**Luxor university**

**Faculty of Computer and Information**

**Computer Science Department**

**Elserag**

**A Literacy Platform for Special Needs**

**Graduation Project Part II**

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**ABSTRACT**

**Now** we want to know more about the people with special needs.

People with special needs encompass a diverse and heterogeneous group of individuals who face various physical, intellectual, sensory, or developmental challenges that may require additional support and accommodation. These challenges can result from conditions such as autism, Down syndrome, cerebral palsy, ADHD, dyslexia, visual or hearing impairments, and more. Special needs individuals often require tailored educational, social, and healthcare services to meet their unique requirements and maximize their potential for independent living and participation in society.

**Blindness**, a sensory disability, creates unique challenges related to access to information, communication, mobility, and independence.

Focusing on blindness as the primary disability in our project represents a significant step towards fostering inclusivity and empowerment for individuals with visual impairments.

In our project, we aim to develop a **literacy platform** that caters specifically to the needs of **blind individuals**. This entails creating accessible digital content, leveraging assistive technologies, and adopting inclusive design principles to ensure that blind users can acquire and enhance their literacy skills effectively. By prioritizing blindness in our project, we contribute to the broader mission of making education and information accessible to all, regardless of their visual abilities.

Our project holds the potential to transform the lives of blind individuals, empowering them with the knowledge and skills necessary for personal growth, societal participation, and increased opportunities.

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**List of Abbreviation**

|  |  |
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| **Keyword** | **Meaning** |
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**Chapter 1**

**System Overview**

* 1. **Introduction**
     1. **Motivation**

‎**1.1.2 Problem Statement**

**1.1.3 Overview**

**Chapter 2**

**Related Work**

**Chapter 3**

**Domain Analysis and Technique**

**3.1 Domain Analysis**

**3.2 Risks**

|  |  |  |  |
| --- | --- | --- | --- |
| **Strategy** | **Priority** | **Effects** | **Risk** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
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**3.3 Constrains**

**3.4 Project plan**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mars** | **April** | **May** | **June** |
| **Gathering Information** |  |  |  |  |  |  |  |  |  |
| **Define Requirements** |  |  |  |  |  |  |  |  |  |
| **Analysis** |  |  |  |  |  |  |  |  |  |
| **Design** |  |  |  |  |  |  |  |  |  |
| **Implementation** |  |  |  |  |  |  |  |  |  |
| **Develop AI Platform** |  |  |  |  |  |  |  |  |  |
| **Testing and Final Discussion** |  |  |  |  |  |  |  |  |  |

**3.5 Feasibility Study**

**3.6 Quality Assurance Plan**

* 1. **System Requirements**

**3.8 Techniques and tools**

**Chapter 4**

**Proposed System & Methodology**

**4.1 System Use-Cases**

**4.1.1: Client use-case**

**4.1.2: Admin Use-Case**

**4.1.3: Server use-case**

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**4.4.1 State Diagram**

**4.4.1.1 State for Client**

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**4.5 interaction class diagram**

