# ExamScanUIUC

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> To get, install and start the ExamScanUIUC application under Python using Pip:
>
> ```
> > python -m pip install examscanuiuc --user --upgrade
> > python -m examscanuiuc.tag [options] exam.pdf
> > python -m examscanuiuc.scan [options] scans.pdf
> ```

ExamScanUIUC is a python package for adding and analysing tags on exams. It can be run as a Python 2 or Python 3 module.

# 1 Getting ExamScanUIUC

ExamScanUIUC is available on the Python Package Index (PyPI). The preferred method for installing the latest stable release is to use Pip:

```
> python -m pip install examscanuiuc --user --upgrade
```

Pip can be installed using get-pip.py and is included in Python 2.7.9 and Python 3.4 by default.

## 1.1 Dependencies

ExamScanUIUC requires several pieces of software. On Ubuntu these can be installed using:

```
pdfimages    apt-get install poppler-utils
pdftoppm     apt-get install poppler-utils
zbar         apt-get install libzbar-dev libffi-dev
```

## 1.2 ExamScanUIUC development version

Although the latest stable release of ExamScanUIUC is available through PyPI, you can get the latest development version of flipper from Bitbucket or straight from the Mercurial repository with the command:

```
> hg clone https://bitbucket.org/mark_bell/examscanuiuc
```

To compile ExamScan use the command:

```
> python setup.py install --user
```

# 2 Example

ExamScanUIUC includes an example exam to try tagging and some scans of completed exams. To copy these into a demo folder in the current directory use the command:

```
> python -m examscanuiuc.demo
```

In the following examples, we will assume that you have then moved within this folder by doing:

```
> cd ./demo
```

## 2.1   Tagging

To add tags to `exam.pdf` use the tag module of ExamScanUIUC:

```
> python -m examscanuiuc.tag exam.pdf
```

You will be asked for some basic information, namely the number of exams:

```
> Number of exams needed: 10
```

and the page scores:

```
> Enter points available per page as a comma separated list (or blank to cancel).
> Expecting 9 page scores.
> Unless you want to award points for completing the cover sheet, this should start
   with a 0: 0,5,6,7,5,5,4,7,6
```

ExamScanUIUC will now generate `output.pdf` containing 10 tagged copies of the exam.
Of course, you can pass this information in directly via flags:

```
> python -m examscanuiuc.tag exam.pdf --num=10 --scores=0,5,6,7,5,5,4,7,6
```

If you want to generate more exams or the exam in several pieces, use the –start flag to set a starting exam number:

```
> python -m examscanuiuc.tag exam.pdf --num=5 --start=11 --scores=0,5,6,7,5,5,4,7,6
```

Alternatively, this information can be specified by a configuration file:

```
> python -m examscanuiuc.tag exam.pdf --config=settings.conf
```

## 2.2   Advanced tagging

This also allows more advanced tagging of the exams by providing a rooms spreadsheet.

```
> python -m examscanuiuc.tag exam.pdf --config=settings.conf --rooms=rooms.xlsx
```

This Excel file contains sheets describing the room layouts and ExamScanUIUC can use these to also add seat names to each exam.

## 2.3   Analysis

Exams should be scanned in black and white at 400dpi **with the pages rotated 180 degress** so while you can read each page they are upside down from your perspective. This is because the corners where the staples were are often slightly damaged, and the pages twist more if scanned in the standard orientation, confusing the optical mark recoginition code. **If you don't physically rotate the pages, the code will fail.**

To analyse the scanned pages of a tagged exam contained in `scans.pdf` use the scan module of ExamScanUIUC:

```
> python -m examscanuiuc.scan --roster=demo/roster.xlsx demo/scan.pdf
```

Pages can be scanned in several batches. Once all pages have been scanned, ExamScanUIUC will write all student data out to `results.csv`.
Additionally, reports for students can be generated by providing a template:

```
> python -m examscanuiuc.scam --roster=demo/roster.xlsx --template=demo/template.html
```

This html template will have its tags, denoted {{tag_name}}, replaced with data for each student. Temporary data is stored in ./tmp and this should be deleted before starting analysing a new exam.

# 3   Known issues

The packages used by ExamScanUIUC require an updated version of the `six` package. Since this is included as an 'Extra' package in the included system Python on OS X, Mac users may need to:

- install Python manually,

- modify their `PYTHONPATH` environment variable, or

- install ExamScanUIUC within `virtualenv`

as described here.