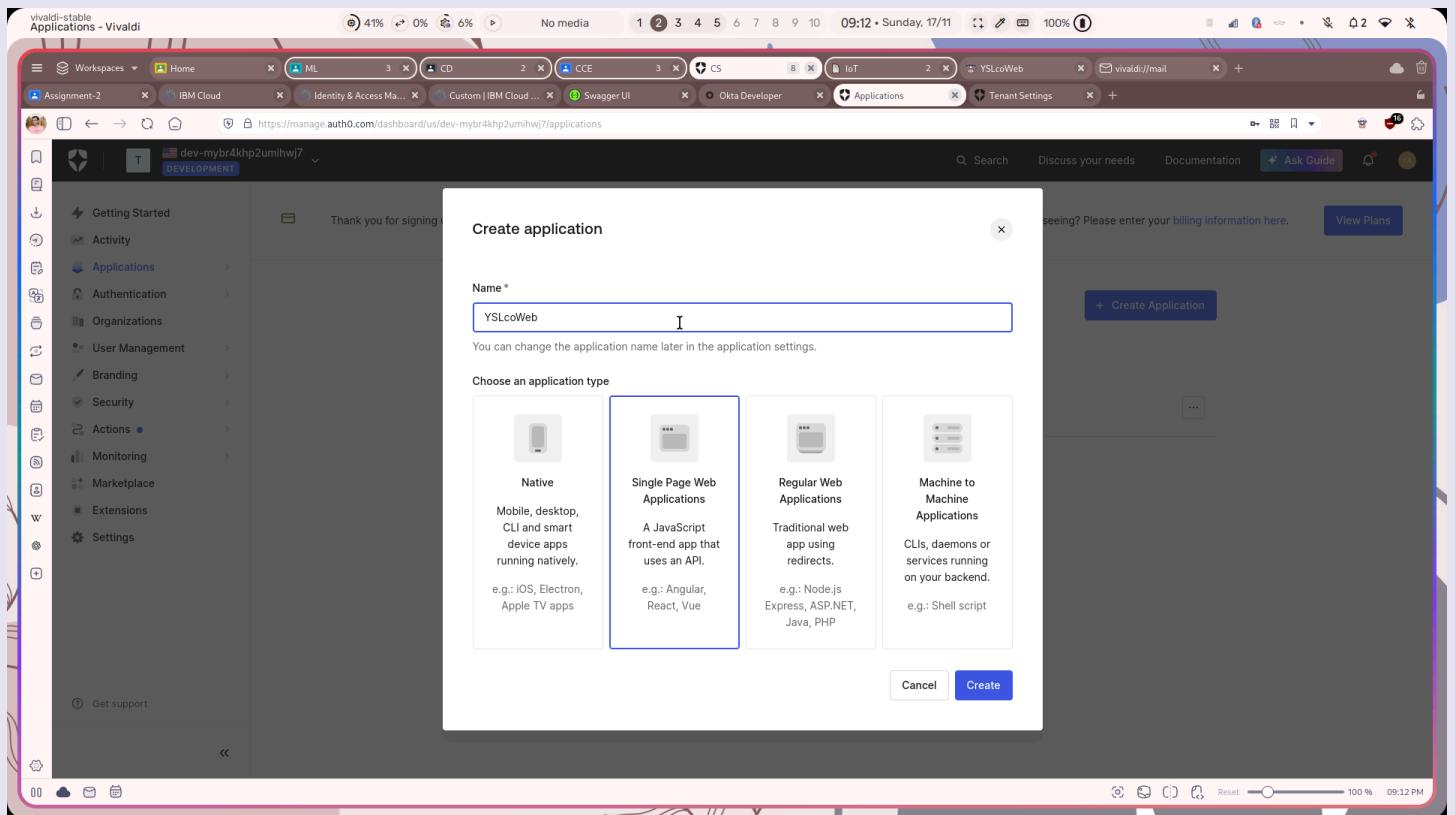
The screenshot shows a Vivaldi browser window with multiple tabs open. The active tab is titled "Assignment-2" and displays the URL <https://manage.auth0.com/dashboard/us/dev-mybr4khp2umihw7/onboarding>. The page is titled "Last Step! Let's integrate a Sample App". It provides instructions for integrating Auth0 into a sample application using a Single-Page App (Angular). A "DOWNLOAD SAMPLE APP" button is available. To the right, there is a terminal-like interface showing command examples:

```
http://localhost:4200
4. Make sure Node.js LTS is installed and execute the following commands in the sample's directory:
npm install && npm start
You can also run it from a Docker image with the following commands:
# In Linux / macOS
sh exec.sh
# In Windows' PowerShell
./exec.ps1
```

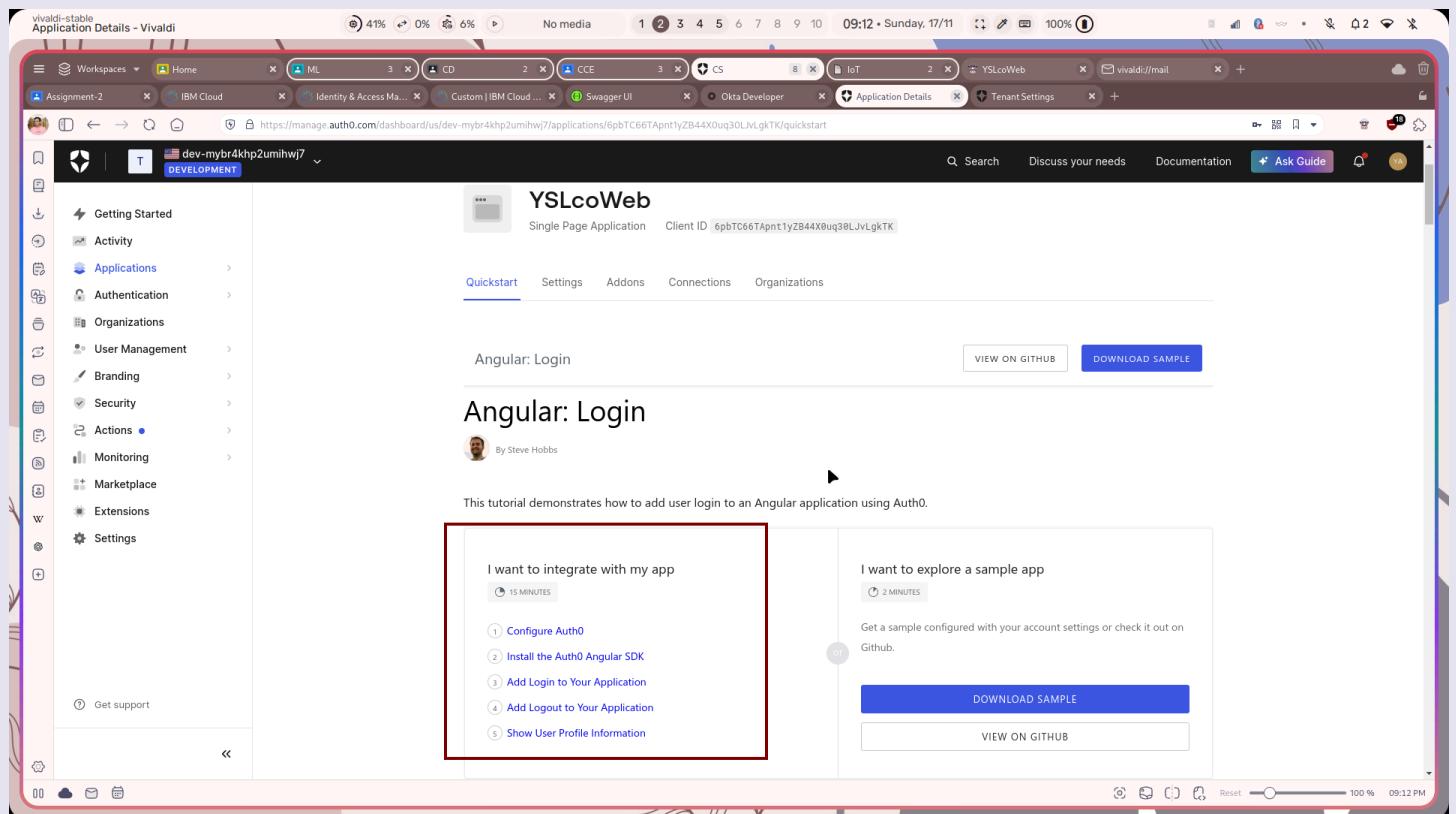
The browser interface includes a sidebar with various development tools like ML, CD, CCE, CS, IoT, and Swagger UI. The status bar at the bottom shows "100% 09:09 PM".