**4.5.1 System diagram**

**4.5.2 Sequence Diagram**

**4.6 Design Class**

**4.6.1 Class Diagram**

**4.7 Database Schema**

* 1. **ER Diagram**

**Chapter 5**

**Implementation & Testing**

5.1 Programming languages and Frameworks

Front-End Part

* Flutter
* Dart
* Shared preferences

Back-End Part

* PHP
* MySQL
* Stripe
* JWT

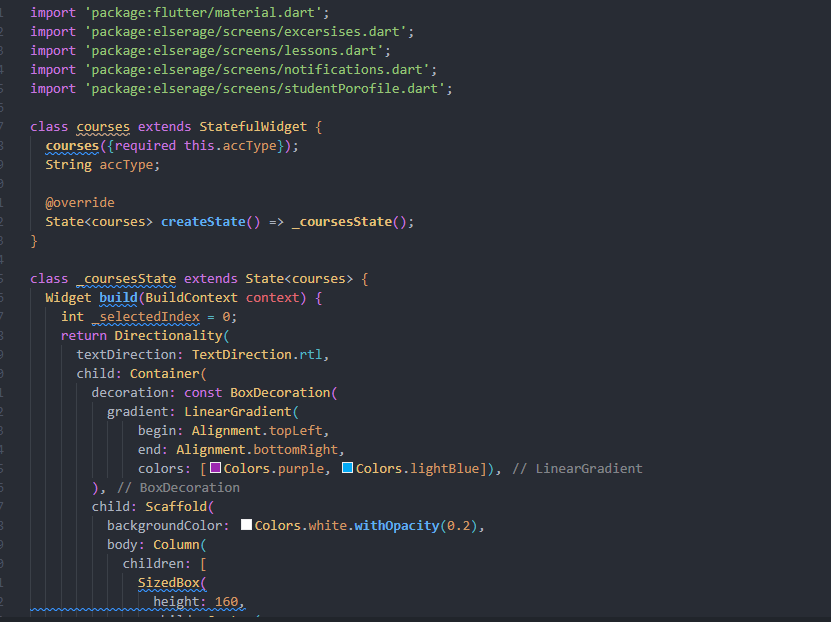
5.2 Algorithms

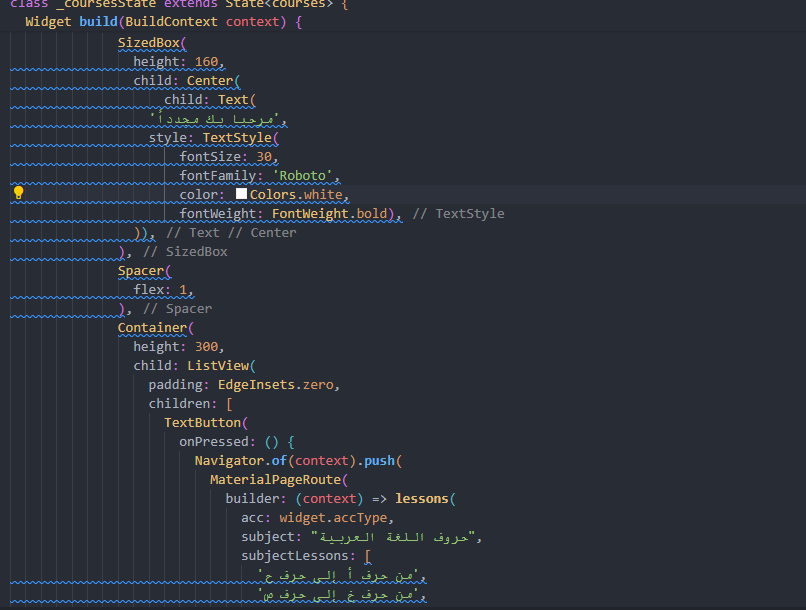
* Hash algorithm for passwords.
* Text to Speech
  + **Step 1: Add Dependencies**
    - **Open** pubspec.yaml file.
    - **Add** the following line under dependencies:
      * flutter\_tts: ^3.1.0----code
    - **Run** flutter pub get to install the package.
  + **Step 2: Import the Package**
    - **Open** the Dart file where you want to implement TTS (e.g., main.dart).
    - **Add** the following import statement at the top:
      * **import 'package:flutter\_tts/flutter\_tts.dart';**
  + **Step 3: Initialize and Configure the TTS Engine**
    - **Create** a class or method to initialize FlutterTts.
    - **Instantiate** FlutterTts:
      * **FlutterTts flutterTts = FlutterTts();----code**
    - **Set** language, pitch, and speech rate (optional)
  + **Step 4: Create a Flutter Widget to Use TTS**
    - **Define** a StatefulWidget to manage TTS state.
    - **Create** a TextField to capture user input.
    - **Create** buttons for speaking and stopping the TTS.
    - **Implement** methods to handle speaking and stopping
  + **Step 5: Configure Platform-Specific Settings**
    - **For iOS**:
      * **Open** ios/Runner/Info.plist.
      * **Add** the following permissions:
      * **code**
      * <key>NSMicrophoneUsageDescription</key>
      * <string>We need your microphone to give you a voice</string>
      * <key>NSSpeechRecognitionUsageDescription</key>
      * <string>We need your permission to use speech recognition</string>
    - **For Android**:
      * **Open** android/app/src/main/AndroidManifest.xml.
      * **Ensure** the following permission is included:
        + Code:
        + <uses-permission android:name = "android.permission.INTERNET"/>

