

# DSA Tutor - Complete Deployment Guide

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This guide will help you deploy your DSA Tutor application to the internet so others can use it.

## Table of Contents






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1. [Prerequisites](#)
  2. [Understanding API Keys \(IMPORTANT\)](#)
  3. [Deploy to Vercel](#)
  4. [Setup Custom Domain](#)
  5. [Configure Environment Variables](#)
  6. [Verify Deployment](#)
  7. [Troubleshooting](#)
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## Prerequisites

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Before you start, make sure you have:

-  GitHub account (you already have this)
  -  GitHub Student Developer Pack activated
  -  Your code pushed to a GitHub repository
  -  Supabase account with your database set up
  -  OpenRouter API key
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## Understanding API Keys (IMPORTANT)

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### Why API keys are NOT shown publicly

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Your API keys should NEVER be in your code! Here's why:

- If someone sees your OpenRouter API key, they can use YOUR credits
- If someone gets your Supabase keys, they can access YOUR database

- API keys = passwords to your services

## ✓ How your app works WITHOUT exposing keys

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Your app uses **environment variables** which are stored securely on the server:

1. **Local Development (.env.local)** - Only on your computer
2. **Production (Vercel)** - Stored in Vercel's secure dashboard
3. **Your Code** - Only references the variable names, NOT the actual keys

```
  

```

When deployed, Vercel injects these keys at runtime, so they're never exposed to users.

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## Deploy to Vercel

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Vercel is **FREE** and perfect for Next.js apps. GitHub Student Pack gives you extra benefits!

### Step 1: Create Vercel Account

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1. Go to <https://vercel.com>
2. Click "Sign Up"
3. Choose "Continue with GitHub"
4. Authorize Vercel to access your GitHub

### Step 2: Push Your Code to GitHub

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```
# If you haven't initialized git yet
git init
git add .
git commit -m "Initial commit - DSA Tutor app"

# Create a new repository on GitHub (github.com/new)
# Then connect and push:
git remote add origin https://github.com/YOUR-USERNAME/dsa-tool.git
git branch -M main
git push -u origin main
```

### Step 3: Import Project to Vercel

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1. Go to <https://vercel.com/new>
2. Click "Import Git Repository"
3. Select your dsa-tool repository
4. Configure project:
  - **Framework Preset:** Next.js (should auto-detect)
  - **Root Directory:** ./ (leave as default)
  - **Build Command:** npm run build (auto-filled)
  - **Output Directory:** .next (auto-filled)
5. **IMPORTANT:** Before clicking "Deploy", click "Environment Variables"

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## Configure Environment Variables

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You need to add your API keys to Vercel so your app can use them.

### Step 1: Add Environment Variables in Vercel

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In the Vercel deployment screen, add these variables:

## Required Variables:


Variable Name	Where to Get It	Example Value
NEXT_PUBLIC_SUPABASE_URL	Supabase Dashboard → Settings → API	https://xxxxx.supabase.co
NEXT_PUBLIC_SUPABASE_ANON_KEY	Supabase Dashboard → Settings → API → anon public	eyJhbGciOi... (long key)
SUPABASE_SERVICE_ROLE_KEY	Supabase Dashboard → Settings → API → service_role	eyJhbGciOi... (long key)
OPENROUTER_API_KEY	OpenRouter Dashboard → Keys	sk-or-v1-...

## Optional (but recommended):

Variable Name	Value	Purpose
RATE_LIMIT_MAX_REQUESTS	20	Max requests per minute per user
RATE_LIMIT_WINDOW_MS	60000	Rate limit window (60 seconds)

## Step 2: How to Find Your Keys

### Supabase Keys:

1. Go to <https://supabase.com/dashboard>
2. Select your project
3. Click "Settings" (  ) in sidebar
4. Click "API"

### 5. Copy:

- **URL** → NEXT\_PUBLIC\_SUPABASE\_URL
- **anon public** → NEXT\_PUBLIC\_SUPABASE\_ANON\_KEY
- **service\_role** → SUPABASE\_SERVICE\_ROLE\_KEY ( ⚠ KEEP THIS SECRET!)

### OpenRouter API Key:

1. Go to <https://openrouter.ai/keys>
2. Copy your API key
3. Paste as OPENROUTER\_API\_KEY

### Step 3: Deploy!

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1. After adding all environment variables, click **"Deploy"**
  2. Wait 2-3 minutes for build to complete
  3. You'll get a URL like: <https://dsa-tool-abc123.vercel.app>
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## Setup Custom Domain

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With GitHub Student Pack, you get a **FREE .me domain** from Namecheap!

### Step 1: Get Free Domain

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1. Go to <https://education.github.com/pack>
2. Find "Namecheap" in the list
3. Click "Get access" → Get your free .me domain for 1 year
4. Choose a domain name (e.g., dsatutor.me, codepractice.me)
5. Complete registration

### Step 2: Connect Domain to Vercel

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1. In Vercel, go to your project
2. Click "Settings" → "Domains"
3. Click "Add Domain"

4. Enter your domain (e.g., dsatutor.me)
5. Vercel will show DNS records to add

### Step 3: Update DNS in Namecheap

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1. Go to Namecheap Dashboard → Domain List
2. Click "Manage" on your domain
3. Go to "Advanced DNS"
4. Add these records (Vercel will tell you exact values):