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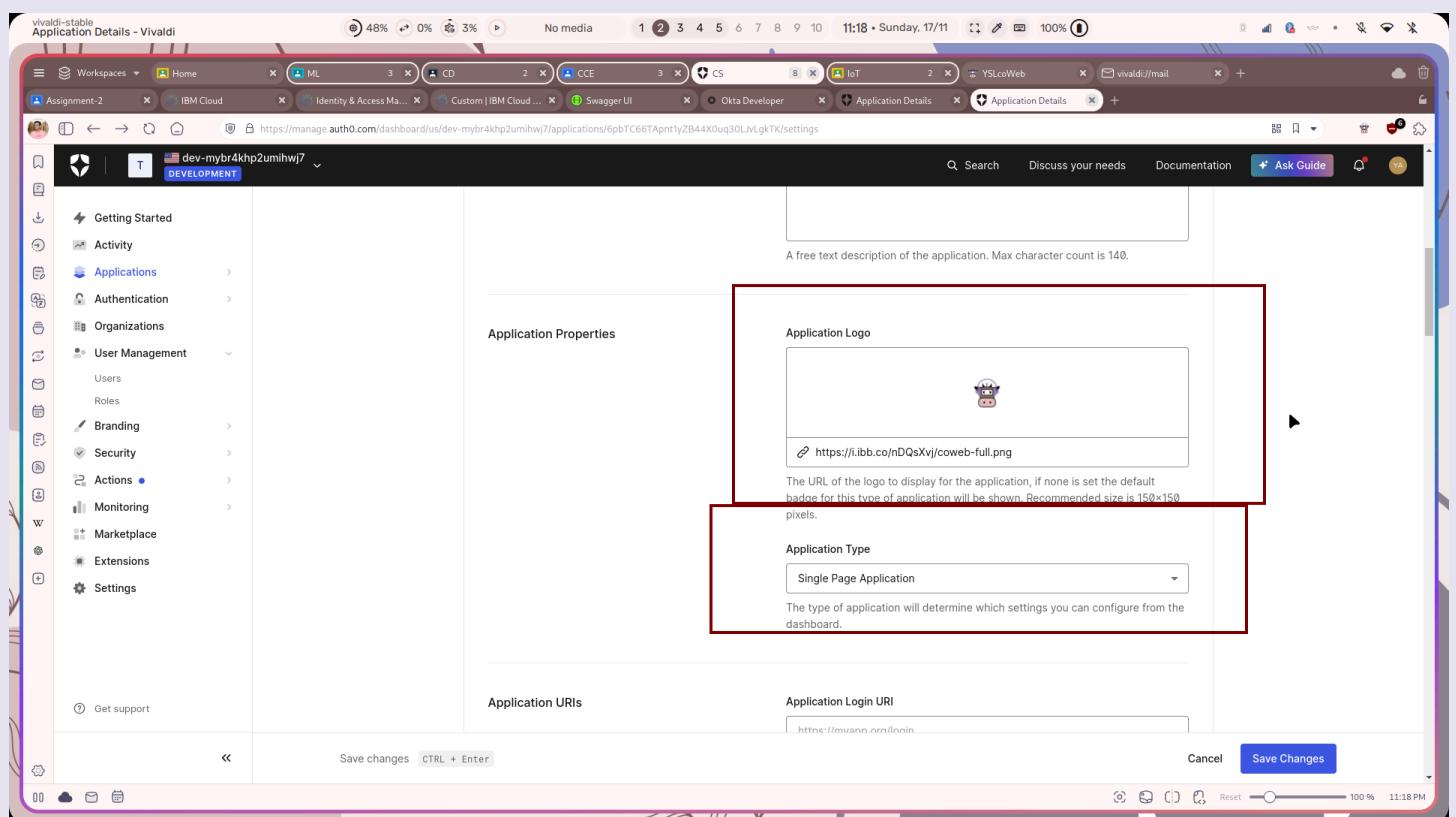
4. Now, setup integration with own application (Angular in this case)



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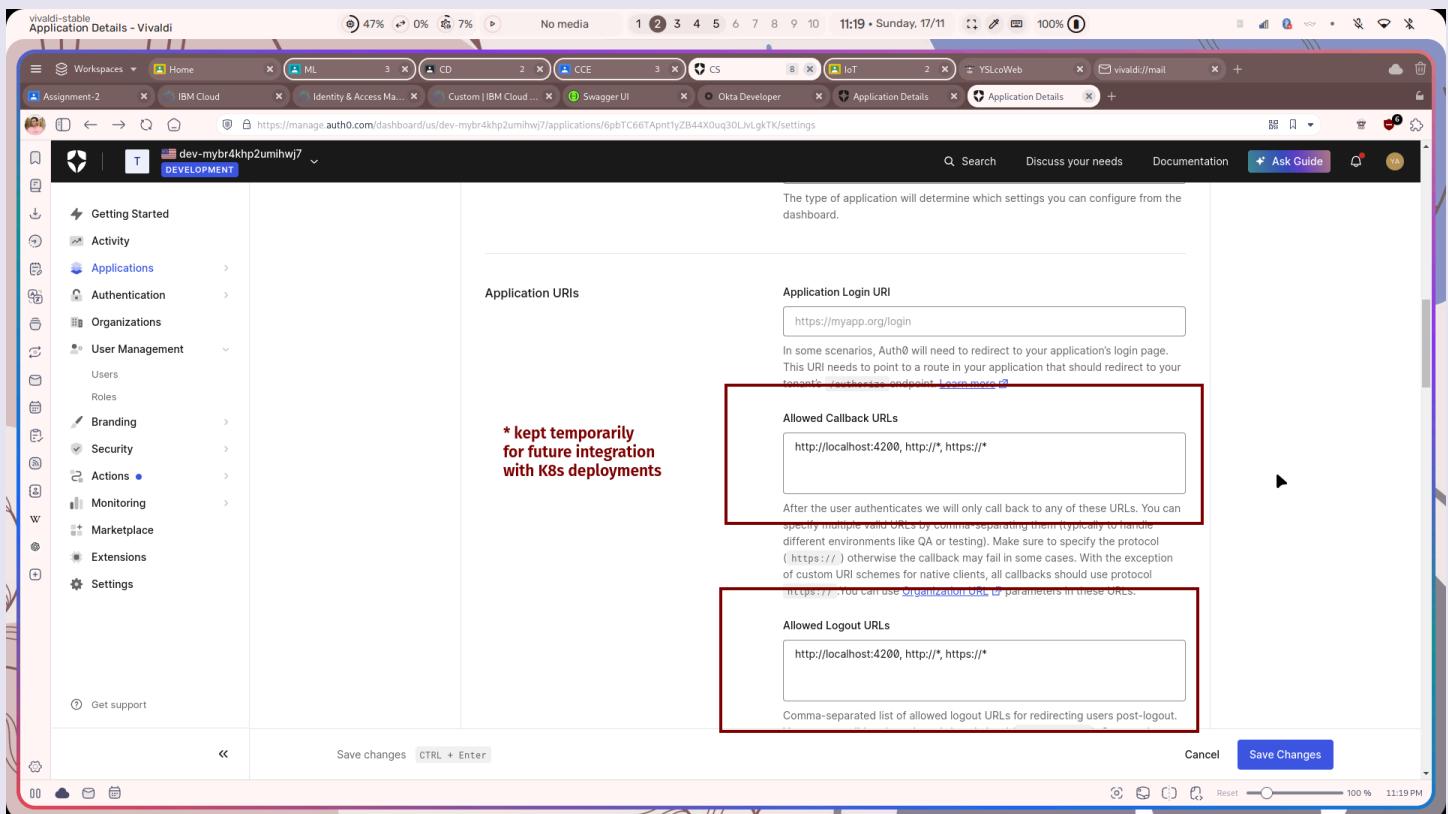


The screenshot shows the Auth0 dashboard with the 'Angular: Login' application selected. The left sidebar has 'DEVELOPMENT' selected. The main area displays the 'YSLcoWeb' application details, including its status as a 'Single Page Application' with a Client ID of '6pbTC66TAprntlyZB44X0uq30LNlJgkTK'. Below this, there are tabs for 'Quickstart', 'Settings', 'Addons', 'Connections', and 'Organizations'. A 'VIEW ON GITHUB' button is available. The 'Angular: Login' section features a brief introduction by Steve Hobbs and two main sections: 'I want to integrate with my app' (with steps 1-5) and 'I want to explore a sample app' (with a 'DOWNLOAD SAMPLE' button). Both sections have 'VIEW ON GITHUB' buttons.