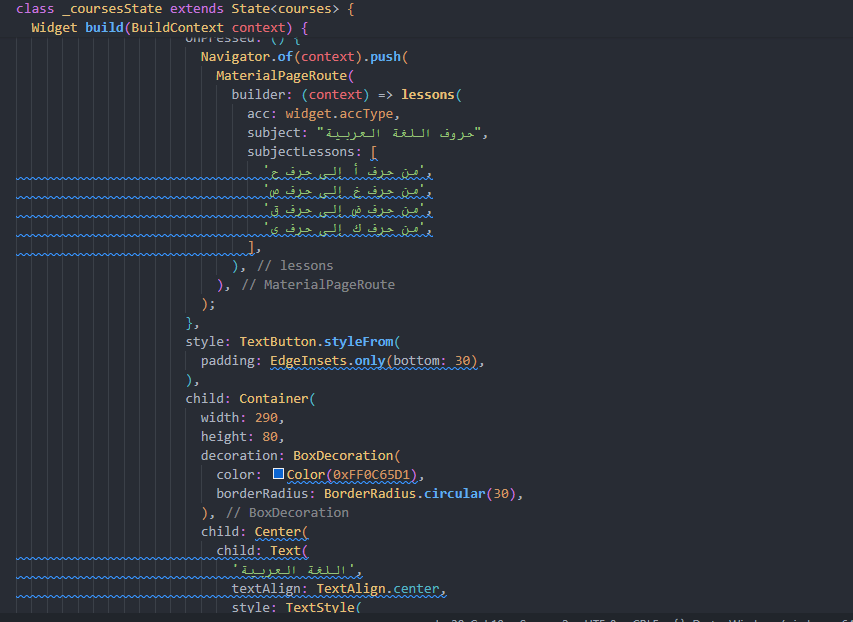
5.3 Application Essentials

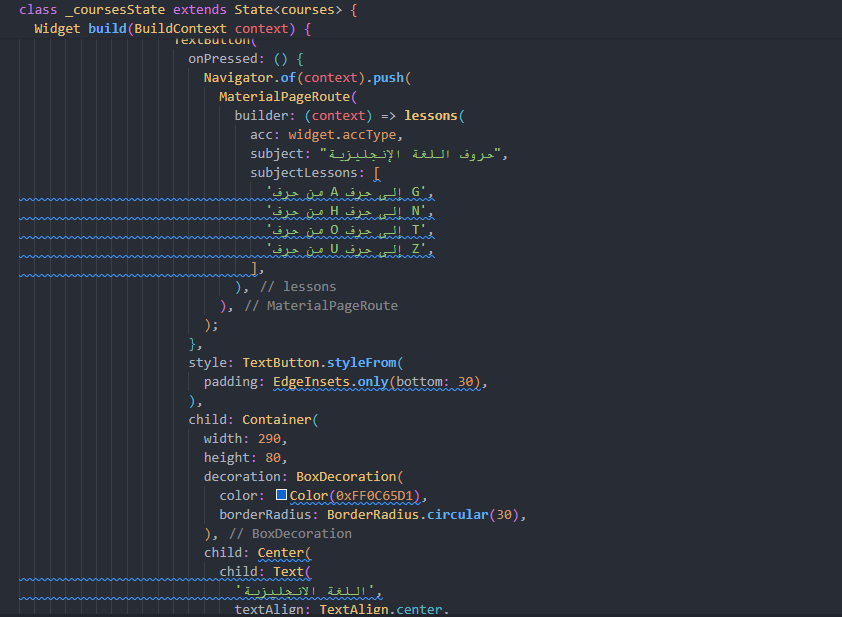
5.3.1 Front-End Implementation

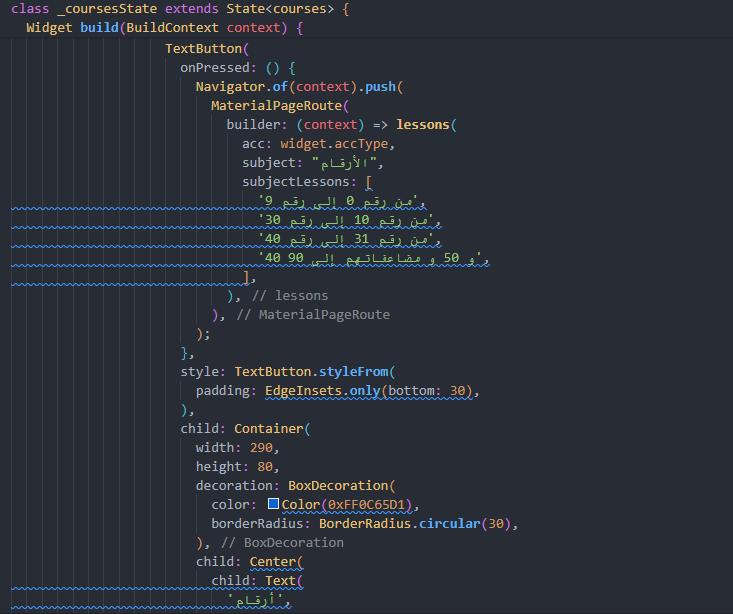
* + Courses 🡺

