# **Khmer Learning App - Data Structure**

## **1. Application State**

// Main app state variables

const [activeTab, setActiveTab] = useState('lessons'); // 'lessons' | 'quiz'

const [selectedLesson, setSelectedLesson] = useState(null); // Lesson object or null

const [showPurchaseModal, setShowPurchaseModal] = useState(false); // boolean

const [purchasedLessons, setPurchasedLessons] = useState([3, 5]); // Array of lesson IDs

const [showQuiz, setShowQuiz] = useState(false); // boolean

const [quizCompleted, setQuizCompleted] = useState(false); // boolean

const [quizScore, setQuizScore] = useState(0); // number

const [currentQuizAnswers, setCurrentQuizAnswers] = useState({}); // Object {questionId: answer}

## **2. Lessons Data Structure**

const lessons = [

{

id: number, // Unique identifier

title: string, // Lesson title

description: string, // Brief description

free: boolean, // true for free, false for paid

price?: number, // Price (only for paid lessons)

level: string, // "Beginner" | "Intermediate" | "Advanced"

image: string // Image type identifier

}

]

// Example:

{

id: 2,

title: "Countries & Nationality",

description: "Learn how to talk about countries and nationality in Khmer",

free: true,

level: "Beginner",

image: "travel"

}

## **3. Lesson Content Structure**

const lessonContent = {

title: string, // Main lesson title

sections: [ // Array of content sections

{

title: string, // Section title

content: string // Section content (multi-line string)

}

]

}

// Example:

{

title: "Countries & Nationality",

sections: [

{

title: "Key Vocabulary",

content: "Where? [nouw-naa?] : នៅណា?\ncome [merk] : មក\n..."

},

{

title: "Useful Dialogue",

content: "Q: Where do you come from?\n[neak merk bpii naa?]\n..."

}

]

}

## **4. Quiz Data Structure**

const quizQuestions = [

{

id: number, // Unique question identifier

question: string, // The question text

options: string[], // Array of 4 possible answers

correctAnswer: string // The correct answer (must match one option)

}

]

// Example:

{

id: 1,

question: "How do you ask 'Where do you come from?' in Khmer?",

options: [

"អ្នកនៅណា? (neak nouw-naa?)",

"អ្នកមកពីណា? (neak merk bpii naa?)",

"អ្នកទៅណា? (neak dtouw naa?)",

"អ្នកធ្វើការនៅណា? (neak tweu-gaa nouw-naa?)"

],

correctAnswer: "អ្នកមកពីណា? (neak merk bpii naa?)"

}

## **5. Quiz Answers Structure**

// User's quiz answers - stored as object

const currentQuizAnswers = {

[questionId]: selectedAnswer // Key-value pairs

}

// Example:

{

1: "អ្នកមកពីណា? (neak merk bpii naa?)",

2: "ខ្ញុំគឺជាជនជាតិខ្មែរ (k'nhom geu-jia jun-jiat kmae)",

3: "កម្ពុជា (gam-bpuk-jia)"

}

## **6. Image Mapping Structure**

const imageMap = {

alphabet: "Aa អា",

activity: "🔄",

numbers: "១២៣",

food: "🍚",

travel: "🚌",

conversation: "💬",

question: "❓"

}

## **7. Purchase System Structure**

// Purchased lessons - Array of lesson IDs

const purchasedLessons = [3, 5, 6]

// Purchase modal state

const showPurchaseModal = boolean

// Lesson accessibility check

function isLessonAccessible(lesson) {

return lesson.free || purchasedLessons.includes(lesson.id)

}

## **8. Lesson Content Examples**

### **Countries & Nationality Lesson (ID: 2)**

{

sections: [

{

title: "Key Vocabulary",

content: "Khmer vocabulary with pronunciation and script"

},

{

title: "Useful Dialogue",

content: "Question-answer pairs in English, pronunciation, and Khmer script"

},

{

title: "Country Names",

content: "List of countries with Khmer names and pronunciation"

},

{

title: "Grammar Notes",

content: "Grammar rules and sentence structures"

}

]

}

### **Daily Activities Lesson (ID: 3)**

{

sections: [

{

title: "Daily Activities Vocabulary",

content: "Morning routines and personal care activities"

},

{

title: "Household Activities",

content: "Cleaning, cooking, and home maintenance activities"

},

{

title: "Leisure Activities",

content: "Entertainment and recreational activities"

},

{

title: "Practice Dialogue",

content: "Sample conversation about daily routine timing"

}

]

}

## **9. Component Architecture**

KhmerLearningApp (Main Component)

├── Header (App title and premium status)

├── Navigation Tabs (Lessons | Quiz)

├── Main Content Area

│ ├── Lessons List View

│ ├── Selected Lesson Content View

│ ├── Quiz Selection View

│ └── Active Quiz View

└── Purchase Modal (Overlay)

## **10. Data Flow**

1. **Lesson Selection**: User clicks lesson → setSelectedLesson(lesson)
2. **Content Display**: App checks isLessonAccessible() → Shows content or purchase prompt
3. **Quiz Access**: User clicks quiz → setShowQuiz(true) and setActiveTab('quiz')
4. **Quiz Interaction**: User selects answers → Updates currentQuizAnswers
5. **Quiz Completion**: User submits → Calculates score → setQuizCompleted(true)
6. **Purchase Flow**: User buys lesson → Updates purchasedLessons array

## **11. Key Functions**

// Lesson management

handleLessonSelect(lesson)

isLessonAccessible(lesson)

// Quiz management

handleAnswerSelect(questionId, answer)

calculateQuizScore()

handleQuizSubmit()

handleQuizRestart()

// Purchase management

handlePurchase()

// UI helpers

getLessonImage(type)

This structure provides a clear separation between free/paid content, supports multiple lesson types, tracks user progress, and enables quiz functionality with score tracking.