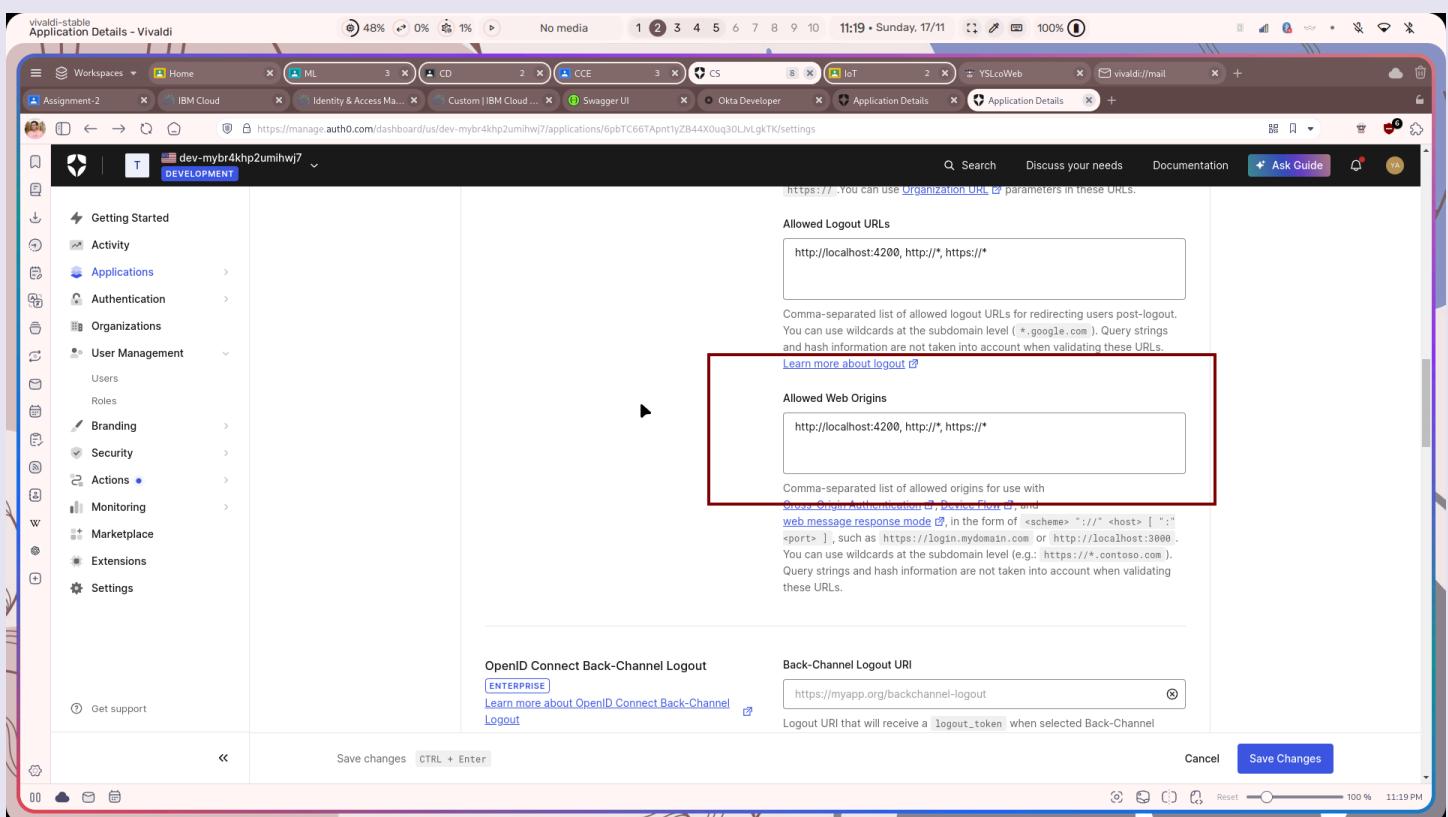


The screenshot shows the 'Application Details' page for the 'Angular: Login' application. The left sidebar shows 'User Management' expanded. The main area has a large text input field for 'A free text description of the application. Max character count is 140.' Below it, the 'Application Properties' section includes fields for 'Application Logo' (with a placeholder image and URL 'https://i.ibb.co/nDQsXvij/coweb-full.png') and 'Application Type' (set to 'Single Page Application'). The 'Application URIs' section contains the 'Application Login URI' field with the value 'https://muann.onion/login'. At the bottom, there are 'Save changes' and 'Save Changes' buttons.

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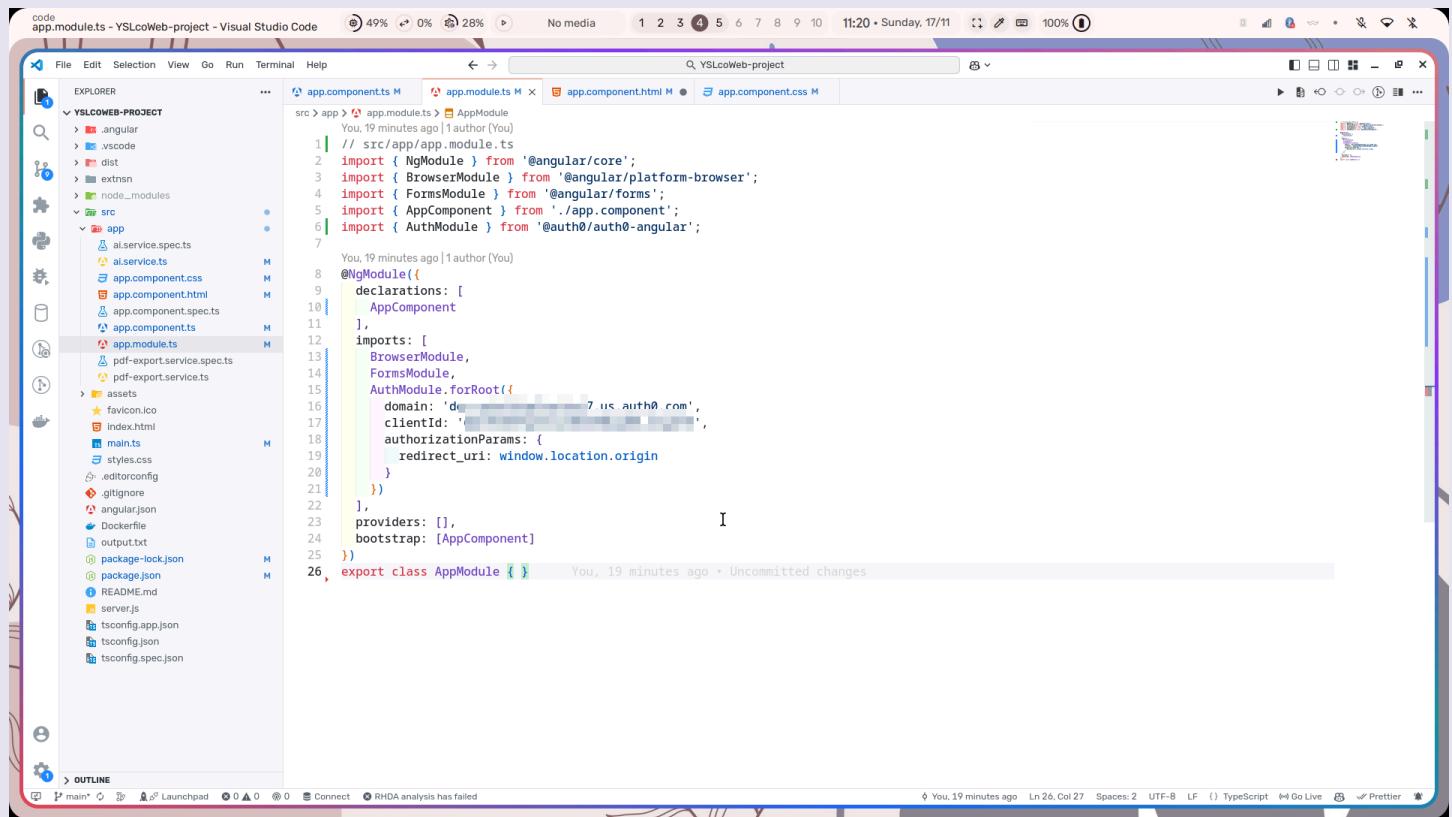
The screenshot shows the 'Application Details' section of the Okta Developer interface. On the left, a sidebar lists various application settings like Getting Started, Activity, Applications, Authentication, Organizations, User Management (with sub-options for Users and Roles), Branding, Security, Actions, Monitoring, Marketplace, Extensions, and Settings. The main panel displays the 'Application URIs' section, which includes fields for 'Application Login URI' (set to <https://myapp.org/login>) and 'Allowed Callback URLs' (containing <http://localhost:4200>, http://*, https://*). A note states: '* kept temporarily for future integration with K8s deployments'. Below these are sections for 'Allowed Logout URLs' (containing <http://localhost:4200>, http://*, https://*) and 'Comma-separated list of allowed logout URLs for redirecting users post-logout'. At the bottom right are 'Cancel' and 'Save Changes' buttons.