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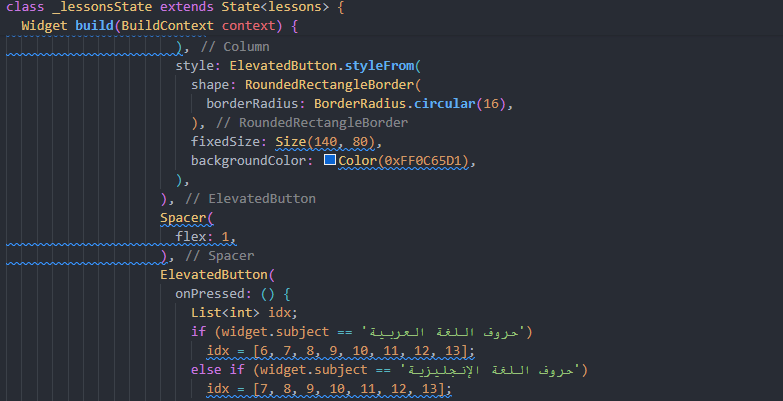
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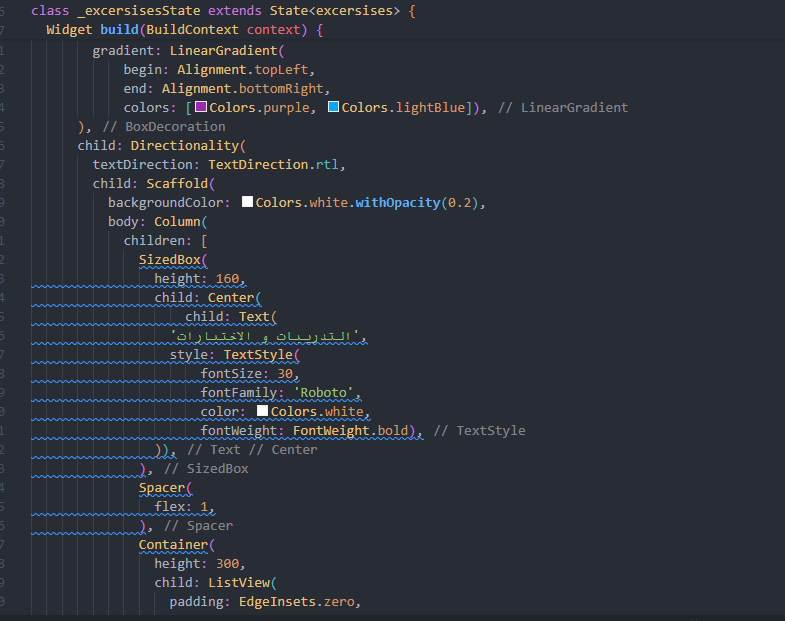
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* + Lessons 🡺

