

```
# ✅ Install dependencies
!pip install langchain langchain-google-genai PyPDF2 fpdf

Requirement already satisfied: langchain in /usr/local/lib/python3.11/dist-packages (0.3.25)
Requirement already satisfied: langchain-google-genai in /usr/local/lib/python3.11/dist-packages (2.1.5)
Requirement already satisfied: PyPDF2 in /usr/local/lib/python3.11/dist-packages (3.0.1)
Collecting fpdf
  Downloading fpdf-1.7.2.tar.gz (39 kB)
  Preparing metadata (setup.py) ... done
Requirement already satisfied: langchain-core<1.0.0,>=0.3.58 in /usr/local/lib/python3.11/dist-packages (from langchain)
Requirement already satisfied: langchain-text-splitters<1.0.0,>=0.3.8 in /usr/local/lib/python3.11/dist-packages (from langchain)
Requirement already satisfied: langsmith<0.4,>=0.1.17 in /usr/local/lib/python3.11/dist-packages (from langchain) (0.3.44)
Requirement already satisfied: pydantic<3.0.0,>=2.7.4 in /usr/local/lib/python3.11/dist-packages (from langchain) (2.11.5)
Requirement already satisfied: SQLAlchemy<3,>=1.4 in /usr/local/lib/python3.11/dist-packages (from langchain) (2.0.41)
Requirement already satisfied: requests<3,>=2 in /usr/local/lib/python3.11/dist-packages (from langchain) (2.32.3)
Requirement already satisfied: PyYAML<=5.3 in /usr/local/lib/python3.11/dist-packages (from langchain) (6.0.2)
Requirement already satisfied: filetype<2.0.0,>=1.2.0 in /usr/local/lib/python3.11/dist-packages (from langchain-google-genai)
Requirement already satisfied: google-ai-generativelanguage<0.7.0,>=0.6.18 in /usr/local/lib/python3.11/dist-packages (from langchain-google-genai)
Requirement already satisfied: google-api-core[grpc]<2.0.*,!=2.1.*,!=2.10.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,!=2.8.* in /usr/local/lib/python3.11/dist-packages (from google-ai-generativelanguage<0.7.0,>=0.6.18)
Requirement already satisfied: google-auth!=2.24.0,!>2.25.0,<3.0.0,>=2.14.1 in /usr/local/lib/python3.11/dist-packages (from google-api-core[grpc]<2.0.*,!=2.1.*,!=2.10.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,!=2.8.*)
Requirement already satisfied: proto-plus<2.0.0,>=1.22.3 in /usr/local/lib/python3.11/dist-packages (from google-api-core[grpc]<2.0.*,!=2.1.*,!=2.10.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,!=2.8.*)
Requirement already satisfied: protobuf!=4.21.0,!>4.21.1,!>4.21.2,!>4.21.3,!>4.21.4,!>4.21.5,<7.0.0,>=3.20.2 in /usr/local/lib/python3.11/dist-packages (from google-auth!=2.24.0,!>2.25.0,<3.0.0,>=2.14.1)
Requirement already satisfied: tenacity!=8.4.0,<10.0.0,>=8.1.0 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: jsonpatch<2.0,>=1.33 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: packaging<25,>=23.2 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: typing-extensions<=4.7 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: httpx<1,>=0.23.0 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: orjson<4.0.0,>=3.9.14 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: requests-toolbelt<2.0.0,>=1.0.0 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: zstandard<0.24.0,>=0.23.0 in /usr/local/lib/python3.11/dist-packages (from langchain-core<1.0.0,>=0.3.58)
Requirement already satisfied: annotated-types<=0.6.0 in /usr/local/lib/python3.11/dist-packages (from pydantic<3.0.0,>=2.7.4)
Requirement already satisfied: pydantic-core<=2.33.2 in /usr/local/lib/python3.11/dist-packages (from pydantic<3.0.0,>=2.7.4)
Requirement already satisfied: typing-inspection<=0.4.0 in /usr/local/lib/python3.11/dist-packages (from pydantic<3.0.0,>=2.7.4)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.11/dist-packages (from requests<3,>=2)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-packages (from requests<3,>=2)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.11/dist-packages (from requests<3,>=2)
Requirement already satisfied: certifi<2017.4.17 in /usr/local/lib/python3.11/dist-packages (from requests<3,>=2)
Requirement already satisfied: greenlet<=1 in /usr/local/lib/python3.11/dist-packages (from SQLAlchemy<3,>=1.4)
Requirement already satisfied: googleapis-common-protos<2.0.0,>=1.56.2 in /usr/local/lib/python3.11/dist-packages (from google-api-core[grpc]<2.0.*,!=2.1.*,!=2.10.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,!=2.8.*)
Requirement already satisfied: grpcio<2.0.0,>=1.33.2 in /usr/local/lib/python3.11/dist-packages (from google-api-core[grpc]<2.0.*,!=2.1.*,!=2.10.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,!=2.8.*)
Requirement already satisfied: grpcio-status<2.0.0,>=1.33.2 in /usr/local/lib/python3.11/dist-packages (from google-api-core[grpc]<2.0.*,!=2.1.*,!=2.10.*,!=2.2.*,!=2.3.*,!=2.4.*,!=2.5.*,!=2.6.*,!=2.7.*,!=2.8.*)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in /usr/local/lib/python3.11/dist-packages (from google-auth!=2.24.0,!>2.25.0,<3.0.0,>=2.14.1)
Requirement already satisfied: pyasn1-modules<=0.2.1 in /usr/local/lib/python3.11/dist-packages (from google-auth!=2.24.0,!>2.25.0,<3.0.0,>=2.14.1)
Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.11/dist-packages (from google-auth!=2.24.0,!>2.25.0,<3.0.0,>=2.14.1)
Requirement already satisfied: anyio in /usr/local/lib/python3.11/dist-packages (from httpx<1,>=0.23.0)
Requirement already satisfied: httpcore==1.* in /usr/local/lib/python3.11/dist-packages (from httpx<1,>=0.23.0)
Requirement already satisfied: h11<=0.16 in /usr/local/lib/python3.11/dist-packages (from httpcore==1.*)
Requirement already satisfied: jsonpointer<=1.9 in /usr/local/lib/python3.11/dist-packages (from jsonpatch<2.0,>=1.33)
Requirement already satisfied: pyasn1<0.7.0,>=0.6.1 in /usr/local/lib/python3.11/dist-packages (from pyasn1-modules<=0.2.1)
Requirement already satisfied: sniffio<=1.1 in /usr/local/lib/python3.11/dist-packages (from anyio)
Building wheels for collected packages: fpdf
  Building wheel for fpdf (setup.py) ... done
  Created wheel for fpdf: filename=fpdf-1.7.2-py2.py3-none-any.whl size=40704 sha256=f0bb01b68c034a0771be175a28423d0102db:
  Stored in directory: /root/.cache/pip/wheels/65/4f/66/bba9866da446a72e206d6484cd97381cbc7859a7068541c36
Successfully built fpdf
Installing collected packages: fpdf
Successfully installed fpdf-1.7.2
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```
# ✅ Imports
import os
import PyPDF2
from langchain_google_genai import ChatGoogleGenerativeAI
from langchain.prompts import PromptTemplate
from fpdf import FPDF
```

```
# ✅ Set Gemini API key
os.environ["GOOGLE_API_KEY"] = "AIzaSyD-IZMvu-PqcUJAMBqZuIp5t_spSeNLCY" # ← Replace this with your real key
```

```
# ✅ Initialize Gemini LLM
llm = ChatGoogleGenerativeAI(model="gemini-1.5-flash", temperature=0.3)
```

```
# ✅ Load study content from PDF
def load_pdf_text(file_path):
    with open(file_path, "rb") as f:
        reader = PyPDF2.PdfReader(f)
        text = ""
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    for page in reader.pages:
        text += page.extract_text()
    return text