This screenshot shows the same 'Application Details' page, but the focus is on the 'Allowed Web Origins' section. It contains a single entry: <http://localhost:4200>, http://*, https://*. A note below explains: 'Comma-separated list of allowed origins for use with OAuth Single Authorization Code, Device Flow, and web message response mode', providing examples like <https://login.mydomain.com> or <http://localhost:3000>. It also notes that wildcards at the subdomain level (e.g., https://*.contoso.com) are supported. At the bottom right are 'Cancel' and 'Save Changes' buttons.

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5. Add necessary changes, routings, buttons and logic to angular code



The screenshot shows the Visual Studio Code interface with the file `app.module.ts` open in the editor. The code defines an Angular application module (`AppModule`) with imports for `BrowserModule`, `FormsModule`, `AppComponent`, and `AuthModule`. It also includes configuration for `AuthModule.forRoot()` with domain, clientId, and authorizationParams. The file is saved in the `YSLCoWeb-project` folder under the `src/app` directory.

```
// src/app/app.module.ts
import { NgModule } from '@angular/core';
import { BrowserModule } from '@angular/platform-browser';
import { FormsModule } from '@angular/forms';
import { AppComponent } from './app.component';
import { AuthModule } from 'auth0/auth0-angular';

@NgModule({
  declarations: [
    AppComponent
  ],
  imports: [
    BrowserModule,
    FormsModule,
    AuthModule.forRoot({
      domain: 'https://dev-7.us.auth0.com',
      clientId: 'REDACTED',
      authorizationParams: {
        redirect_uri: window.location.origin
      }
    })
  ],
  providers: [],
  bootstrap: [AppComponent]
})
export class AppModule { }
```

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The screenshot shows the Visual Studio Code interface with the following details:

- Title Bar:** "code app.component.html - YSLCoWeb-project - Visual Studio ..." at the top left.
- Activity Bar:** On the far left, it includes icons for Explorer, Search, Find, Open, Save, Undo, Redo, Terminal, Help, and a GitHub icon.
- File Explorer:** Shows the project structure under "YSLCoWEB-PROJECT". The "src/app" folder is expanded, showing files like "app.service.spec.ts", "app.service.ts", "app.component.css", "app.component.html", "app.component.spec.ts", "app.component.ts", "app.module.ts", "pdf-export.service.spec.ts", and "pdf-export.service.ts".
- Code Editor:** The main area displays the "app.component.ts" file. A red rectangular box highlights the section of code starting with `<div class="dropdown">` and ending with `</div>` on line 53. This section contains logic for a user dropdown menu, including conditional rendering based on authentication status and template-driven forms for logging in or out.
- Status Bar:** At the bottom, it shows "main.html" as the active file, "Launchpad" as the active workspace, and "Connect" as the active terminal. It also indicates "RHDA analysis has failed".
- Bottom Right:** Includes links for "Prettier", "HTML", "Go Live", and "UTF-8".

The screenshot shows the Visual Studio Code interface with the following details:

- Title Bar:** code app.component.ts - YSLCoWeb-project - Visual Studio Co... 49% 0% 3% No media 1 2 3 4 5 6 7 8 9 10 11:24 • Sunday, 17/11 100%
- File Explorer:** Shows the project structure under "YSLCoWEB-PROJECT".
- Editor:** The "app.component.ts" file is open. A red box highlights the following code block:

```
12 export class AppComponent implements OnInit {  
13     // ...  
14     // ...  
15     // ...  
16     // ...  
17     // ...  
18     // ...  
19     // ...  
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39     // ...  
40     // ...  
41     // ...  
42     // ...  
43     // ...  
44     // ...  
45     // ...  
46     // ...  
47     // ...  
48     // ...  
49     // ...  
50     // ...  
51     this.auth.user$.subscribe(user => {  
52         let name = user?.name || 'User';  
53         this.username = name.charAt(0).toUpperCase() + name.toLowerCase().substring(1, 10);  
54     });  
55     this.auth.isAuthenticated$.subscribe(isAuthenticated => {  
56         this.isAuthenticated = isAuthenticated;  
57     });  
58     // ...  
59     // ...  
60     // ...  
61     // ...  
62     // ...  
63     // ...  
64     // ...  
65     // ...  
66     // ...  
67     // ...  
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69     // ...  
70     // ...  
71     // ...  
72     // ...  
73     // ...  
74     // ...  
75     // ...  
76     // ...  
77     // ...  
78     // ...  
79     // ...  
80     // ...  
81     // ...  
82     // ...  
83     help() {
```

- Bottom Status Bar:** You, 3 hours ago Ln 10, Col 37 Spaces: 2 UTF-8 LF () TypeScript Go Live ✓ Prettier

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The screenshot shows the Visual Studio Code interface with the following details:

- Title Bar:** "code app.component.ts - YSLCoWeb-project - Visual Studio Co..."
- Status Bar:** "49% 0% 2% No media 1 2 3 4 5 6 7 8 9 10 11:25 Sunday, 17/11 100%"
- File Explorer:** Shows the project structure under "YSLCoWeb-PROJECT". The "src/app" folder is expanded, showing files like "app.service.spec.ts", "app.service.ts", "app.component.css", "app.component.html", "app.component.spec.ts", "app.component.ts", "app.module.ts", "pdf-export.service.spec.ts", and "pdf-export.service.ts". Other files like "main.ts", "styles.css", and "tsconfig.json" are also listed.
- Editor:** The "app.component.ts" file is open. A red box highlights the import statement for "Inject":

```
import { Component, OnInit, Inject } from '@angular/core';
```
- Search Bar:** "Q YSLCoWeb-project"
- Bottom Status Bar:** "showPopupMenu = false; USERNAME = 'User'; You, 3 hours ago Ln 10, Col 37 Spaces: 2 UTF-B-LF () TypeScript Go Live ⚡ Prettier"

The screenshot shows the Visual Studio Code interface with the following details:

- Title Bar:** code app.component.ts - YSLCoWeb-project - Visual Studio Co... 49% 0% 7% No media 1 2 3 4 5 6 7 8 9 10 11:25 Sunday, 17/11 100%
- File Explorer:** Shows the project structure under "YSLCOWEB-PROJECT".
- Editor:** The "app.component.ts" file is open. The code is as follows:

```
12 t {  
13     // Your component logic here  
14 }  
15  
16  
17  
18  
19  
20  
21  
22 , private PdfExportService: PdfExportService, public auth: AuthService, @Inject(DOCUMENT) public document: Document) {}  
23  
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94  
95  
96
```
- Search Bar:** Q YSLCoWeb-project
- Right Panel:** Includes a "Problems" panel showing 1 error, a "Tasks" panel, and a "Terminal" panel.
- Bottom Status Bar:** You, 3 hours ago Ln 10, Col 37 Spaces: 2 UTF-8 LF () TypeScript Go Live Prettier