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* + Exercises 🡺

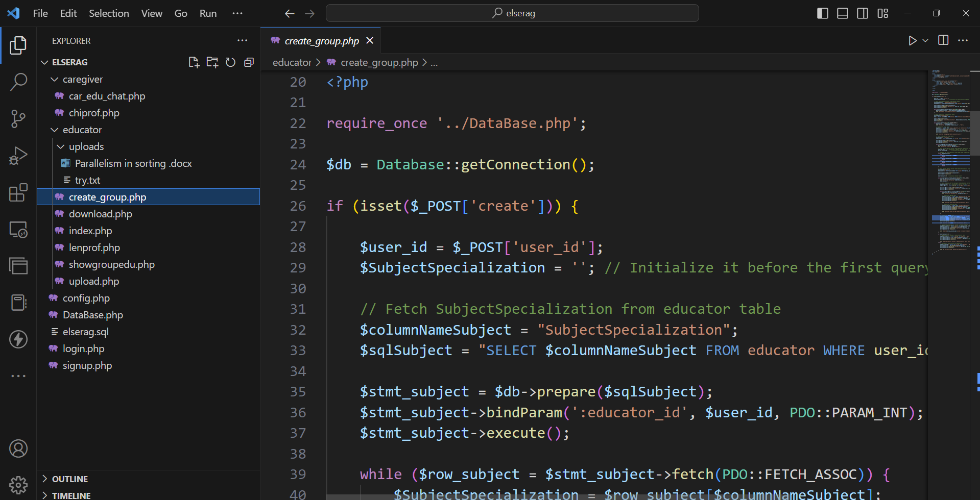
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5.3.2 Back-End Implementation

* + **Backend Framework and Language**: We have chosen PHP and MySQL for database.
  + **Database Management**: MySQL is used to manage our application's relational database. The database schema includes tables for users, etc., ensuring efficient data storage and retrieval.
  + **API Integration**: Stripe is integrated into our backend to handle payment transactions securely. This involves setting up Stripe API endpoints and ensuring PCI compliance for handling sensitive payment information.
  + **Authentication and Authorization**: JWT tokens are used for user authentication. Upon successful login, a JWT token is issued, which is then used to authenticate subsequent requests to protected API endpoints.
  + **Security Measures**: We implement input validation, encrypt sensitive data (e.g., passwords) stored in the database.
  + **Error Handling**: Robust error handling mechanisms ensure that appropriate error messages are returned to the frontend for any invalid requests or server-side issues.
  + **Documentation**: Detailed documentation of API endpoints, data models, and backend architecture is maintained to aid in future development and troubleshooting.

A screen shot of a computer program

Description automatically generated



A screen shot of a computer

Description automatically generated

A screenshot of a computer

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5.4 Testing Scenarios

5.4.1 Front-End Testing

|  |  |  |
| --- | --- | --- |
| Test Case Description | Test Data | Expected Result |
| During the login process, the student is told to enter a username that contains 6 characters | **Username** | **Successful login** |
| The student enter valid username characters | **Invalid username** | **Try again** |
| During the login process, the student is told to enter a password that contains 6 numbers | **Password** | **Successful login** |
| The student enter valid password numbers | **Invalid Password** | **Try again** |
| When a student tries to learn a lesson and enters a letter that matches the letter for the lesson | **Correct letter** | **Successful complete lesson and take points** |
| When a student tries to learn a lesson and enters a letter that don’t matches the letter for the lesson | **Invalid letter** | **Try again the lesson** |
| When the student tries to enter the credit card number into the payment system | **Correct credit card number** | **Successful process** |
| Enter invalid credit card number | **Invalid credit card number** | **Try again the process** |