```

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# ✅ Summarize the content
def summarize_content(text):
    prompt = f"Summarize the following study material into concise bullet points:\n\n{text}\n\nSummary:"
    return llm.invoke(prompt)

```

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# ✅ Generate MCQ quiz questions
def generate_quiz(summary):
    prompt_template = PromptTemplate.from_template(
        "Based on the following summary, generate 2 multiple-choice questions with 4 options each. Provide the correct answer"
    )
    return llm.invoke(prompt_template.format(summary=summary))

```

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# ✅ Save results to PDF
def save_to_pdf(summary, quiz, output_path="study_assistant_output.pdf"):
    pdf = FPDF()
    pdf.add_page()
    pdf.set_auto_page_break(auto=True, margin=15)

    pdf.set_font("Arial", 'B', 14)
    pdf.cell(0, 10, "Study Assistant - Summary & Quiz", ln=True, align="C")

    pdf.set_font("Arial", 'B', 12)
    pdf.cell(0, 10, "Summary", ln=True)
    pdf.set_font("Arial", '', 11)
    for line in summary.split("\n"):
        pdf.multi_cell(0, 10, line)

    pdf.ln(5)
    pdf.set_font("Arial", 'B', 12)
    pdf.cell(0, 10, "Quiz Questions", ln=True)
    pdf.set_font("Arial", '', 11)
    for line in quiz.split("\n"):
        pdf.multi_cell(0, 10, line)

    pdf.output(output_path)
    return output_path

```

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# ✅ Upload PDF
from google.colab import files
uploaded = files.upload()
pdf_path = list(uploaded.keys())[0]

```



Choose files Prompt Engineering.pdf

- **Prompt Engineering.pdf**(application/pdf) - 1549480 bytes, last modified: 13/06/2025 - 100% done  
Saving Prompt Engineering.pdf to Prompt Engineering (1).pdf

```

# ✅ Process
study_text = load_pdf_text(pdf_path)
summary = summarize_content(study_text).content
quiz = generate_quiz(summary).content
pdf_file = save_to_pdf(summary, quiz)

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# ✅ Downloadable Output
files.download(pdf_file)

```