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The screenshot shows the Visual Studio Code interface with the file `app.component.ts` open in the editor. The code implements the `OnInit` interface and contains several methods: `downloadExtension()`, `togglePopupMenu()`, `login()`, `logout()`, and `setApiKey()`. A red box highlights the `async logout()` method. The code uses Angular components like `AppComponent` and services like `ai.service`.

```
export class AppComponent implements OnInit {
  downloadExtension() {
    ...
  }
  else {
    alert('Download cancelled.');
  }
} <- #174-197 downloadExtension()

togglePopupMenu() {
  this.showPopupMenu = !this.showPopupMenu;
}

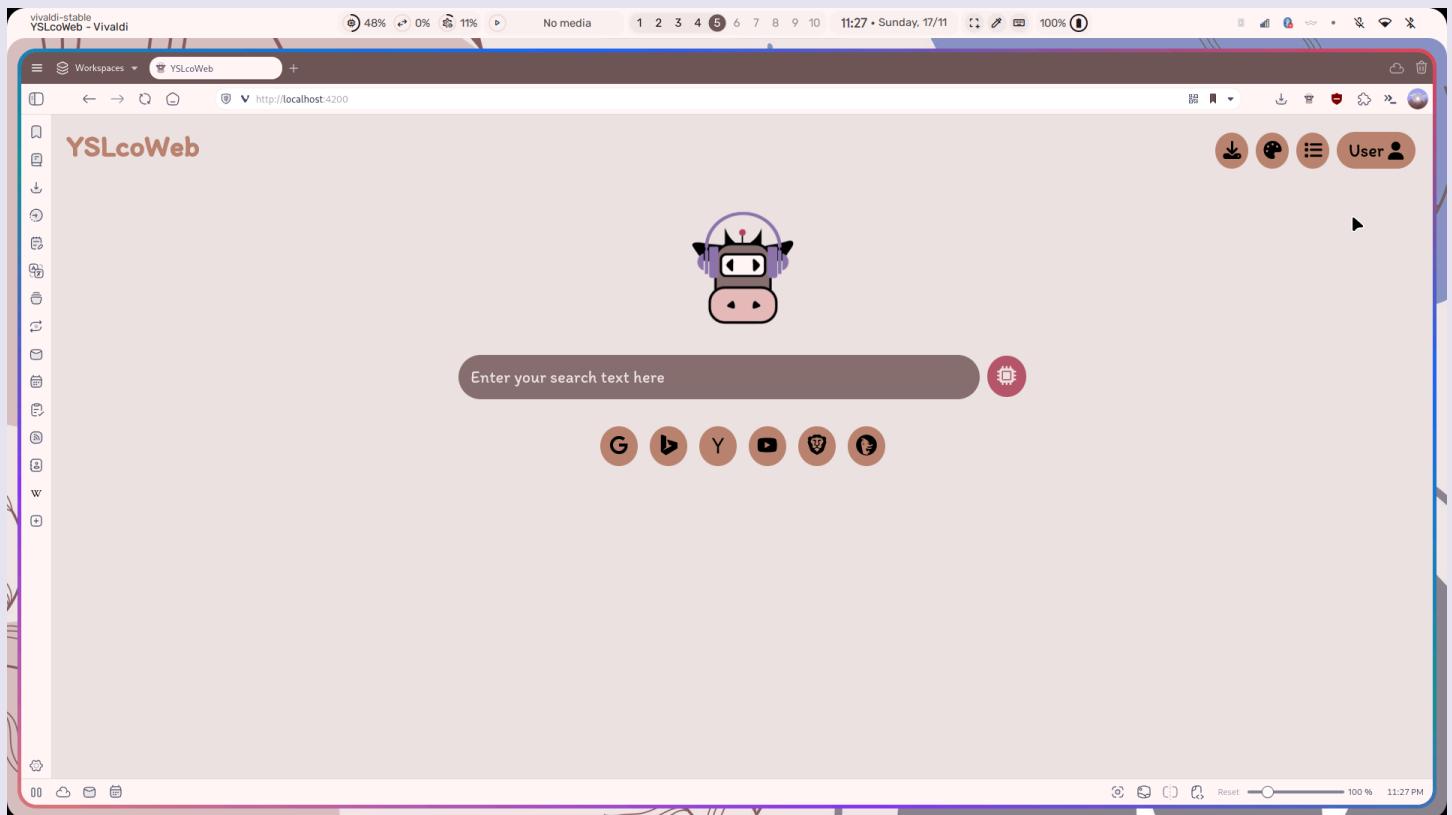
async login() {
  this.auth.loginWithRedirect();
}

async logout() {
  this.auth.logout({ logoutParams: { returnTo: this.document.location.origin } });
  this.aiservice.clearApiKey();
  console.log('User logged out');
} <- #207-211 async logout()

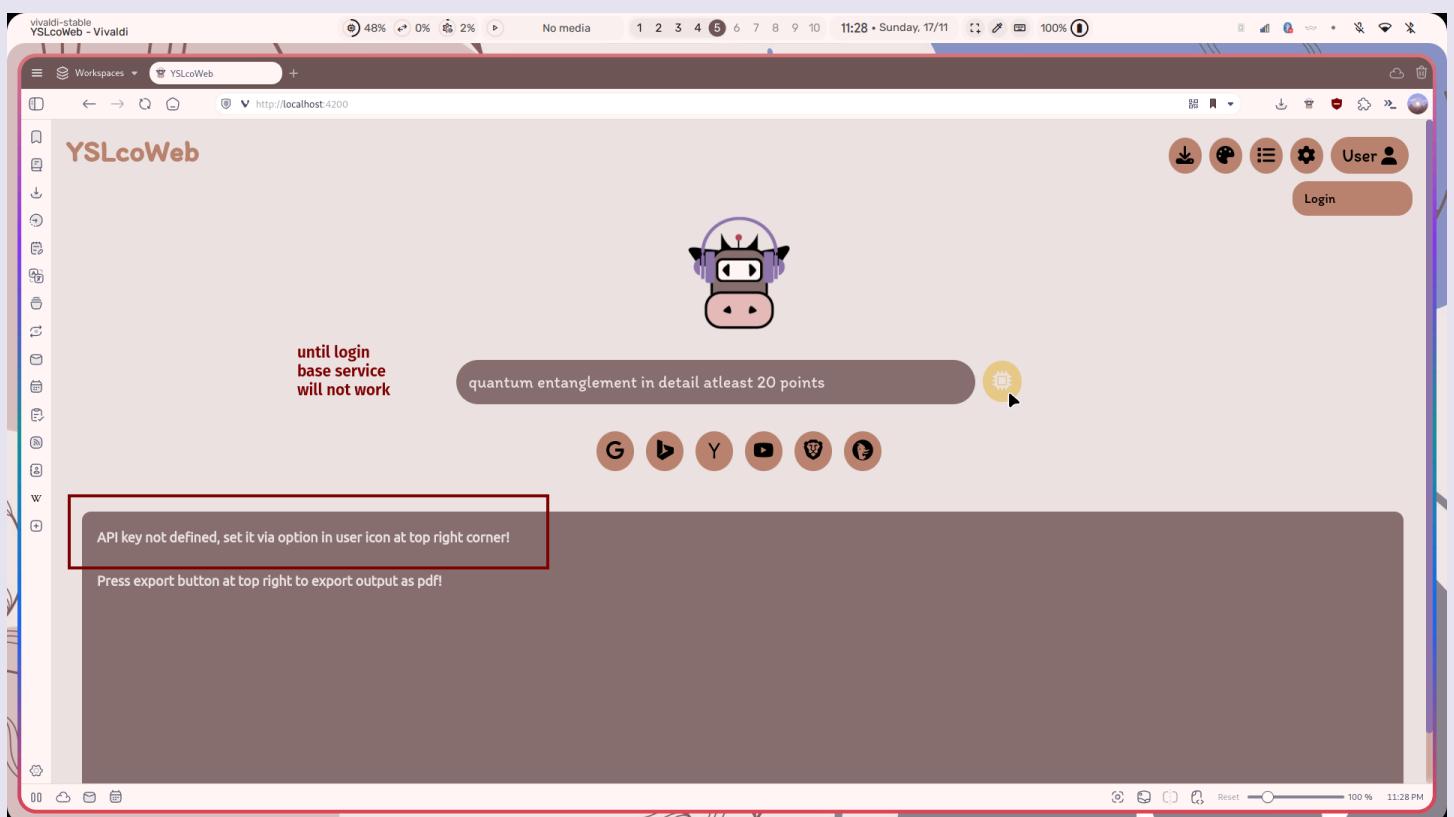
setApiKey() {
  alert('To get your API key, visit the Google Gemini API keys page and follow the instructions to generate a free API key.');
  const apiKey = prompt('Please enter your Google Gemini API key:');
  if (apiKey) {
    this.aiservice.setApiKey(apiKey);
  }
} <- #213-219 setApiKey()
} <- #12-220 export class AppComponent implements OnInit
```

