

1. users Collection

```
{
  "_id": "ObjectId",
  "name": "String",
  "email": "String",
  "password": "String", // Hashed
  "country": "String",
  "phoneNumber": "String",
  "role": "String", // 'student', 'parent', 'admin'
  "isEmailVerified": "Boolean",
  "googleId": "String", // Optional
  "firstLogin": "Boolean",
  "interests": ["ObjectId"], // Ref: 'interests' collection
  "staredCourses": ["ObjectId"], // Ref: 'courses' collection
  "studentProfile": { // Exists only if role is 'student'
    "dob": "Date",
    "religion": "String",
    "parent": "ObjectId" // Ref: 'users' collection
  },
  "parentProfile": { // Exists only if role is 'parent'
    "religion": "String",
    "children": ["ObjectId"] // Ref: 'users' collection
  },
  "createdAt": "Date",
  "updatedAt": "Date"
}
```

Indexing:

- { "email": 1 } (unique): For fast login and to prevent duplicates.
- { "phoneNumber": 1 } (unique): For fast lookups and uniqueness.
- { "googleId": 1 } (unique, sparse): For fast Google Sign-In.
- { "role": 1 } : To quickly query users by their role.

2. courses Collection

```
{
  "_id": "ObjectId",
```

```

"title": "String",
"description": "String",
"learningPath": "ObjectId", // Ref: 'learningPaths' collection
"presenter": "ObjectId", // Ref: 'users' collection
"price": "Number",
"totalHours": "Number",
"language": "String",
"grade": "ObjectId", // Ref: 'grades'
"finalExam": "ObjectId", // Ref: 'assessments'
"ageRange": "String", // e.g., "10-14"
"coverImage": "String", // URL to image in cloud storage
"prerequisites": ["ObjectId"], // Ref: 'courses' collection
"outcome": ["String"], // List of learning outcomes
"averageRating": "Number",
"attachments": [
  {
    "name": "String",
    "url": "String"
  }
],
"chunks": [ // Embedded documents
  {
    "_id": "ObjectId", // Unique ID for the chunk
    "title": "String",
    "type": "String", // 'video', 'audio', 'text'
    "contentUrl": "String", // URL to content
    "transcript_en": "String",
    "transcript_ar": "String"
  }
],
"createdAt": "Date"
}
` ``

```

- ****Indexing****:

- `{ "title": "text", "description": "text" }`: For full-text search.
- `{ "learningPath": 1 }`: To quickly find all courses in a path.
- `{ "presenter": 1 }`: To find all courses by a content creator.
- `{ "price": 1 }`: For sorting by price.

3. ****`userCourseProgress` Collection****

```
`` js
{
  "_id": "ObjectId",
  "user": "ObjectId", // Ref: 'users' collection
  "course": "ObjectId", // Ref: 'courses' collection
  "completedChunks": ["ObjectId"], // IDs of completed chunks
  "progressPercentage": "Number",
  "lastVisited": "Date",
  "points": "Number",
  // "certificateUrl": "String", // Optional
  "certificate": "ObjectId", // Ref: 'certificates'
  "notes": [
    {
      "chunkNumber": "Number",
      "content": "String",
      "createdAt": "Date"
    }
  ]
}
```

- ****Indexing****:

- `{ "user": 1, "course": 1 }` (unique): Ensures a user can only have one progress document per course and makes lookups extremely fast.

4. ****`feeds` Collection****

```
`` js
{
  "_id": "ObjectId",
  "author": "ObjectId", // Ref: 'users' collection
  "content": "String",
  "media": [
    {
      "type": "String", // 'image', 'video'
      "url": "String"
    }
  ],
  "visibility": "String", // 'public', 'private', 'specific_users'
  "allowedUsers": ["ObjectId"], // Ref: 'users'
}
```

```
    "createdAt": "Date"
  }
  ...
```

- ****Indexing****:

- `{ "author": 1 }`: To quickly find all posts by a specific user.
- `{ "createdAt": -1 }`: For sorting the main timeline by most recent.

5. ****`comments` Collection****

```
```js
{
 "_id": "ObjectId",
 "author": "ObjectId", // Ref: 'users' collection
 "content": "String",
 "parentType": "String", // 'course', 'feed', 'comment'
 "parentId": "ObjectId", // ID of the parent item
 "isHighlighted": "Boolean",
 "createdAt": "Date"
}
...

```

- **\*\*Indexing\*\***:

- `{ "parentId": 1, "createdAt": 1 }`: To efficiently fetch and sort all comments for a specific item.

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## 6. Grades Collection

```
```js
{
  "_id": "ObjectId",
  "name": "String",           // e.g., "Grade 5" or "KG 1"
  "order": "Number",         // A number (1, 2, 3...) for proper sorting
  "description": "String"    // Optional description
}

```

7. Assessments Collection

Instead of separate collections for `Quiz`, `Question`, and `Exam`, it's more flexible to have a single

```
{
  "_id": "ObjectId",
  "title": "String",
  "type": "String", // 'quiz' or 'exam'
  "course": "ObjectId", // Ref: 'courses'. The course this belongs to.
  "chunk": "ObjectId", // Optional. The specific chunk this quiz is for.
  "questions": [
    {
      "questionText": "String",
      "questionType": "String", // 'mcq', 'true_false', 'short_answer'
      "points": "Number",
      "options": [
        {
          "text": "String",
          "isCorrect": "Boolean"
        }
      ]
    }
  ]
}
```

8. Certificate Collection

```
{
  "_id": "ObjectId",
  "user": "ObjectId", // Ref: 'users'
  "course": "ObjectId", // Ref: 'courses'
  "issuedOn": "Date",
  "verificationId": "String", // Unique public ID to verify the certificate
  "certificateUrl": "String" // URL to the PDF/Image in cloud storage
}
```

6. Supporting Collections

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- `categories`: { `_id`, `name`, `description` }
- `learningPaths`: { `_id`, `title`, `description`, `category (ref)` }
- `interests`: { `_id`, `name`, `description`, `targetAudience` }

- `orders: { _id, user (ref), courses (ref array), amount, transactionId, paymentStatus, createdAt }`
- `packages: { _id, name, courses (ref array), price }`