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#CODE:
import docx
import pdfkit
import re

class SmartResumeGenerator:
    def __init__(self, template_path):
        self.template_path = template_path
        self.resume_data = {}

    def load_template(self):
        """Load the resume template."""
        self.doc = docx.Document(self.template_path)

    def parse_job_description(self, job_description):
        """Extract keywords and requirements from the job description."""
        # Example: Extract skills (this is a simple example, you can use NLP for better extraction)
        skills_keywords = ["Python", "Java", "Machine Learning", "Data Analysis", "SQL"]
        extracted_skills = [skill for skill in skills_keywords if skill.lower() in job_description.lower()]
        self.resume_data['skills'] = ', '.join(extracted_skills)

    def customize_resume(self, personal_info, job_description):
        """Customize the resume based on personal info and job description."""
        self.resume_data.update(personal_info)
        self.parse_job_description(job_description)

        for paragraph in self.doc.paragraphs:
            for key, value in self.resume_data.items():
                if f'{{{key}}}' in paragraph.text:
                    paragraph.text = paragraph.text.replace(f'{{{key}}}', value)

    def save_resume(self, output_path, format='docx'):
        """Save the customized resume."""
        if format == 'docx':
            self.doc.save(output_path)
        elif format == 'pdf':
            pdfkit.from_file(output_path.replace('.pdf', '.docx'), output_path)
        else:
            raise ValueError("Unsupported format. Use 'docx' or 'pdf'.")

# Example Usage
if __name__ == "__main__":
    # Personal information
    personal_info = {
        'name': 'John Doe',
        'email': 'john.doe@example.com',
        'phone': '123-456-7890',
        'objective': 'To obtain a position as a Data Scientist.',
        'experience': '5 years of experience in data analysis and machine learning.',
        'education': 'MSc in Computer Science, University of XYZ'
    }

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# Job description
job_description = """
We are looking for a Data Scientist with experience in Python, Machine Learning, and Data
Analysis.
The ideal candidate should have strong skills in SQL and be familiar with big data technologies.
"""

# Initialize the resume generator
generator = SmartResumeGenerator('resume_template.docx')
generator.load_template()

# Customize the resume
generator.customize_resume(personal_info, job_description)

# Save the resume
generator.save_resume('custom_resume.docx')
generator.save_resume('custom_resume.pdf', format='pdf')
```