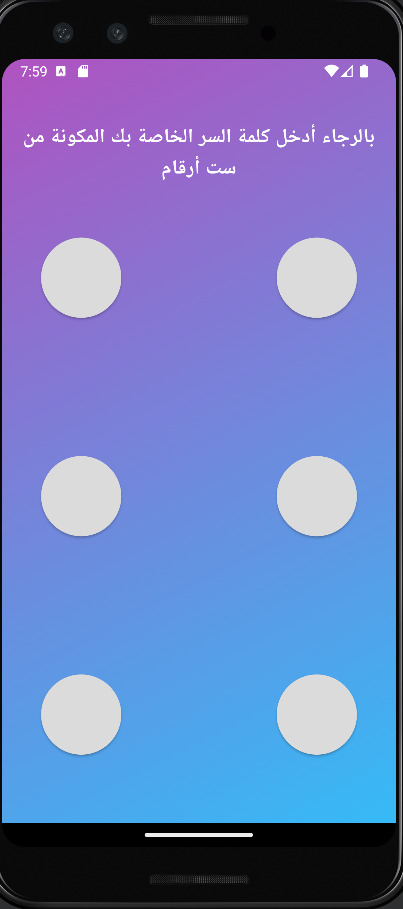
* Lessons Testing 🡺



* Username Testing 🡺



* Password Testing



* Payment System Testing



5.4.2 Back-End Testing

**Chapter 6**

**Evaluation & Results**

**6.1 Evaluation Techniques**

**6.2 Front-End Results**

**6.3 Back-End Results**

**Chapter 7**

**Conclusion & Feature work**

5.1 Conclusions

The envisioned **literacy platform** for individuals with special needs represents a transformative and inclusive initiative aimed at overcoming barriers to traditional education. By integrating **adaptive learning methodologies**, personalized pathways, and robust community support, the project seeks to empower **learners**, **educators**, **caregivers**, and **institutions** within the special education domain. The commitment to accessibility, inclusivity, and privacy, coupled with innovative features such as interactive tools and multilingual support, positions the platform as a pivotal resource for fostering personalized and enriching educational experiences.

Continuous refinement, stakeholder collaboration, and adherence to special education standards underscore the project's dedication to creating a dynamic and supportive ecosystem.

As this initiative unfolds, its potential to redefine **literacy education for individuals with special needs** becomes a beacon of hope for fostering **growth**, **communication**, and **societal integration** within this diverse community.

5.2 Future work

We have great aspirations for future work, we will mention some of them below:

1. Make the application **support multilingual**, to expand the scope of application use.
2. Add more **advanced information** in the existing tracks, to help the learner be stronger and in these tracks.
3. Support **more tracks and sciences** in the near future.
4. Apply the **scanner feature** in the application, to enable the user to scan any book or image to know what it contains by voice.

5.3 References

Unified Modeling Languages (UML)

* **Microsoft Visio** (<https://www.microsoft.com/en-us/microsoft-365/visio/flowchart-software>)
* **Flowchart Maker** (<https://app.diagrams.net/>)

User Interfaces and Experience (UI / UX)

* **Figma** (<https://www.figma.com/>)
* **Microsoft Bing for Image Creation** (<https://www.bing.com/images/create?FORM=GERRLP>)

Information about Special Needs

* **Wikipedia** (<https://www.wikipedia.org/>)
* **Elnour School** (Aswan City)
* **Elnour and ElAml School** (Luxor City)

Problem with Special Needs

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* The real lives behind the data: Children with disabilities in education across Egypt, Jordan, Lebanon and the occupied Palestinian territory (September 2022) - Egypt. (n.d.). ReliefWeb. (<https://reliefweb.int/report/egypt/real-lives-behind-data-children-disabilities-education-across-egypt-jordan-lebanon-and-occupied-palestinian-territory-september-2022>)
* (n.d.). Economic Research Forum (ERF). (<https://erf.org.eg/app/uploads/2018/09/1215.pdf>)
* (n.d.). ERIC - Education Resources Information Center. (<https://files.eric.ed.gov/fulltext/EJ1300085.pdf>)
* A national screening for the prevalence and profile of disability types among Egyptian children aged 6-12 years: a community-based population study - PubMed. (n.d.). PubMed. ([https://pubmed.ncbi.nlm.nih.gov/37608272/#:~:text=Results:%20The%20prevalence%20of%20children,,%20and%20hearing%20(0.4%](https://pubmed.ncbi.nlm.nih.gov/37608272/%23:~:text=Results:%20The%20prevalence%20of%20children,,%20and%20hearing%20(0.4%25))
* Blind community in Egypt. (n.d.). MOSTAFA DARWISH. (<https://www.mostafadarwish.net/blind-community-in-egypt.html>)
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Solution for their problems

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* The 5 Best Education Apps for Blind Students. (n.d.). The Lighthouse for the Blind, Inc. (<https://lhblind.org/blind-students-the-5-best-education-apps-for-learning/>)
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