

# **HKBK COLLEGE OF ENGINEERING**

**PROJECT TITLE: NEWSHUB**

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**DEPT: INFORMATION SCIENCE AND ENGINEERING**

**DOMAIN: MERN STACK**

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## NewsHub Technical Analysis

### 1. Architecture & Code Organization

#### Project Structure

```
my-app/
├── public/      # Static assets
├── src/         # Source code
│   ├── assets/  # Image assets
│   ├── components/ # React components
│   └── App.jsx   # Main application component
├── package.json # Dependencies and scripts
└── vite.config.js # Build configuration
```

#### Key Component Analysis

##### A. [App.jsx](#) (Main Component)

##### State M

anagement:

```

const [articles, setArticles] = useState([]);
const [loading, setLoading] = useState(false);
const [query, setQuery] = useState('technology');
const [category, setCategory] = useState(import.meta.env.VITE_DEFAULT_CATEGORY || 'top')
;
const [country, setCountry] = useState(import.meta.env.VITE_DEFAULT_COUNTRY || 'us');

```

### API Integration:

- Uses Axios for HTTP requests
- Environmental variable protection for API key
- Error handling with fallback mock data
- Dynamic URL construction based on search parameters

### Feature Implementation:

#### 1. News Fetching Logic:

```

const fetchNews = async () => {
  setLoading(true);
  try {
    const apiKey = import.meta.env.VITE_NEWSDATA_API_KEY;
    let url = query && query.trim()
      ? `https://newsdata.io/api/1/news?apikey=${apiKey}&q=${encodeURIComponent(query)}`
      : `https://newsdata.io/api/1/news?apikey=${apiKey}&country=${country}&category=${category}`;
    // ... API call and data transformation
  } catch (error) {
    console.error('Error fetching news:', error);
    // Fallback to mock data
  }
  setLoading(false);
}

```

```
};
```

Filter Categories:

```
const categories = [  
  'business', 'entertainment', 'environment', 'food', 'health',  
  'politics', 'science', 'sports', 'technology', 'top', 'world'  
];
```

3. Country Selection:

```
const countries = [  
  { code: 'us', name: 'United States' },  
  { code: 'gb', name: 'United Kingdom' },  
  // ... more countries  
];
```

## B. [NewsCard.jsx](#) (Article Component)

**Component Features:**

1. Dynamic Image Handling:

```
const [imageError, setImageError] = useState(false);  
  
// Fallback to emoji when image fails to load  
{article.urlToImage && !imageError ? (  
  <img  
    src={article.urlToImage}  
    onError={() => setImageError(true)}  
    // ... styling  
  />  
) : (  
  <div>📰 </div>  
)}  
}}
```

## 2. Text Formatting:

```
const formatDate = (dateString) => {  
  return new Date(dateString).toLocaleDateString('en-US', {  
    year: 'numeric',  
    month: 'short',  
    day: 'numeric',  
    hour: '2-digit',  
    minute: '2-digit'  
  });  
};  
  
const truncateText = (text, maxLength) => {  
  if (!text) return "";  
  return text.length > maxLength ? text.substring(0, maxLength) + '...' : text;  
};
```

## 2. Styling System

### A. Global Styles (index.css)

#### 1. Typography System:

```
:root {  
  font-family: 'Inter', -apple-system, BlinkMacSystemFont, /* ... */;  
  line-height: 1.6;  
  font-weight: 400;  
  color-scheme: light;  
}
```

#### Animation Definitions:

```
@keyframes fadeIn {  
  from {
```

```
    opacity: 0;
    transform: translateY(20px);
  }
  to {
    opacity: 1;
    transform: translateY(0);
  }
}
```

## **B. Component-Level Styling**

### **1. Card Styling:**

```
const cardStyle = {
  border: '1px solid #e1e5e9',
  borderRadius: '16px',
  padding: '0',
  width: '380px',
  minHeight: '450px',
  // ... more styles
};
```

### **2. Responsive Design:**

```
@media (max-width: 768px) {
  .search-form {
    flex-direction: column;
    width: 100%;
  }
  // ... more responsive styles
}
```

### 3. Performance Optimizations

#### A. Image Optimization

- Lazy loading implementation
- Error handling for failed images
- Placeholder system for missing images
- Responsive image sizing

#### B. State Management

- Efficient use of React hooks
- Controlled component patterns
- Debounced search functionality
- Optimized re-rendering