```
Type: A Record
Host: @
Value: 76.76.21.21

Type: CNAME Record
Host: www
Value: cname.vercel-dns.com
```

5. Wait 5-30 minutes for DNS to propagate
6. Your site will be live at <https://yourdomain.me>

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## Verify Deployment

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### Test Your Deployment:

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1. Visit your site - Open your Vercel URL or custom domain
2. Test problem solving:
  - Go to "Solve Problem" page
  - Paste a coding problem
  - Click "Analyze Problem" - Should work!

- Request hints - Should work!
- Submit code - Should work!
- 3. **Check history** - Your sessions should save
- 4. **Check patterns** - Pattern tracking should work

## Common Issues After Deployment:

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### ✗ "Failed to analyze problem"

- **Cause:** OpenRouter API key not set or invalid
- **Fix:** Go to Vercel → Settings → Environment Variables → Check OPENROUTER\_API\_KEY

### ✗ "Database error" or "Failed to fetch history"

- **Cause:** Supabase keys not set correctly
- **Fix:** Verify all 3 Supabase environment variables in Vercel

### ✗ "Rate limit exceeded"

- **Cause:** Too many requests (normal behavior)
- **Fix:** Wait 1 minute or increase RATE\_LIMIT\_MAX\_REQUESTS

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## Post-Deployment Checklist

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- ☐ Site loads at your URL
- ☐ Can analyze problems
- ☐ Can get hints (all 5 levels)
- ☐ Can submit code and get feedback
- ☐ History page shows past problems
- ☐ Patterns page tracks progress
- ☐ Custom domain working (if set up)

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## Sharing Your App

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Now that your app is deployed, you can share it with:

- **Friends:** Send them your URL
- **Resume/Portfolio:** Add as a project
- **Social Media:** Share on LinkedIn, Twitter
- **GitHub README:** Add deployment link

## Add Deployment Badge to GitHub

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Add this to your repository's README.md:

```
## 
**[Visit DSA Tutor](https://your-domain.me)** ← Replace with your URL

[![Deploy with Vercel](https://vercel.com/button)](https://vercel.com/new/clone?repository=)
```

## Troubleshooting

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### Build Failed on Vercel

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**Error:** Type error: Property 'X' does not exist

- **Fix:** Run npm run build locally first to catch TypeScript errors

**Error:** Module not found

- **Fix:** Make sure all dependencies are in package.json, run npm install

### Environment Variables Not Working

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1. Check spelling (case-sensitive!)
2. Remove quotes around values in Vercel



3. Redeploy after adding variables (click "Redeploy" in Vercel)

## Database Connection Issues

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1. Verify Supabase project is not paused (free tier auto-pauses after inactivity)
2. Check Row Level Security (RLS) policies allow public access for anonymous users
3. Test Supabase connection in their dashboard SQL editor

## OpenRouter API Not Working

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1. Check your OpenRouter credits: <https://openrouter.ai/credits>
  2. Verify model availability: `nvidia/nemotron-3-nano-30b-a3b:free`
  3. Test API key with the test script: `node test-openrouter.js`
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## Cost Breakdown (FREE!)

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Service	Cost	What You Get
Vercel	FREE	Hosting, SSL, CDN, Auto-deployments
Supabase	FREE	Database, 500MB storage, 2GB bandwidth
OpenRouter	FREE	\$0.20 free credits (~200 requests)
Domain (.me)	FREE (1 year)	From GitHub Student Pack
Total	\$0	Fully functional app!

## After Free Credits:

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- **OpenRouter:** Pay as you go (\$0.0002 per request with free model)
  - **Domain:** ~\$10/year to renew
  - **Vercel:** Free forever for hobby projects
  - **Supabase:** Free forever (with limits)
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# Updating Your Deployed App

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When you make changes:

```
# 1. Make your changes locally
# 2. Test them (npm run dev)
# 3. Commit and push to GitHub
git add .
git commit -m "Description of changes"
git push

# 4. Vercel automatically detects and redeploys! 
  2. **Supabase Docs:** <https://supabase.com/docs>
  3. **Next.js Docs:** <https://nextjs.org/docs>
  4. **Check Vercel Logs:** Project → Deployments → Click deployment → Logs
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## Congratulations!

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You've deployed your first full-stack application!

**Your app is now live and accessible to everyone on the internet.**

### Next Steps:

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- Share your project on LinkedIn
- Add it to your resume/portfolio
- Get feedback from friends
- Keep building and improving

Good luck with your DSA learning journey! 

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## Appendix: Manual Deployment (Alternative)

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If you prefer not to use Vercel, here are alternatives:

### Option 2: Railway

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- Similar to Vercel, free tier available
- <https://railway.app>

### Option 3: Netlify

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- Another Vercel alternative
  - <https://netlify.com>

#### **Option 4: Self-hosting (VPS)**

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- Requires more setup
- Options: DigitalOcean, AWS, Google Cloud (free credits in GitHub Student Pack)
- Not recommended for beginners

**Recommended: Stick with Vercel for easiest deployment!**