PyInstaller Build Instructions for compress_pdf

Prerequisites

Install required packages:

```
pip install pikepdf pyinstaller pillow
```

Building Executables

For Windows (on Windows machine)

```
pyinstaller --onefile \
    --name compress_pdf \
    --hidden-import=pikepdf \
    --hidden-import=PIL \
    --hidden-import=lxml.etree \
    --collect-all pikepdf \
    compress_pdf.py
```

Output: `dist/compress_pdf.exe`

For Linux (on Linux machine)

```
pyinstaller --onefile \
    --name compress_pdf \
    --hidden-import=pikepdf \
    --hidden-import=PIL \
    --hidden-import=lxml.etree \
    --collect-all pikepdf \
    compress_pdf.py
```

Output: `dist/compress_pdf`

Make it executable:

```
chmod +x dist/compress_pdf
```

For macOS (on macOS machine)

```
pyinstaller --onefile \
    --name compress_pdf \
    --hidden-import=pikepdf \
    --hidden-import=PIL \
    --hidden-import=lxml.etree \
    --collect-all pikepdf \
```

```
    compress_pdf.py
```

Output: `dist/compress_pdf`

Make it executable:

```
chmod +x dist/compress_pdf
```

Placement in Project Structure

After building, place executables in your Electron project:

```
tooldeck/
├── assets/
│   ├── backend_windows/
│   │   ├── (your .NET self-contained publish files)
│   │   └── compress_pdf.exe          ← Place here
│   ├── backend_linux/
│   │   ├── (your .NET self-contained publish files)
│   │   └── compress_pdf              ← Place here
│   └── backend_macos/
│       ├── (your .NET self-contained publish files)
│       └── compress_pdf              ← Place here
```

Alternative: Scripts Subfolder

If you prefer, create a `scripts` subfolder in each backend folder:

```
backend_windows/
├── (API files)
└── scripts/
    └── compress_pdf.exe
```

The C# service will automatically search both locations.

Testing the Executable

Test the executable directly:

```
# Windows
compress_pdf.exe input.pdf output.pdf --quality 75 --json

# Linux/macOS
./compress_pdf input.pdf output.pdf --quality 75 --json
```

Expected output (JSON):

```
{
  "success": true,
```

```
  "original_size": 1048576,
  "compressed_size": 524288,
  "compression_ratio": 50.0,
  "output_path": "output.pdf"
}
```

Cross-Compilation Notes

Important: PyInstaller executables are **not cross-platform**. You must build on each target OS:

- Build Windows `.exe` on Windows
- Build Linux binary on Linux
- Build macOS binary on macOS

Using CI/CD (Recommended)

Use GitHub Actions or similar to automate builds:

```
# .github/workflows/build-compress-executable.yml
name: Build Python Compression Executable

on: [push]

jobs:
  build-windows:
    runs-on: windows-latest
    steps:
      - uses: actions/checkout@v3
      - uses: actions/setup-python@v4
        with:
          python-version: '3.11'
      - run: pip install pikepdf pyinstaller pillow
      - run: pyinstaller --onefile --name compress_pdf compress_pdf.py
      - uses: actions/upload-artifact@v3
        with:
          name: compress_pdf-windows
          path: dist/compress_pdf.exe

  build-linux:
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v3
      - uses: actions/setup-python@v4
        with:
          python-version: '3.11'
      - run: pip install pikepdf pyinstaller pillow
      - run: pyinstaller --onefile --name compress_pdf compress_pdf.py
      - run: chmod +x dist/compress_pdf
      - uses: actions/upload-artifact@v3
        with:
          name: compress_pdf-linux
          path: dist/compress_pdf
```

```
  build-macos:
    runs-on: macos-latest
    steps:
      - uses: actions/checkout@v3
      - uses: actions/setup-python@v4
        with:
          python-version: '3.11'
      - run: pip install pikepdf pyinstaller pillow
      - run: pyinstaller --onefile --name compress_pdf compress_pdf.py
      - run: chmod +x dist/compress_pdf
      - uses: actions/upload-artifact@v3
        with:
          name: compress_pdf-macos
          path: dist/compress_pdf
```

Troubleshooting

Issue: "pikepdf not found" error

Solution: Add `--collect-all pikepdf` to PyInstaller command

Issue: Large executable size (50+ MB)

Normal: pikepdf includes QPDF libraries. This is expected.

Issue: Executable doesn't run

Windows: May need Visual C++ Redistributable **Linux**: May need `libqpdf` shared libraries (usually included by PyInstaller) **macOS**: May need to sign the executable or allow in Security & Privacy

Issue: Permission denied (Linux/macOS)

Solution:

```
chmod +x compress_pdf
```

File Size Expectations

- **Windows**: ~40-60 MB
- **Linux**: ~35-50 MB
- **macOS**: ~40-55 MB

These sizes are normal due to bundled libraries (QPDF, lxml, PIL).