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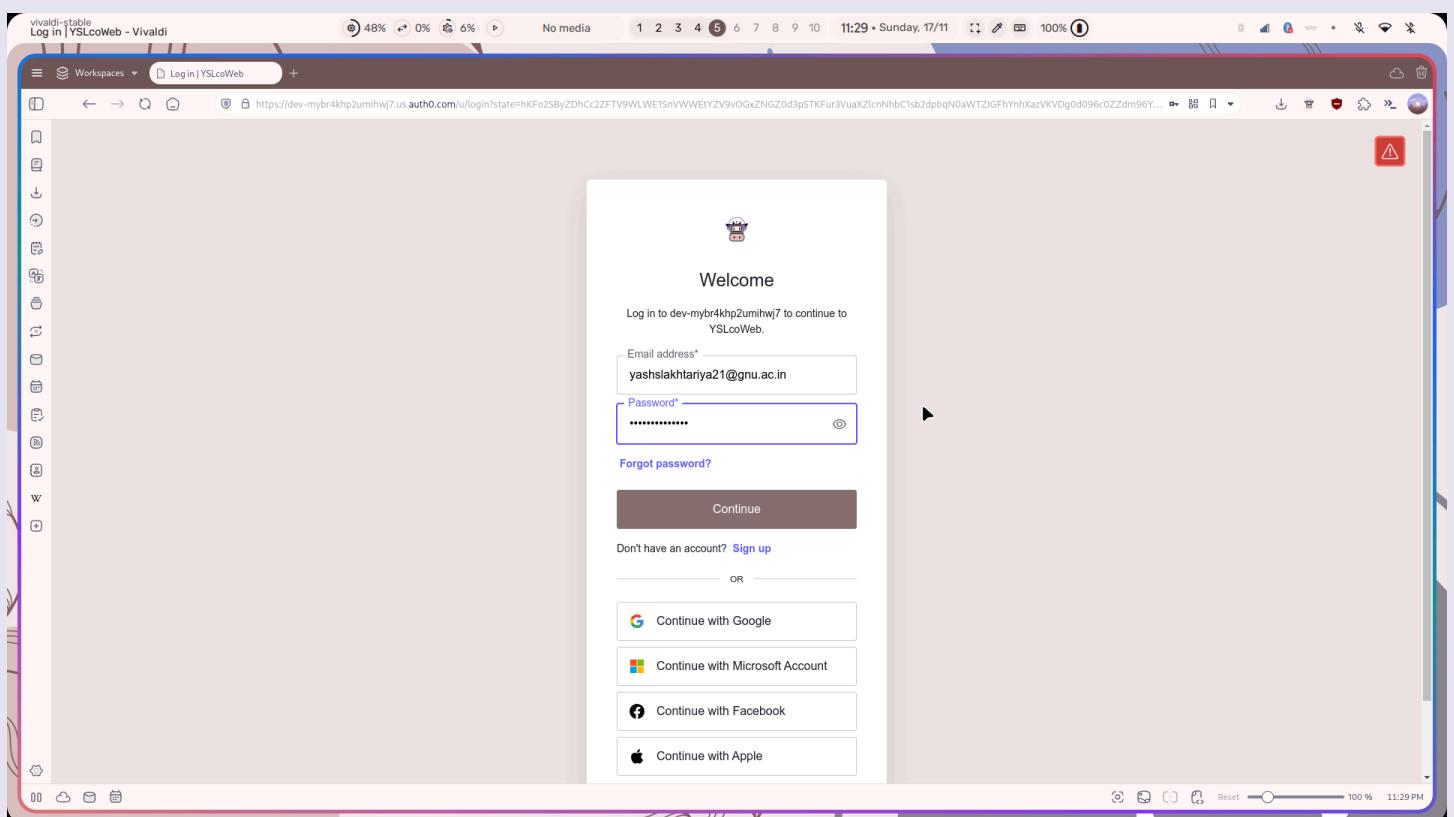
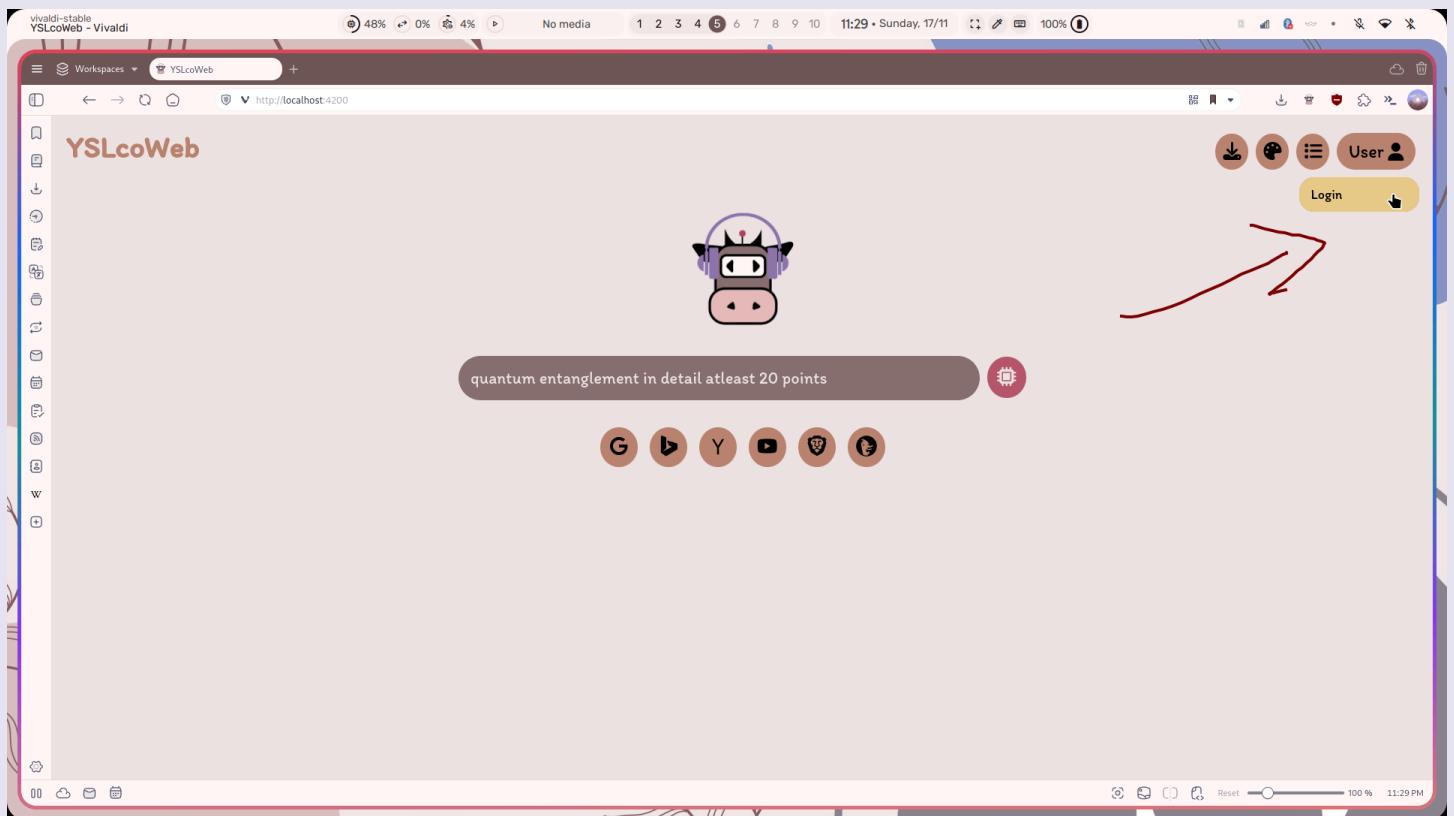
6. Check if it works with the app