### 4. Dependencies Analysis

```
{  
  "dependencies": {  
    "axios": "^1.11.0",  
    "react": "^19.1.0",  
    "react-dom": "^19.1.0"  
  },  
  "devDependencies": {  
    "@eslint/js": "^9.30.1",  
    "@vitejs/plugin-react": "^4.6.0",  
    "eslint": "^9.30.1",  
    // ... more dev dependencies  
  }  
}
```

## 5. Build & Development Configuration

### A. Vite Configuration

```
import { defineConfig } from 'vite'

import react from '@vitejs/plugin-react'

export default defineConfig({
  plugins: [react()]
})
```

### B. ESLint Configuration

```
export default defineConfig([
  {
    files: ['**/*.js,jsx'],
    extends: [
      js.configs.recommended,
      reactHooks.configs['recommended-latest'],
      reactRefresh.configs.vite,
    ],
    // ... more configuration
  }
])
```

## 6. Security Measures

1. API Key Protection:
  - Environment variable usage
  - Key validation checks
  - Error handling for invalid keys
2. Data Sanitization:
  - Input validation for search queries
  - URL encoding for API requests



- XSS prevention in content rendering

## 7. Error Handling

### 1. API Error Handling:

```
try {  
  // API calls  
} catch (error) {  
  console.error('Error fetching news:', error);  
  // Fallback content  
}
```

### 2. UI Error States:

- Loading indicators
- Error messages
- Fallback content
- No-results states

## 8. Testing Considerations

While no test files are present, the code structure supports testing:

- Isolated component logic
- Pure functions for formatting
- Mockable API calls
- Separated concerns

## 9. Deployment Requirements

### 1. Environment Setup:

- NewsData.io API key
- Node.js environment
- npm or yarn package manager

### 2. Build Process:

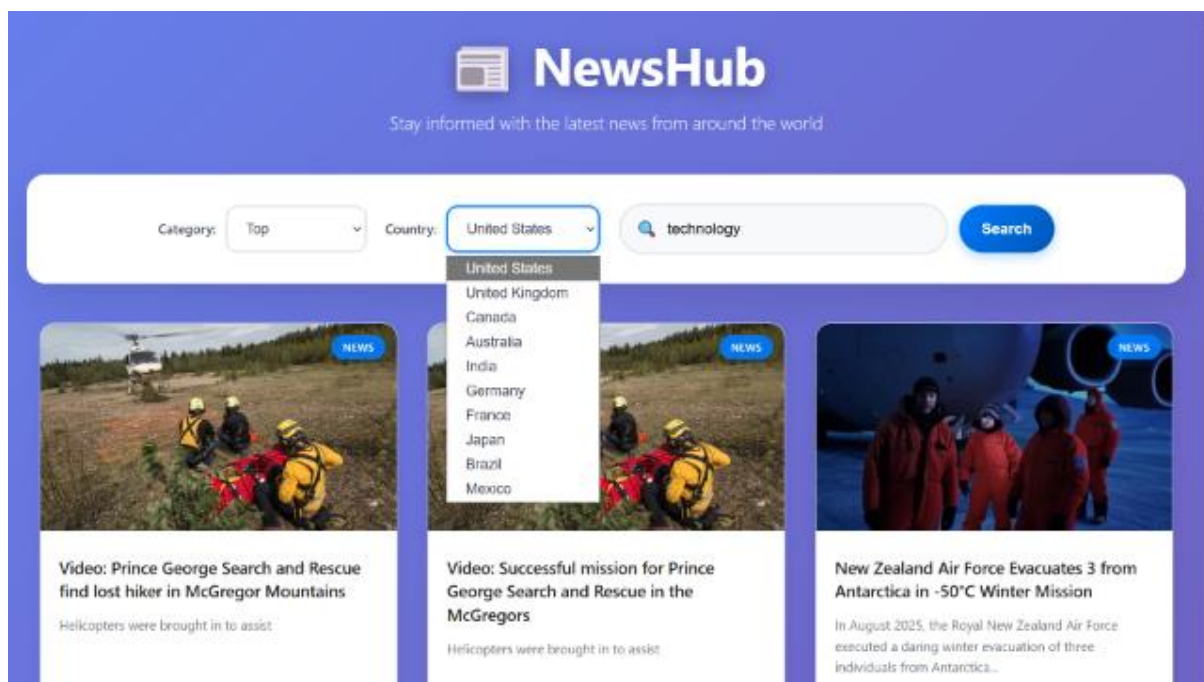
```
npm install # Install dependencies
```


```
npm run build # Create production build
```

npm run preview # Preview production build

This detailed analysis shows a well-structured React application with modern practices, strong error handling, and good separation of concerns. The codebase is maintainable and follows React best practices while providing a robust user experience.

## SNAPSHOTS OF THE CODE:






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