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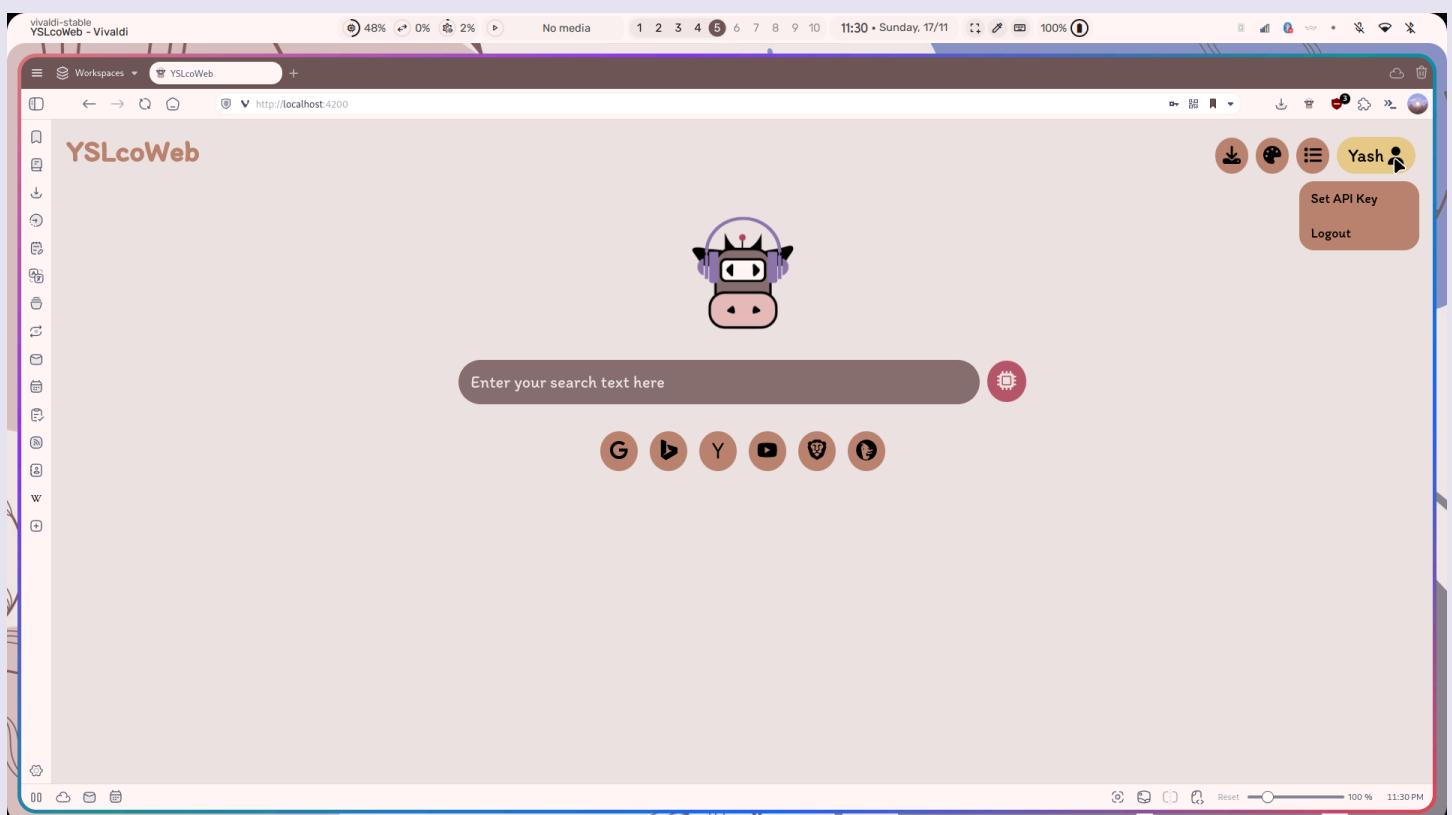
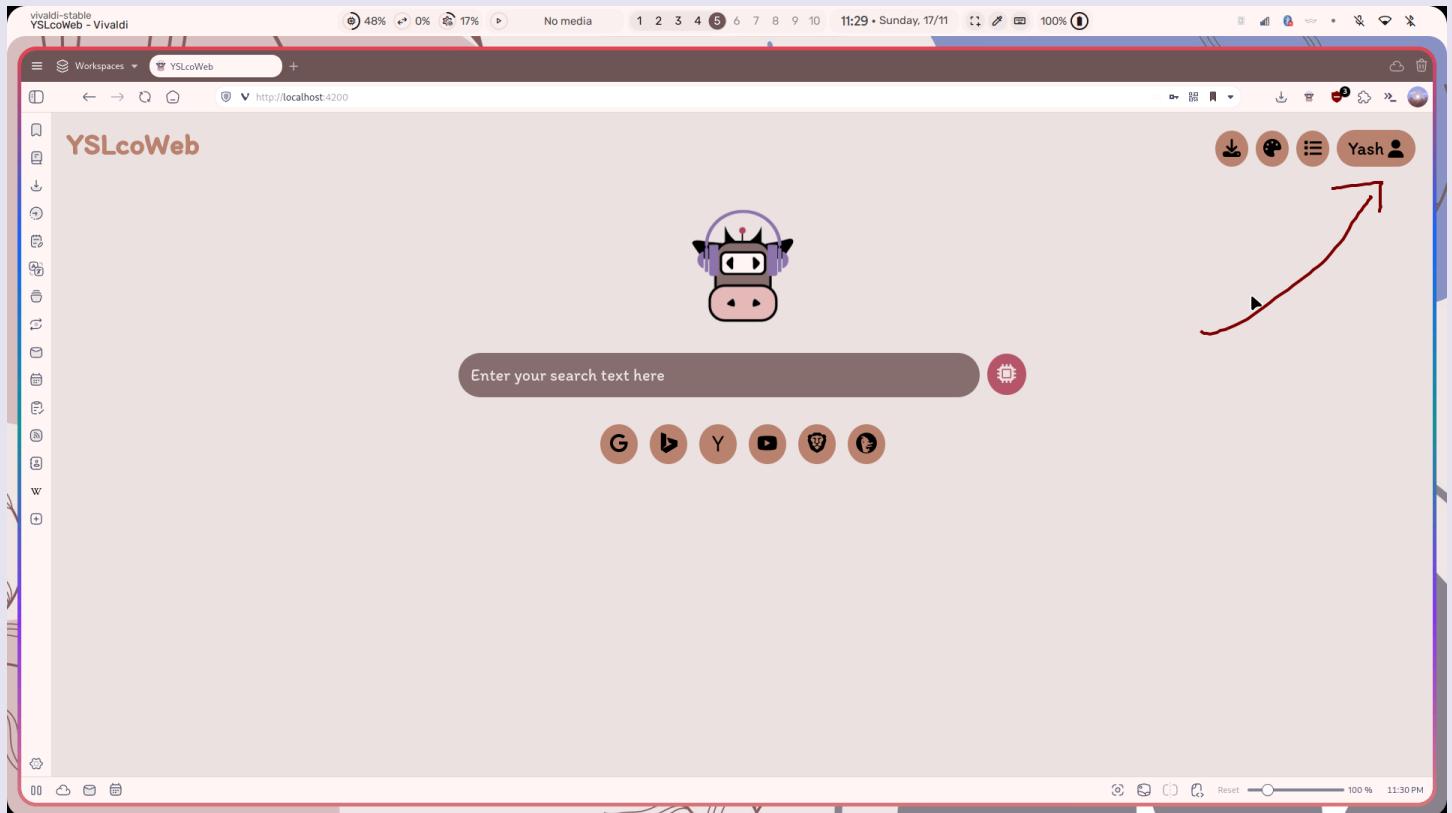


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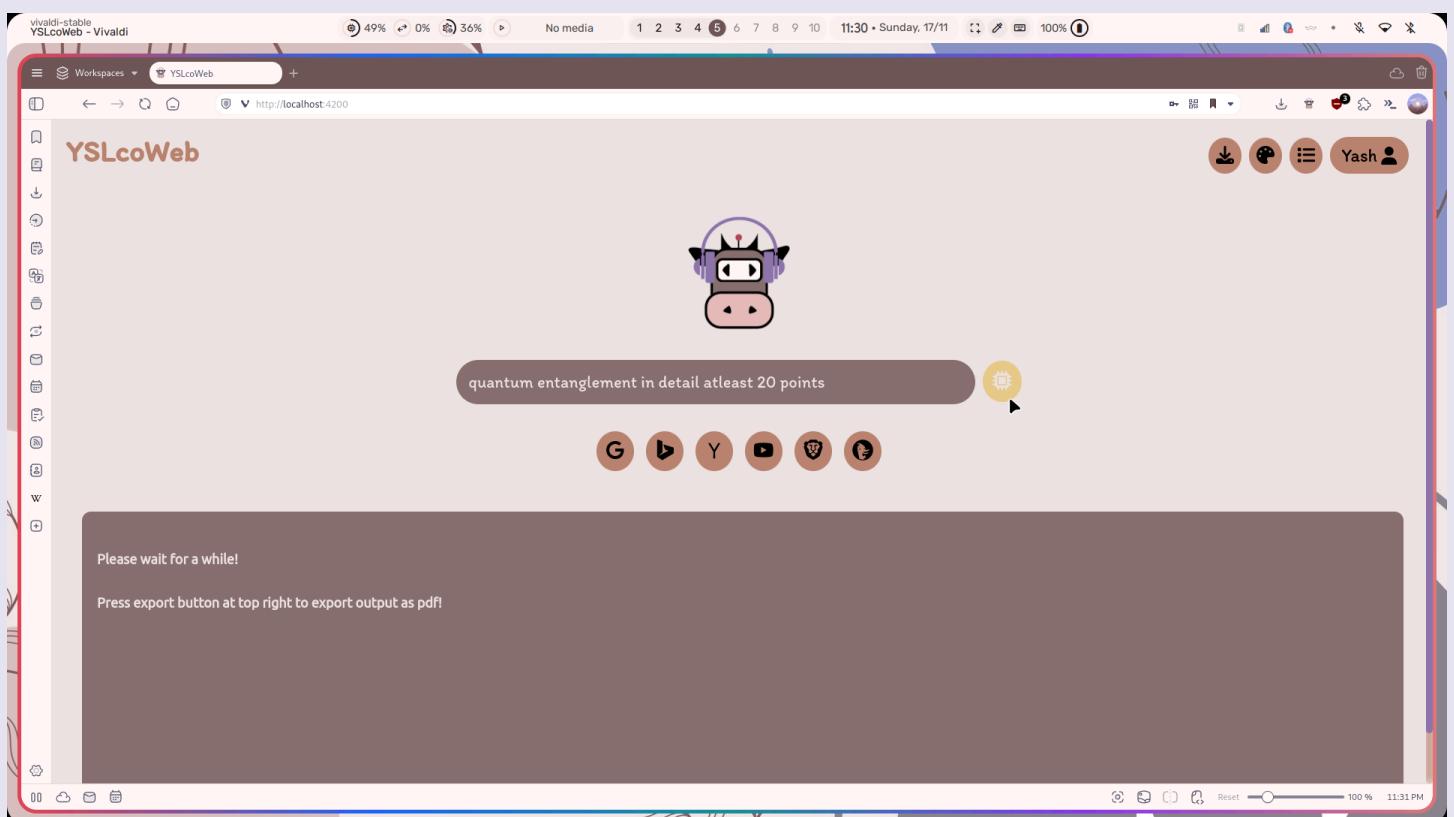
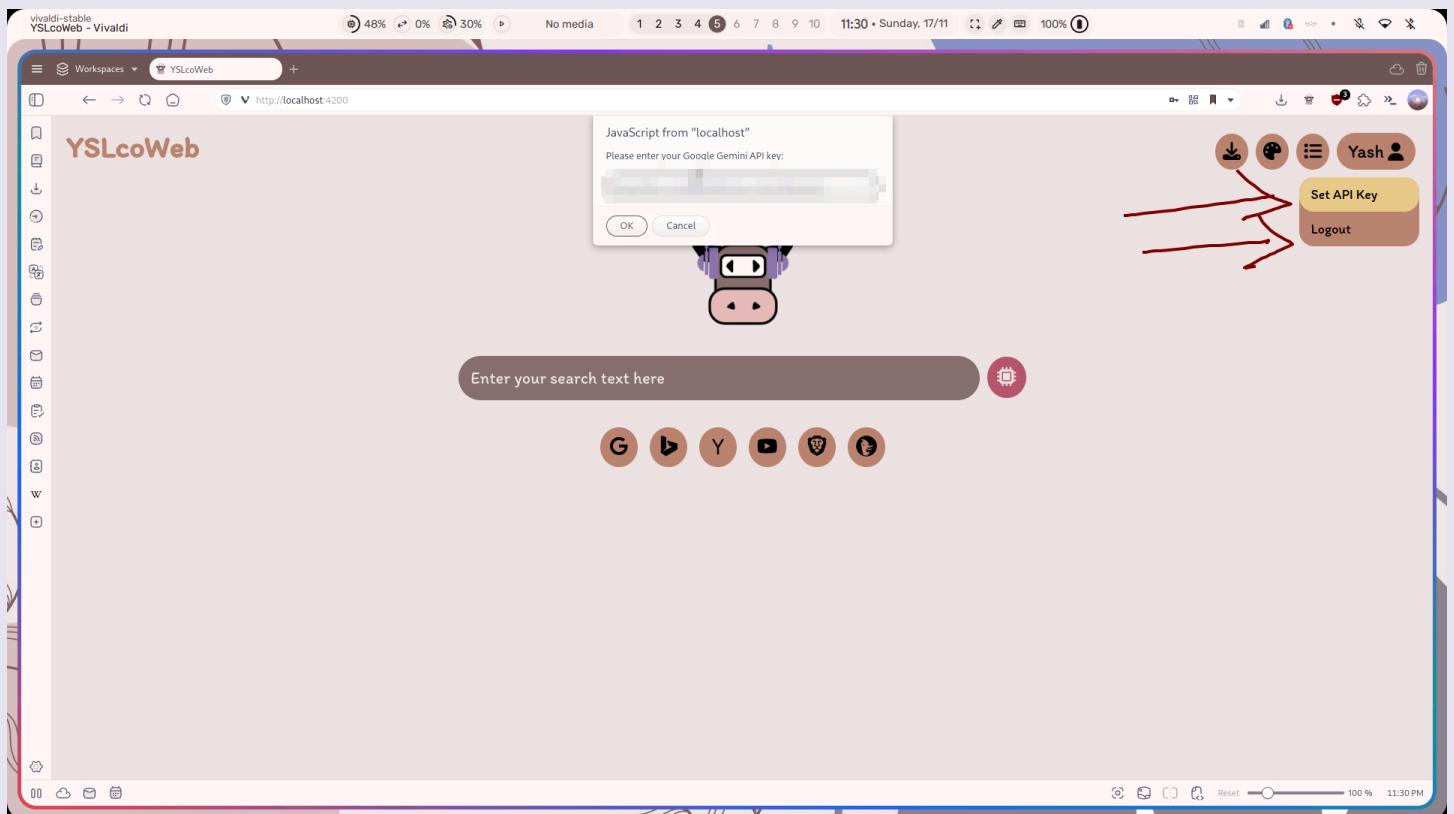
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The screenshot shows a Vivaldi browser window titled "YSLcoWeb". The main content area features a cartoon cow icon at the top. Below it is a dark blue bar with the text "quantum entanglement in detail atleast 20 points" and a gear icon. A row of social media sharing icons (Google+, YouTube, etc.) follows. The main text area contains the following content:

Quantum entanglement is a physical phenomenon where two or more particles become linked together in such a way that they share the same fate, no matter how far apart they are. This link is independent of the distance separating them.

1. Entanglement involves correlated particles.
2. Measurement on one entangled particle instantaneously affects the other.
3. This correlation exists regardless of distance.
4. It violates classical physics' locality principle.
5. Einstein called it "spooky action at a distance."
6. Entanglement is a quantum superposition state.
7. The particles' properties are undefined until measured.
8. Measurement forces the particles into definite states.
9. These states are correlated, showing opposite or same properties.

This screenshot shows the same Vivaldi browser window continuing from the previous slide. The main content area now includes the following additional numbered points:

14. Quantum teleportation utilizes entanglement.
15. Entanglement helps in quantum key distribution.
16. It aids in building more powerful quantum sensors.
17. Entanglement is being researched for quantum simulations.
18. Understanding entanglement helps explore fundamental physics.
19. Challenges include maintaining entanglement over long distances.
20. Future applications may include advanced communication technologies.

[Refer: https://en.wikipedia.org/wiki/Quantum_entanglement]

Press export button at top right to export output as pdf!

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